

Governance in agrifood global value chain: a bibliometric analysis of the past 15 years¹

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Abstract

The insertion of small rural producers in global value chains (GVCs) is an alternative for their survival. The sustainability of the agrifood GVC involving North and South contexts depends on how resources are allocated, which, on their end, depend on governance. Governance in terms of leader firm and governance transaction. However, the integration between these two types of governance is not clear. Our aim was to investigate the scientific field on “governance in agrifood global value chain”, and research gaps in it through a survey on the production of knowledge between the years of 2005 to 2019. Our descriptive results show that the research on the theme has increased over the years, with emphasis on the period between 2016 and 2018. Slightly more than half (53%) of the scientific articles on the subject were published by a group consisting of 10 countries, especially The United States, The United Kingdom and The Netherlands, highlighting the Wageningen University. Regarding the main journals, there is a concentration of the total number of publications in 10 main journals. This allowed us to identify that there was a scientific community interested in the area. The network graph showed that the field is developed by different and interdisciplinary perspectives and is organized into four main axes: 1) chain governance; 2) transaction governance; 3) horizontal relationships; 4) political and structural elements, involving different theories, such as Transaction Cost Economics and Economic Sociology. Studies that link chain governance and transaction governance are discrete, being linked by studies concerning upgrading, requiring further studies on the topic. Although the sustainability of the chain depends on both transaction and chain governance, this bibliometric study showed that there is a gap to be filled in this topic. This study contributes to the scientific knowledge on the field and efficiency of the North and South agrifood GVC as it reveals future perspectives and paths to be followed, such as studies on upgrading, vertical and horizontal relationships, governance of the global chain as well as concerns in terms of public policies.

Keywords: Agrifood, Governance, Production System, Bibliometric analysis

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1. Introduction

The insertion of small rural producers in global value chains (GVCs) is an alternative for their survival (Gereffi *et al.*, 2005; Giuliani *et al.*, Trienekens, 2011; Fernandez-Stark *et al.*, 2014). In chains involving different global contexts, especially North and South, small producers tend to face difficulties such as lack of technological resources and infrastructure, access to knowledge, as well as incompatibility of institutional environments (e.g. norms, values) (Trienekens, 2011).

Agrifood production is often destined to international markets, which imposes multiple challenges when compared to domestic markets, especially when considering disparities in institutional environments (Gereffi *et al.*, 2005; Giuliani *et al.*, 2005; Trienekens, 2011). The sustainability of a global value chain depends on how resources are allocated, which directly depends on how the chain is organized in terms of governance (Gereffi *et al.*, 2005; Gereffi, 2013; Fao, 2014; Samper *et al.*, 2017).

From the perspective of chain governance, the coordination of activities is carried out by a leading company (Gereffi *et al.*, 2005). Five governance types in this scenario are proposed by Gereffi *et al.* (2005): markets, modular value chains, relational value chains, captive value chains, and hierarchy. They may vary depending on how complex transactions are, the capability of data coding, and the suppliers' ability of meeting demands (Gereffi *et al.*, 2005).

However, the characteristics of transactions in the different stages in a chain are different, especially when considering the differences in institutional environments (Giuliani *et al.*, 2005; Guimarães, 2021). Thus, the governance of the global value chain alone is not enough for the sustainability of this chain, and the governance of each transaction that makes up the chain needs to be observed, which can be investigated from the perspective of the New Institutional Economics (Ménard and Shirley, 2014). From the New Institutional Economics, the governance of transactions become more complex once a chain implicates greater asset specificity, with more added value, dimensions that can be hard to measure, and problems regarding private information (Williamson, 1985; Barzel, 2005; Akerlof, 1970).

Despite the importance of considering both transaction and value chain governance to the sustainability of global value chains, this integration is not clear to the scientific community and has gaps to be filled. For this reason, our aim is to investigate the scientific field on “governance in agrifood global value chain”, and research gaps in it through a survey on the production of knowledge between the years of 2005 to 2019. Grounded on Malanski *et al.*

(2019), the purpose of this analysis was to survey the scientific production indexed in the two most important international databases, Web of Science and Scopus. We particularly focused on the agrifood sector given that chains involving international contexts include, among others, transactions of products from this sector (Trienekens, 2011).

This article is organized into four sections. In addition to this introduction, the second part presents the methodological procedures. The third and fourth ones present the main results and discussions. Finally, the fifth one states the conclusions.

2. Methodological Procedures

The purpose of this analysis is to survey the scientific production on the subject “governance in agrifood global value chain” in the last 15 years (2005 to 2019) indexed in the Web of Science and Scopus databases. The collection of bibliographic data from the two databases was based on an equation composed of keywords according to the Tesauro “Agrovoc” from United Nations Food and Agriculture Organization (FAO) related to the theme of this study (Agrovoc, 2020). The two keywords that structure the subject were “governance” and “global value chain”². The equation was applied in the “topic search field”, which includes the title, abstract, and keywords of articles:

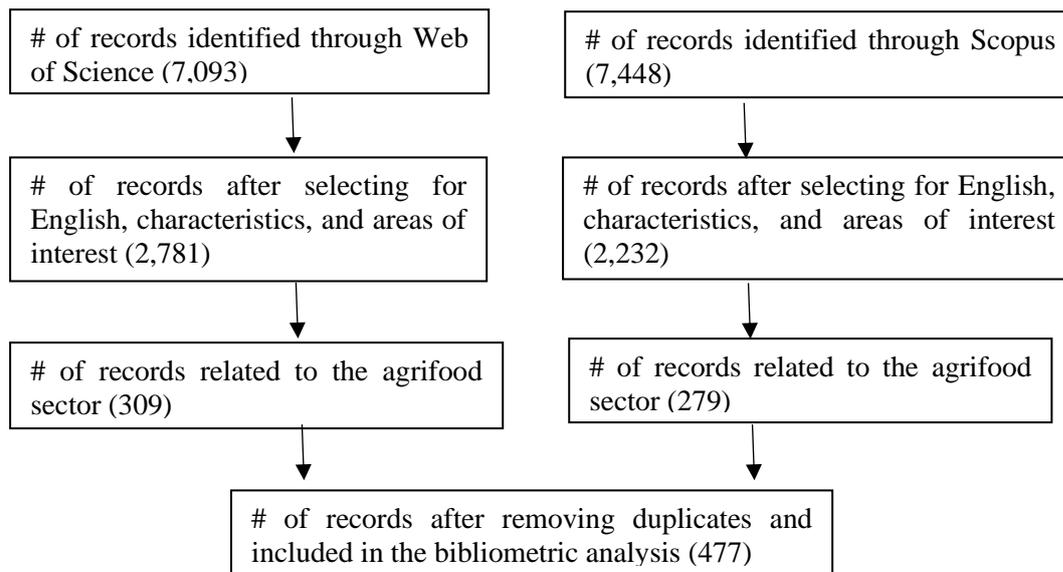
$$TS=((\textit{“governance*” OR “coordination” OR “relationship*” OR “transaction*” OR “institution*” OR “mechanism*”}) AND (\textit{“value chain*” OR “global value chain*” OR “agrifood chain*” OR “global production network*” OR “food system*” OR “short chain*” OR “commodity chain*” OR “value based supply chain*”})).$$

Starting from the 14,541 articles found, a first screening was performed selecting the language of the documents (English), characteristics (in process or already published), and the areas of interest related to governance (Social Sciences, Business, Management and Accounting, Agricultural and Biological Sciences, Economics, Econometrics and Finance, Arts and Humanities, Psychology). Duplicates were removed in the second screening. Next, a third screening was performed by reading the title, summary, and keywords of the studies related to

² The inclusion of words related to “agrifood” could restrict search results, since this sector encompasses diverse types of production (e.g. crops, livestock, fisheries, among others), and the vocabulary used can vary between general agricultural production (e.g. agriculture) to very specific (e.g. horticulture).

the agrifood sector. Finally, 477 articles discussing “governance in agrifood global value chain” were identified. Seminal works, even if conceptual or proposed in sectors other than agriculture, were kept, given that they are the foundation for the construction of research on the topic. Figure 1 synthesizes the methodological path.

Figure 1 - Methodological path for selecting the articles included in the bibliometric analysis



Source: made by the author

Two analyses were performed based on the 477 articles identified: 1) descriptive analysis of the main meta-data of the articles based on the frequency of the following variables: authors, affiliation (university and country), year of publication, number of citations, and journal; 2) network analysis based on keywords used by the authors of the article, showing the main areas of scientific research in “governance in agrifood global value chain” for the past 15 years. A network graph was generated based on the frequency of co-occurrence of keywords, with support of the platform CorText/INRA (Cortext, 2020).

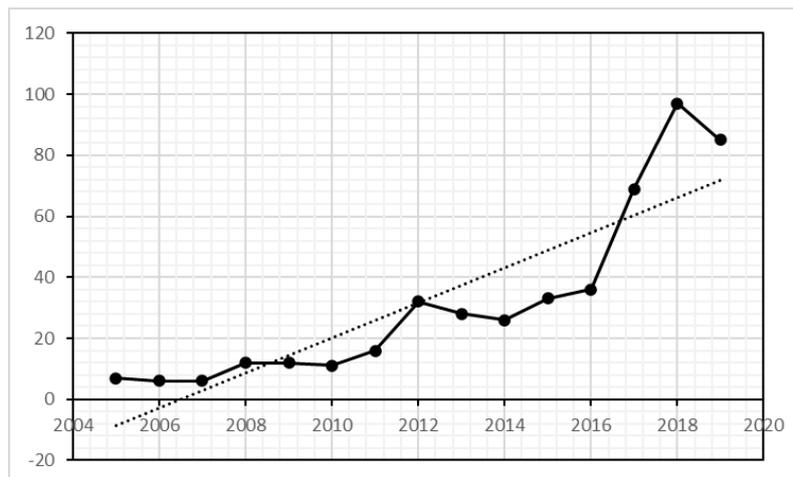
The network graph is composed of nodes, represented by keywords. Triangle is associated with keyword absolute frequency: the bigger it is, the more frequent the word is. The strength of the co-occurrence between keywords is indicated by the thickness of the line connecting them: the thicker the line, the greater the frequency of the co-occurrence. A dense network of co-occurrence forms a cluster of keywords, represented by a colored circle. Finally, a discussion was made based on the network graph.

3. Results

3.1. Research evolution and context: countries and institutions

Our descriptive results show that the research on the theme has increased over the years, with emphasis on the period between 2016 and 2018. **Erro! Fonte de referência não encontrada.** An increase in the number of studies about the subject occurred in 2012, with an average of 31 articles per year between 2012 and 2016 (Figure 2). In 2017, the number of works increased significantly, with an average of 84 articles between 2017 and 2019, and 97 of the total were published in 2018. Even though 2019 had less published works concerning the subject, constant growth was identified, which indicates that studies are being developed to fulfill the gap.

Figure 2 – Evolution of articles related to “governance in agrifood global value chain” according to number of publications per year between 2004 and 2020.



Source: made by the authors

Research related to “governance in agrifood global value chain” was conducted in 56 countries in five continents. This shows that the interest on the subject is present worldwide, although a few countries have published more works than others. Slightly more than half (53%) of the scientific articles on the subject were published by a group of 10 countries, especially the United States of America, the United Kingdom, and the Netherlands (table 1). The Top 10 countries performing research on the subject are mainly developed economies, except Brazil and South Africa.

Table 1 – Countries that published the most on “governance in agrifood global value chain” between 2005 and 2019.

Position	Country	# of publications
1st	United States of America	79
2nd	United Kingdom	56
3rd	Netherlands	41
4th	Italy	28
5th	Australia	27
6th	Canada	15
7th	Brazil	14
8th	Germany	14
9th	Denmark	13
10th	South Africa	13

Source: made by the authors

We identified 287 institutions conducting research related to “governance in agrifood global value chain”. The ones that conducted the most research on the subject (Table 2) were mostly located in the top 10 countries. The main institution was the Wageningen University, which has published 5% of all the studies on the subject and over half (51%) of the studies conducted in the Netherlands.

Table 2 – Institutions that published the most on “governance in agrifood global value chain” between 2005 and 2019.

Position	Institution	# of publications	Country
1st	Wageningen University	21	Netherlands
2nd	University of Sydney	8	Australia
3rd	Duke University	7	United States of America
4th	Copenhagen Business School	5	Denmark
5th	University of Copenhagen	5	Denmark
6th	University of Manchester	5	United Kingdom
7th	University of Sussex	4	United Kingdom

Note: there are another 11 universities with three works each.

Source: made by the authors

While these scientific articles are located in a few countries, (e.g. Netherlands, Australia, United States of America, Denmark, and United Kingdom), we identified that in each country the studies were scattered through multiple universities. Four of the top 7 universities were in the United Kingdom and Denmark. Despite the representativeness of these universities in the development of those studies, they were responsible only for 4% of the published studies on the subject. This shows that works are scattered and, therefore, other universities from the United Kingdom and Denmark have published studies on the subject.

3.2 Main journals and areas of interest

Over two hundred (225) journals have published on “governance in agrifood global value chain”. Regarding journals with most publications, 29% of the total number of publications on the subject between 2005 and 2019 (139 out of 477) are condensed in 10 main journals (Table 3). This allowed us to identify that there is a scientific community interested in the area.

Table 3 – Journals with most publications on “governance in agrifood global value chain” between 2005 and 2019.

Position	Journal	Scope	# of publications
1st	Journal of Rural Studies	Rural Social Sciences Studies	27
2nd	World Development	Development Studies	20
3rd	British Food Journal	Food Related Studies	19
4th	International Food and Agribusiness Management Review	Global Food and Agribusiness System	14
5th	Review of International Political Economy	Political Economy	12
6th	Geoforum	Human Geography	11
	Agriculture and Human Values	Food and Agricultural Systems	
7th	Journal of Agribusiness in Developing and Emerging Economies	Agribusiness in Emerging Economies	10
8th	European Journal of Development Research	International Development Studies	9
9th	Journal of Business Ethics	Ethical Issues in Business	7

Source: made by the authors

Two main subjects were identified in these journals: 1) Food and Agribusiness Systems (Journal of Rural Studies, British Food Journal, International Food and Agribusiness Management Review, Agriculture and Human Values, and Journal of Agribusiness in Developing and Emerging Economies), and 2) Development Studies and Developing Economies (World Development and European Journal of Development Research). These journals concentrate 78% of all that was published on the top 10 periodicals, which demonstrates that studies in agrifood global value chain are focused on analyzing different agrifood subsystems in emerging economies.

Other subjects with less representativeness were also identified: political guidelines (Review of International Political Economy), geography (Human Geography), and ethics (Journal of Business Ethics). Among these subjects, geographical studies stand out given they are not related to “governance in agrifood global value chain”, the main subject. This could be connected to the fact that global chain involves two distinct geographical contexts.

3.3 Main authors and their affiliations

Around 1019 authors took part in different publications on “governance in agrifood global value chain”. Among them, 10 authors that most published on the subject (table 4) were responsible for approximately 10% of the published works between 2005 and 2019.

Table 4 – Most published authors on “governance in agrifood global value chain” between 2005 and 2019.

Position	Author	# of publications	Country	University
1st	Gereffi, G.	7	United States of America	Duke University
2nd	Neilson, J.	6	Australia	University of Sydney
3rd	Ponte, S.	6	Denmark	Copenhagen Business School
4th	Molnar, A.	5	Hungary	Hungarian Academy of Sciences
5th	Pietrobelli, C.	5	Italy	University of Rome III
6th	Lee, J.	4	United States of America	Duke University
7th	Mancini, M.	4	Italy	University of Parma
8th	Rossi, A.	4	Italy	University of Pisa
9th	Swinnen, J.	4	Belgium	Katholieke University Leuven
10th	Trienekens, J.	4	Netherlands	Wageningen University

Source: made by the authors

Half of the main authors have their origins in one of the countries that most published on the subject (United States of America, Australia, Denmark, Italy, and Netherlands). Gereffi, G. stands out as the most published author of the subject. Although he presents investigations not only in the agrifood sector, he is one of the pioneers of the global value chain concept (Gereffi *et al.*, 2005; Barrientos *et al.* 2011; Gereffi and Lee, 2012, 2016; Lee *et al.*, 2010; Gereffi, 2013; Lee and Gereffi, 2015). That is why most publications were theoretical, searching to discuss the concepts of this subject in several sectors, including the agrifood one. Lee, J. stands out in number of articles developed with Gereffi, G.

Authors such as Ponte, S., Pietrobelli, C., Rossi, A., and Trienekens, J. have developed studies related to governance in global chains, although they have not directly investigated the agrifood sector in every article. Other prominent authors in number of publications have investigated the governance of these chains in the agricultural context, mostly based on empirical studies (Neilson and Shonk, 2014; Van Herck and Swinne, 2015; Watabaji *et al.*, 2016; Neilson *et al.*, 2018; Mancini *et al.*, 2019).

3.4 Most cited articles

The most cited articles, in both databases, were in large part from authors who have most published in the area, such as Gereffi, G., Ponte, S., Pietrobelli, C., and Lee, J. It is also noteworthy that these articles were related to main journals, countries, and universities that published on the topic (Tables 5 and 6).

Table 5 – Most cited articles in the database Web of Science on “governance in agrifood global value chain” between 2005 and 2019.

# of citations	Author(s)	Title	Journal	Year	1st author's affiliation	Country
2066	Gereffi, G.; Humphrey, J.; Sturgeon, T.	The Governance of Global Value Chains	Review of International Political Economy	2005	Duke University	United States of America
350	Ponte, S.; Gibbon, P.	Quality Standards, Conventions and The Governance of Global Value Chains	Economy and Society	2005	Copenhagen Business School	Denmark
348	Giuliani, E.; Pietrobelli, C.; Rabellotti, R.	Upgrading in Global Value Chains: Lessons from Latin American Clusters	World Development	2005	University of Rome III	Italy
341	Jacobides, M. G.; Winter, S. G.	The Co-Evolution of Capabilities and Transaction Costs: Explaining the Institutional Structure of Production	Strategic Management Journal	2005	London Business School	United Kingdom
293	Le Breton- Miller, J.; Miller, D.	Why Do Some Family Businesses Out- Compete? Governance, Long-Term Orientations, and Sustainable Capability	Entrepreneurship Theory and Practice	2006	University of Alberta	Canada
206	Gereffi, G.	Global Value Chains in a Post-Washington Consensus World	Review of International Political Economy	2013	Duke University	The United Kingdom
173	Pietrobelli, C.; Rabellotti, R.	Global Value Chains Meet Innovation Systems: Are There Learning Opportunities for Developing Countries?	World Development	2011	University of Rome III	Italy
137	Gereffi, G.; Lee, J.	Why the World Suddenly Cares About Global Supply Chains	Journal of Supply Chain Management	2012	Duke University	United Kingdom
130	Closs, D. J.; Speier, C.; Meacham, N.	Sustainability to Support End-To-End Value Chains: The Role of Supply Chain Management	Journal of The Academy of Marketing Science	2011	Michigan State University	United States of America

116	Lee, J.; Gereffi, G.; Beauvais, J.	Global Value Chains and Agrifood Standards: Challenges and Possibilities for Smallholders in Developing Countries	Proceedings of The National Academy of Sciences of the United States of America	2010	University of Maryland	United States of America
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Source: made by the authors

This shows that studies were largely theoretical, with concerns for scientific evolution when talking about global value chain. That is why part of them was frequently cited. They are derived from seminars and are not related to the agrifood context. In addition, although we could note an increase in the number of research studies since 2012, the most cited works are dated from 2005 to 2014. This could mean the consolidation on studies about this subject started in 2005, and then an evolution in explaining the phenomenon is being pursued, either by theoretical or empirical means.

Table 6 – Most cited articles in the database Scopus on “governance in agrifood global value chain” between 2005 and 2019.

# of citations	Author(s)	Title	Journal	Year	1st author's affiliation	Country
2751	Gereffi, G.; Humphrey, J.; Sturgeon, T.	The Governance of Global Value Chains	Review of International Political Economy	2005	Duke University	United States of America
421	Giuliani, E.; Pietrobelli, C.; Rabbott, R.	Upgrading in Global Value Chains: Lessons from Latin American Clusters	World Development	2005	University of Rome III	Italy
285	Barrientos, S.; Gereffi, G.; Rossi, A.	Economic and social upgrading in global production networks: A new paradigm for a changing world	International Labour Review	2005	Nottingham University	United Kingdom
282	Gereffi, G.	Global Value Chains in a Post-Washington Consensus World	Review of International Political Economy	2014	Duke University	United States of America
213	Yeung H. W.-chung.; Coe, N. M.	Toward a Dynamic Theory of Global Production Networks	Strategic Management Journal	2015	Economic Geography	Malaysia
180	Gereffi, G.; Lee, J.	Why the World Suddenly Cares About Global Supply Chains	Journal of Supply Chain Management	2012	Duke University	United States of America
157	Ponte, S.; Sturgeon, T.	Explaining Governance in Global Value Chains: A Modular Theory-Building Effort	Review of International Political Economy	2014	Copenhagen Business School	Denmark
145	Bair, J.	Analyzing economic organization: Embedded networks	Economy and Society	2008	University of Virginia	United States of America

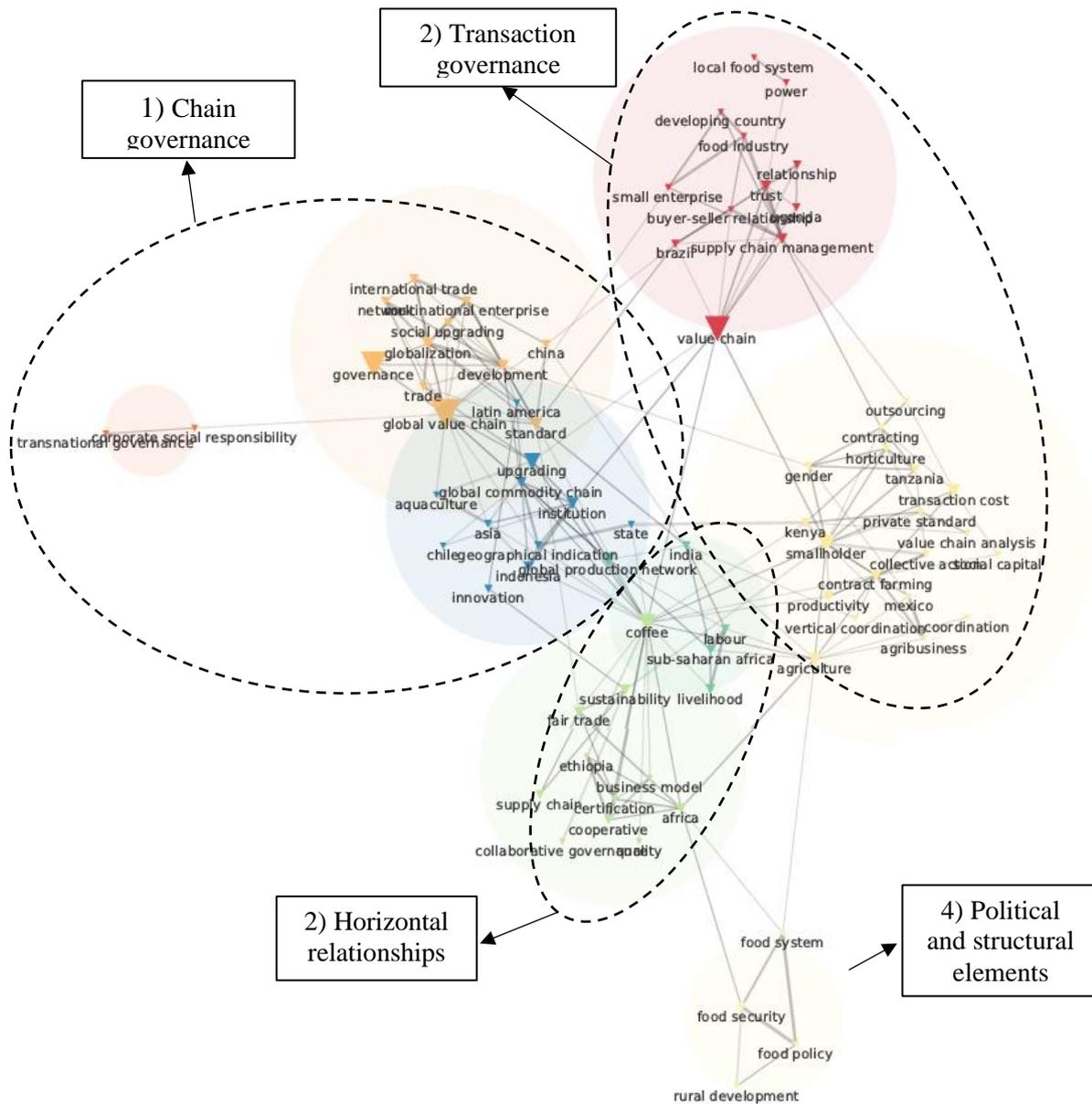
		and global chains compared				
139	Muradian, R.; Pelupessy, W.	Governing the coffee chain: The role of voluntary regulatory Systems	World Development	2005	Tilburg University	Netherlands
133	Elkington, J.	Governance for Sustainability	Corporate Governance-An International Review	2006	Sustainability	United Kingdom

Source: made by the authors

3.5 Network graph: analysis

Approximately 1253 different keywords were observed in the 477 articles, which shows a great diversity in the works on “governance in agrifood global value chain. The network graph showed that the field is developed by different and interdisciplinary perspectives and is organized into four main axes: 1) chain governance; 2) transaction governance; 3) horizontal relationships; 4) political and structural elements, involving different theories, such as Transaction Cost Economics and Economic Sociology

Figure 3 – Network graph on “governance in agrifood global value chain”.



Source: made by the authors

The first axis, chain governance, concerns the analysis of governance from a systemic and global perspective, which considers the organization of the chain in international contexts. This governance encompasses both an economic perspective of global transactions (international trade, globalization, multinational enterprise, trade, and standard) (Ponte and Gibbon, 2005; Bacon, 2010; Henson and Humphrey, 2010; Henson, 2011; Tran *et al.*, 2013; Dallas, 2015; Giovannetti and Marvasi, 2018; Franse *et al.*, 2019) and a perspective of chain

development (network, social upgrading, and development) (Vurro *et al.*, 2009; Barrientos *et al.*, 2011; Glin *et al.*, 2012; Rossi, 2013; Gereffi and Lee, 2016; Horner, 2017; Lie *et al.*, 2018).

Some words stand out, such as: global value chain, governance, and upgrading, which indicates that studies investigate how upgrading occurs from the governance of global value chains. Analyses on upgrading in these chains can include elements such as innovation, institutions, the government, geographical indications, and discussion from the perspective of global commodity chains (innovation, institution, government, geographical indication, and global commodity chain) (Canada and Vazquez, 2005; Neilson, 2007; Swinnen and Maertens, 2007; Conneely and Mahon, 2015; Neilson *et al.*, 2018; Pietrobelli and Staritz, 2018). The highlighted studies happen in specific contexts, such as in Chile, Indonesia, and Asia, especially regarding aquaculture, as the graph shows (Gwynne, 2006; Neilson, 2007; Ponte *et al.*, 2014; Neilson *et al.*, 2018).

The second major axis, transaction governance, concerns the analysis of governance from an individual perspective and considers governance from the analysis of transactions within a chain. This axis shows theoretical interdisciplinarity since concepts of Transaction Cost Economics and Economic Sociology were used to understand governance in these chains at an individual level.

Transaction governance indicates that there are concerns about economic aspects in the chain, and it involves two large groups. The first group analyzes transactions at a micro level involving the individual view of the agent from different perspectives, whether in gender, the social capital of Economic Sociology, or through the lens of Transaction Cost Economics (outsourcing, contracting, collective action, contract farming, coordination) (Goohue, 2011; Wever *et al.*, 2012; Ali and Kumar, 2015; Bullock *et al.*, 2018; Sengere *et al.*, 2019). It is an axis that shows that studies have investigated dyadic relationships, transaction by transaction, with a focus on the producer (smallholder) (Abebe *et al.*, 2016; Clay *et al.*, 2018; Kano, 2018).

The second group has the words value chain as a guideline, in which studies are concerned about how the relationship between the parts of a chain takes place. In this group, research studies broaden the view on the agents, going from the rural producer to the agents of different stages of a chain, which may involve local systems (local food system, power, food industry, trust, small enterprise, relationship, buyer-seller relationship, supply chain management) in developing countries, such as Brazil and Uganda (Giuliani *et al.*, 2005; Vieira and Traill, 2008; Nousiainen *et al.*, 2009; Mount, 2012; Ouma *et al.*, 2017; Papaoikonomou and Ginieis, 2017; Tröger *et al.*, 2018).

The third major axis of the graph, horizontal relations, shows that there are studies focused on the governance of global value chains based on horizontal and collective relationships in the chain, focusing on the production segment. This axis addresses social issues, sustainability, and collectives organized into two groups. The first group shows studies related to social issues, such as labor and livelihood in contexts such as India and Sub-Saharan Africa (Neilson, 2007; Neilson and Shonk, 2014; Fakudze and Machethe, 2015; Langford, 2019). The second group concerns the governance of the value chain in particular places, such as Africa - specifically the coffee chain with an emphasis on Ethiopia. There are studies that seek to understand upgrading in global coffee value chains through collective forms and horizontal relationships. Governance in these chains may involve a search for standards when it comes to quality, sustainability, and fair trade, which can be made possible through horizontal and collective forms (quality, certification, collaborative governance, and cooperativeness) (Abate, 2018; Minten *et al.*, 2018; Piao *et al.*, 2019; Sengere *et al.*, 2019).

The fourth major axis of the graph shows that the governance of the chain involves different political and structural guidelines for achieving rural development. In this axis, studies focus on questions about food policies, food security, and food systems for rural development (food policy, food security, and food system, rural development) (Pinstrup-Andersen, 2007; Von Braun, 2009; Lowitt, 2015; Marsden *et al.*, 2018).

4. Governance in agrifood global value chain: what is being done by scientific communities

Based on what has been exposed up until now, we seek to answer the question: How research studies on “governance in agrifood global value chain” have been characterized for the past 15 years? This subject has been discussed from different perspectives: structural, systemic politics, transaction economics, and vertical and horizontal relations. These perspectives which are sometimes interdisciplinary, by mixing economics (e.g. theories such as Transaction Cost Economics) and Economic Sociology, these are a few examples.

Our graph shows that studies on “governance in agrifood global value chain” involve both economic and social concerns, which shows that for the functioning of the chain, these concepts must be present in research analyses. The network graph reveals that theoretical interdisciplinarity is used to investigate governance in these chains, which shows that it is a complex subject that demands this complementarity for its understanding. This theoretical

interdisciplinarity also shows that researchers are attempts to understand the phenomenon and the need for further studies on the topic.

Another important point is the diversity of concepts linked to the value chain – food system, agribusiness, global value chain, value chain – and the different types of governance – governance, transnational governance, collaborative governance. The progress of studies on the subject depends on the clarification of these concepts.

Studies on “governance in the global agrifood value chain” involve chain governance and transaction governance. Although the two governance axes are not grouped on the graph, thus showing a possible misalignment between them, they can be connected through other terms, such as upgrading. The graph also shows that the governance for chain upgrading depends on the governance of the transaction. Chain governance is usually discussed in a global context and involves different lines of studies, with emphasis on chain upgrading. This shows that studies have been interested in analyzing upgrading in global value chains based on the governance of the chain as a whole (Gereffi *et al.*, 2005; Lee *et al.*, 2010; Barrientos *et al.*, 2011; Trienekens, 2011).

However, the graph shows that studies on chain upgrading also involve discussions in value chains (not necessarily global) involving transaction governance. This shows that there are research analyses seeking to understand upgrading in global value chains based on the governance of transactions (Trienekens, 2011). Therefore, the analysis on upgrading a chain depends on both chain governance and transaction (Trienekens, 2011; Fao, 2014; Samper *et al.*, 2017).

Despite this, research gaps linked to the two levels of governance (chain and transaction) have been identified: the relationship between these concepts, and especially how the governance of the transaction influences the governance of the chain, is not clear. Furthermore, the network graph does not show important words when related to the governance of global value chains, such as incentive, asymmetric information, efficiency. Thus, studies focused on these subjects can contribute to a better understanding of the impact of governance on the upgrading of these chains.

Finally, studies that seek to fill the gaps presented, especially on how the governance mechanisms of the transaction influence the governance and the upgrading of a (global) value chain, can contribute to the efficiency of these chains.

5. Conclusions

The sustainability of global value chains depends on how they are organized in terms of governance. Studies involving chain governance and transaction governance exist separately and are consolidated. However, little is known about how transaction governance impacts chain governance. This study makes it possible to identify how studies have been addressing the topic, in addition to providing arguments and future paths to fill this scientific gap.

The study also shows that the interest in the topic has grown over the years worldwide, especially in some scientific communities. This study contributes to the science and efficiency of the North and South agrifood GVC as it reveals future perspectives and paths to be followed, such as studies on upgrading, vertical and horizontal relationships, governance of the global chain as well as concerns in terms of public policies.

The inherent complexity of the subject highlights the need for more interdisciplinary research. This is the case for studies on governance in global agrifood value chains, as they involve economic and social issues associated mainly with the upgrading of the chains. Future studies on how transaction governance influences chain governance can contribute to the efficiency of global value chains. Studies are recommended based on important concepts for the efficiency of global value chains that are not identified in the graph, such as incentives, efficiency, and information asymmetry. Finally, literature reviews can be carried out to clarify the differences between concepts around value chains, apparently related to each other, and the different types of governance.

As a way to overcome limitations faced by this work, we suggest searches in databases with indexed articles from Latin American sources. Although databases such as Web of Science and Scopus bring consolidated results, these databases include mostly international journals from developed countries in the northern hemisphere. Searches based on tools such as Scielo can enrich the results of this work in view of the more comprehensive coverage of research from other contexts, such as developing countries and the Southern hemisphere.

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