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OPEN ACCESS



International Food and Agribusiness Management Review
Volume 22, Issue 1, 2019; DOI: 10.22434/IFAMR2018.0089

Received: 14 August 2018 / Accepted: 26 October 2018

Analyzing agribusiness value chains: a literature review

REVIEW ARTICLE

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Abstract

The goal of our work is to review methodologies to analyze value chains, particularly within the agribusiness sector. The first part of the analysis delves into the value chain concept, with the aim of discovering how the concept has changed from an historical perspective, and what would be an acceptable narrow definition. The second and main part of the analysis seeks to study the methodological techniques for approaching and accurately analyzing a value chain in the agribusiness sector. To such end, we will review the literature for different existing methodologies, in order to understand what steps and dimensions should be considered in a value chain study. Finally, we will identify a set of outlines that are common to all the papers obtained from the literature review to help to determine the approaches or points of view that should be considered for an agribusiness value chain analysis.

Keywords: agribusiness value chains, value chain analysis, value chain methodologies, value chain description
JEL code: Q13, Q18, Q00, O13

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1. Introduction

The concept of agribusiness as a theoretical framework is since its inception naturally associated with the notion of value chain. Back in mid-20th century, increasing bonds between consumer experience and agricultural production had already been identified. Davis (1956: p. 107) stated that technological change ‘has brought agricultural production and marketing closer and closer together – actually making them interdependent’ and thus ‘we need to look not just at production on the farm but at the aggregate of all agricultural purchasing-production-distribution operations’ (Davis, 1956: p. 108).

The idea of a certain product at the consumer table, and a consistent set of value-adding operations needed for that to occur, is rooted in the very concept of agribusiness. In the agribusiness sector in particular, the concept implies additional complexities, such as the risk emanating from the biological processes, the role of buffer stocks and the different farm and at-farm-gate market structures (Sporleder and Boland, 2011). These complexities create the need to make an insight on how a value chain is defined, and how its performance can be measured.

With a broader aspiration of analyzing value chain performance and competitiveness in the future, the main goal of this work in particular is to make a first approach to methodologies for an analysis of agribusiness value chains. This is a mandatory first step to delve into value chain competitiveness and performance. The main question we want to ask through this work is: which are the methodological approaches, available tools or existing points of view that can be used to analyze an agribusiness value chain?

In the first part of the analysis, we will approach the concept of value chain. This concept has extensive applications, and is commonly used in different ways. We want to explore how the concept has changed from an historical perspective, and what would be an acceptable narrow definition.

The concept of value chain is constantly changing. Developed in the late 60s, the older Francophone model (the *filière* approach) focused on the links between enterprises for production and distribution of agricultural commodities within national boundaries. The latest developed Anglophone Global Commodity Chain (GCC) analysis focuses on globally fragmented but interlinked production systems. Even in this permanent evolution, the idea of a certain number of actors performing value-adding activities has remained at the heart of the value chain definition (Gereffi *et al.*, 2001; Kaplinsky and Morris, 2002).

The second and main part of this work seeks to determine methodological approaches towards value chain analysis. Therefore, we will do a literature review of different existent methodologies, trying to understand which approaches, points of view and dimensions should be considered.

Gereffi *et al.* (2005) point out that it is necessary to identify common parameters to determine value chain taxonomy, which could be embodied in a robust set of indicators. The absence of a theoretical framework operates as a limit to generalizations that can be made from different analysis, and to comparisons between value chains.

For example, value chain analysis can be done at a product level, measuring input-output flows based on a defined functional unit of a commodity without being site-specific, or at a spatial level, describing input-output flows within a defined economy (Faße *et al.*, 2009). According to different governance patterns, Gereffi *et al.* (2005) classify value chains in five different categories: market, captive, relational, modular and hierarchical oriented. Also Martinez and Steward (2003) distinguish between supply push value chains and demand pull value chains, and Yanes-Estevez *et al.* (2010) distinguish agribusiness value chains according to their environment uncertainty. Kaplinsky and Morris (2002) make a summary of different value chain types in terms of governance and demand-and-supply-oriented value chains.

In order to identify and review the concept of ‘agribusiness value chain methodologies’, we searched the PROQUEST, EBSCO, and JSTOR databases, on the one hand, and SCOPUS on the other. The search was filtered by publication date (2005-2017), fields (business, economics, and agriculture), subject term (value chain), focusing on peer-reviewed journal papers, written in English.

In the next section we will introduce different value chain definitions, from a historical perspective. Section 3 describes the data and methods used for the analysis. Section 4 shows the outlines and main remarks that arise from the study and categorization of the papers retrieved from the review. Our work ends in section 5 with some final remarks and outlining the required future analysis in this line.

2. The concept of value chain

2.1 Concepts and definitions

There seems to be a proliferation of different definitions regarding the concept of value chain, depending both on the research topic and the researcher background (Gereffi *et al.*, 2001). The concept has evolved during the years, and it has also been enriched from different points of view and different disciplines that have worked on it. The main goal of this section is not to present a unique and undisputed definition of what a value chain is from a theoretical perspective, but to highlight the theoretical richness of the concept and to describe its evolution from a historical perspective.

From a generic and very simple point of view, a classic value chain is defined as a ‘full range of activities which are required to bring a product or a service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use’ (Kaplinsky and Morris, 2002: p.4). The authors highlight that production itself is only one of the many value adding links of the value chain.

Bellú (2013) defines a value chain as both a set of ‘interdependent economic activities’ and a ‘group of vertically linked economic agents’. The author proposes the conception that a value chain is made from the interaction of a set of activities that necessarily have to be performed, and a group of actors that perform them in different stages.

Webber and Labaste (2010) focus on the linkages of a value chain, including all of the vertical links and the interdependent processes that generate value for the consumer, and also the horizontal bonds to other value chains that provide intermediate goods and services. The authors remark that a value chain implies both the creation of value as well as the process of allocating the incremental value.

Gereffi *et al.* (2001) focus on the richness of the concept of value chain and the type of analysis that can arise from this perspective. Focusing on the chain or organizational network (rather than the firm) as the unit of analysis, interesting questions emerge, such as power, governance and the dynamics of chains. Also Donovan *et al.* (2015) do a review of different definitions of value chains in terms of a set of activities, a set of actors, and strategic networks to better respond to consumers’ demands.

From the definitions and concepts previously reviewed, we can identify some general outlines that the generic concept of value chain necessarily embraces:

- inputs, outputs and activities that generate a transformation;
- agents that perform certain activities and have vertical and horizontal bonds;
- value addition activities and value allocation;
- a final product or group of final products;
- a group of consumers at the end of the chain;
- problems and opportunities that are shared by all the agents;
- power relations and governance mechanisms.

2.2 Theoretical contributions and historical background

The classic and original approach to the concept of value chain is the notion of *Filière*. It was developed in France during the 1960s, by the French National Institute for Agriculture Research (INRA) and the French Agricultural Research Centre for International Development (CIRAD). This concept was used to describe agricultural commodity chains, through the analysis of inputs and outputs, and a quantitative measure of cost, prices and value added (Bellú, 2013; Bertazzoli *et al.*, 2011; Faße *et al.*, 2009; Kaplinsky and Morris, 2002).

The concept of *Filière* implies a structural view on value chains, seeking to describe the processes that arise in the production and distribution of agricultural commodities. It is mainly descriptive and certainly static, showing quantities at one moment of time, but lacking precision in describing how the relationships change and evolve, the entrance and exit of actors and the growing or shrinking of physical and economic flows (Faße *et al.*, 2009; Kaplinsky and Morris, 2002). The main goal of French scholars in this regard was to find a framework to analyze the processes of vertical integration and contract manufacturing that were taking place in the French agricultural sector in the 1960s.

In the 1980s, ideas regarding the concept of value chain started to emerge from the field of strategic management. Researchers in this area started to explore this notion within the firm boundaries. The seminal works were the one of Michael Porter, analyzing the idea of value chain related to the gain of competitive advantages by the firms (Bertazzoli, *et al.*, 2011; Faße *et al.*, 2009; Kaplinsky and Morris, 2002). Porter (1985) identifies a set of primary activities (inbound logistics, operations, outbound logistics, marketing and sales and services) and a set of support activities (firm infrastructure, human resource management, technology development and procurement). The total value is the amount buyers are willing to pay for what a firm provides them, and consists in the distinct activities a firm performs (physically and technologically) and a margin (Porter, 1985). The main limitation of Porter's analysis is that his value chain approach is confined to the firm level, overlooking the analysis of up- or downstream activities beyond the company (Faße *et al.*, 2009).

In the same line, another concept that arose from the perspective of strategic management is the idea of 'supply chain'. It is used to describe the logistical and operational processes involved in taking the product from its origin to the customer (Feller *et al.*, 2006). The focus in this case is not to analyze the creation of value, but to optimize the process.

One core concept developed in mid-1990s is the global commodity chain (GCC). Gereffi (1994) explains that global commodity chains are entrenched in production systems that give rise to particular patterns of coordinated trade. In these global chains large firms simultaneously participate in many different countries, not in an isolated or segment fashion but as part of their global production and distribution strategies. Global Commodity Chains have three main dimensions according to the framework proposed by Gereffi (1994): an input-output structure; a territoriality; a governance structure.

Gereffi (1994) puts governance in a prominent place within his analysis, identifying two distinct types of governance structures for Global Commodity Chains: producer-driven and buyer-driven commodity chains. The first form of governance (producer-driven) refers to chains in which transnational firms or other large integrated industrial companies play the central role in controlling production system linkages. The second case (buyer-driven) refers to chains in which large retailers and trading companies play the key role in setting up decentralized production networks in a variety of exporting countries around the world.

The notion of Global Commodity Chains laid the foundations for the concept of Global Value Chain (GVC), also developed by Gereffi, which outlines the role of governance in international production relations. It highlights the coordination of globally fragmented or disintegrated chains, which are at the same time interlinked production systems. The role of dominant actors, or lead firms, in the coordination and design of institutional mechanisms of inter-firm relationships is a key element in the concept of Global Value Chains.

In this global value chain perspective, power relationships and information asymmetry are key concepts in its analysis (Faße *et al.*, 2009; Trienekens, 2011).

Gereffi *et al.* (2005) introduced an analytical framework made of five types of value-chain governance, mentioned in the first section of this paper. Each type depends essentially on the complexity of information required to sustain a particular transaction, the extent to which information can be codified and the capabilities of actual and potential suppliers regarding the requirements of the transaction.

Within the field of institutional analysis, some studies focus on the influence of institutional quality in the extent in which countries participate in global value chains (Dollar and Kidder 2017; Dollar *et al.*, 2016). The analysis made by Dollar and Kidder (2017) focuses on the fact that some chains are more complex than others in the sense they are more contract-intensive; this implies a bigger space for opportunistic behavior between actors operating in different links of the value chain. In these more complex chains, institutional quality is important to boost participation in global markets.

Dollar *et al.* (2016) find that correlation between institutional quality and GVC participation is positive; this explains the fact that industries more sensitive to institutions tend to have higher participation in complex value chains in those countries where institutions are more solid. The authors consider rule of law, government effectiveness, political stability, regulatory quality, and absence of violence/terrorism as variables that explain the institutional quality.

Finally, a relatively new line of thought related to the concept of value chain states that the traditional notion of value chain may be, in some cases, very 'linear' (a series of interlinked successive stages). This traditional approach to the concept may lose some of the richness of the horizontal and vertical linkages that coexist at the same time in the production relations (Coe *et al.*, 2008). The notion of network gives the chance to complement the idea of a value chain in successive stages by capturing the complexity of current relations within economic sectors.

3. Data and methods

As stated before, the main goal of this paper is to review methodological approaches to describe and analyze agribusiness value chains, aiming to encompass all the aspects and dimensions that this concept embraces. Therefore, a literature review of the concept 'agribusiness value chain methodologies' was done using the main databases available.

A literature review is aimed at making a systematic collection and analysis of the relevant work produced in a field, using a reproducible method to identify, select and appraise all the significant studies previously published. In this way, the research synthesis that is achieved helps to identify knowledge gaps in the subject and leads to further research (Booth *et al.*, 2012; Seuring and Muller, 2008).

Thus, the purpose of the literature review done for this paper is to identify, select and categorize different approaches to analyze agribusiness value chains. Such information has been processed in an effort to summarize the existing research and identify the conceptual content of the field that can contribute to theory building.

In order to identify and review the concept of 'agribusiness value chain methodologies', we searched the PROQUEST, EBSCO, and JSTOR databases, on the one hand, and SCOPUS on the other. The search was filtered by publication date (2005-2017, August 31st), fields (business, economics, and agriculture), subject term (value chain), focusing on peer-reviewed journal papers, written in English.

Most of the relevant literature published was found as of 2005 in English language. Figure 1 shows that in a search for 'value chain methodologies in agribusiness' as keywords (in all fields) in PROQUEST, EBSCO

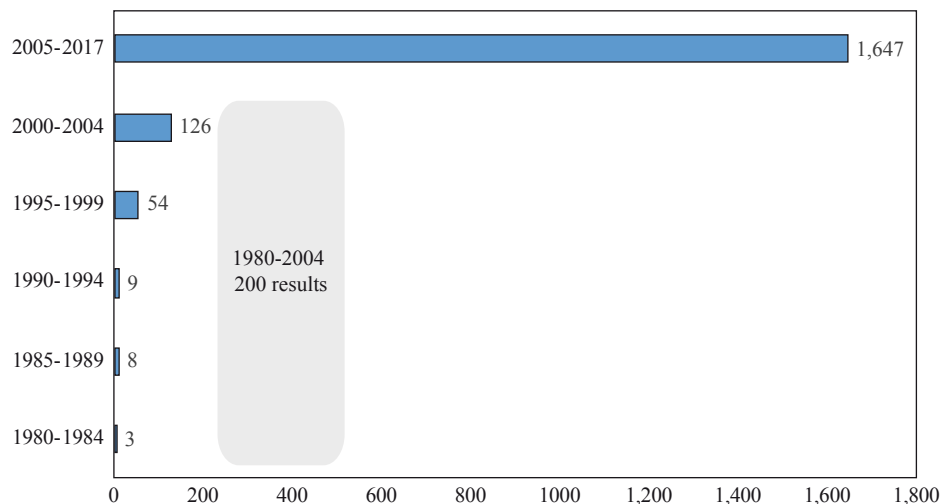


Figure 1. Value chain agribusiness methodologies. Number of paper published (results per year).

AND JSTOR databases, we found 1,847 articles, out of which 200 were published before 2005 and 1,647, after that date. The search was made until August 31st 2017.

Other more specific search strategies were attempted in order to obtain systematic and exhaustive results. The terms ‘value chain’ or ‘value chains’ were used as subject terms, ‘agribusiness’ was used as a general keyword, and four different approaches: ‘evaluation methodology’, ‘methodology’, ‘value chain analysis methodologies’, and ‘performance methodologies’ were used as a third key concept. Also ‘guidelines’ was entered as a fifth option to see if it was possible to retrieve papers focused on value chain methodologies related to development in low-income countries, used by International Organizations such as FAO, World Bank, CIAT, GTZ, USAID, IDRC, etc. The search strategies are summarized in Table 1.

The two search strategies that retrieved more results were those based on the keywords ‘*methodology*’ and ‘*value chain analysis methodologies*’, with 56 and 55 results, respectively. With the other strategies, 22 results were retrieved (‘*evaluation methodology*’), 36 for ‘*performance methodologies*’ and 28 for ‘*guidelines*’ (Table 2).

Overall, 18 papers were found as relevant to the goal of this paper in at least 3 out of the 5 search strategies. Four papers were found from five strategies: Donovan *et al.* (2015), Howieson *et al.* (2016), Habib (2011), and Fearn *et al.* (2012). Four papers (De Figueiredo *et al.*, 2017; Liedtke *et al.*, 2010; Boniface, 2012 and Marques Vieira and Traill, 2008) from 4, and another 10 papers were found from 3 out of 5 search strategies, as shown by Table 3.

Table 1. Description of search criteria.

Subject term	First general keyword	Second general keyword
value chain OR value chains	agribusiness	evaluation methodology methodology value chain analysis methodologies performance methodologies guidelines

Table 2. Value chain methodologies in agribusiness. Number of relevant results obtained in each of the five search strategies.¹

Five different search criteria	Number of results	Relevant results	Papers obtained in the five strategies
Evaluation Methodology	22	8	Donovan <i>et al.</i> (2015); Howieson
Methodology	56	18	<i>et al.</i> (2016); Habib (2011);
Value chain analysis methodologies	55	17	Fearne <i>et al.</i> (2012)
Performance methodologies	36	15	
Guidelines	28	7	

¹ PROQUEST, EBSCO and JSTOR databases were searched.

Table 3. Summary of papers obtained in each of the five search strategies.¹

References	1 Evaluation methodology	2 Methodology	3 Value chain analysis methodologies	4 Performance methodologies	5 Guidelines	Match (out of 5)
Donovan <i>et al.</i> (2015)	X	X	X	X	X	5
Habib (2011)	X	X	X	X	X	5
Fearne <i>et al.</i> (2012)	X	X	X	X	X	5
Howieson <i>et al.</i> (2016)	X	X	X	X	X	5
De Figueiredo <i>et al.</i> (2017)	X	X	X	X		4
Liedtke <i>et al.</i> (2010)	X	X	X	X		4
Boniface (2012)	X	X	X	X		4
Marques Vieira and Traill (2008)		X	X	X	X	4
Sagheer <i>et al.</i> (2009)		X	X	X		3
Mvumi <i>et al.</i> (2016)		X	X	X		3
Keivan Zokaei and Simons (2006)		X	X	X		3
Bhandari and Vipin (2016)		X	X	X		3
Lombana (2011)		X	X	X		3
Grunert <i>et al.</i> (2005)		X	X		X	3
Ariyawardana <i>et al.</i> (2015)		X	X	X		3
Ricketts <i>et al.</i> (2014)	X	X	X			3
Tallontire <i>et al.</i> (2011)		X	X		X	3
Timsina <i>et al.</i> (2016)		X	X	X		3

¹ PROQUEST, EBSCO and JSTOR databases were searched.

A similar search was made in the SCOPUS database, obtaining 51 results. Six out of 14 authors were identified in the EBSCO, PROQUEST and JSTOR databases: Howieson (2016), Fearne *et al.* (2012), Grunert *et al.* (2005), Liedtke *et al.* (2010), Sagheer *et al.* (2009), and Keivan Zokaei and Simons (2006). However, an interesting paper focusing on quantitative analysis of value chains was identified in SCOPUS: Bertazzoli *et al.* (2011). This would make a total of 19 relevant papers identified in the different databases we explored.

As a summary to this methodology section, our literature review on the methodological approaches to analyze agribusiness value chains led us to identify 19 papers which were relevant to the analysis. In the next section of this paper we will summarize and systematize the conceptual content of each of these approaches, to find consistencies and common patterns that help to determine categories to tackle the analysis of agribusiness value chains.

Beyond the fact that all methodological approaches have their limitations, this literature review intends to follow the structured procedures that provide a systematic approach and thus ensure objectivity. The validity condition was attained by following the formal recommended steps for a literature review (Booth *et al.*, 2012), while reliability was addressed by having all the formal procedures conducted by the two researchers.

4. Categorization of the papers obtained in the literature review

Based on a literature review, in the previous section we identified 19 papers considered relevant in terms of the notion of ‘*agribusiness value chain methodologies*’. Each of the 19 papers identified provide certain elements, different points of view to address the initial goal for this work. At this point, bibliography selected in the previous section has to be schematized and categorized, in order to find consistencies, common patterns that help to sort those papers by a systematic approach. As a first step, papers were classified into different categories, in terms of the approach used to analyze agribusiness value chains. Six main approaches or categories were identified: strategic, efficiency, sustainability, value assessment, development and governance.

The first general approach that was identified is focused on how the value chain is performing and competing, from a business and economic standpoint. The main contribution of the authors within this line is that they analyze the whole value chain as an economic unit, with a common business goal. We classified these authors under the umbrella of the *strategic* approach.

A group of authors in this general category focus on evaluating the strategy followed by the chain, or proposing a strategy design for the chain as a whole (we identified this as a sub-category, called *strategy evaluation/design*). In this line, De Figueiredo Junior *et al.* (2017) evaluate strategies for honey value chains in three regions of Brazil using a structure-conduct-performance (S-C-P) model. They adapt a conceptual framework designed for industrial organization, such as S-C-P, to make a diagnosis of the strategy, and argue that the value chain S-C-P allows searching for promising strategies towards performance in an integrated way.

In a similar line of analysis, Howieson *et al.* (2016), use a six step methodology to facilitate value chain analysis to agri-food chains more as a strategic process than as a diagnostic tool. These steps are the following: (1) engaging the chain; (2) understanding the market; (3) mapping the current state of the chain; (4) identifying challenges and opportunities; (5) implementation and (6) evaluation. The authors work with the prawn industry in Australia, and not only see value chain analysis from a strategic point of view, but also propose that the relationship among actors within the value chain is in itself a crucial source of value creation.

Within the generic strategic category, we may also find a group of authors that put emphasis on the final consumer or market orientation of the value chain (we called this sub-category *customer/market orientation*). These authors see the value chain as a business unit, but focus the analysis on the end of the chain, where the markets and consumer aiming to get final products with certain characteristics that meet their expectations are found. The value chain as a whole needs to make strategic focus to keep those consumers fully satisfied.

Keivan Zokaei and Simons (2006) analyze the UK red meat industry, and use value chain analysis to improve customer focus, stating the need to realign the process along the supply chain with true consumer requirements.

Grunert *et al.* (2005) study four agri-food value chains in different geographic areas: bacon in Denmark; frozen cod in Norway; orange juice in Brazil and lamb meat in New Zealand. They aim to extend market orientation from a firm level to the value chain level, and in this line they define market orientation as ‘chain members generation of intelligence pertaining to current and future end-users needs, dissemination of this intelligence across chain members and chain-wide responsiveness to it’ (Grunert *et al.*, 2005: p. 430). The authors combine desk research with interviews to key decision makers for each value chain, in order to characterize how the chain is working in terms of different aspects: heterogeneity on served consumer markets; heterogeneity on raw material procurement; degree and type of regulation; degree of relational exchanges and power distribution along the chain.

Also in this line of analysis, Ariyawardana *et al.* (2015) study the red lentil chain in South Asia, aiming to analyze what are the attributes most valued by consumers, and which value chain interventions are required to meet them. By using focus groups and direct surveys to consumers, the authors typify certain attributes valued by red lentils consumers, and study to which extent the chain meets them.

Finally, and also within the strategic approach, we found two papers that focus directly on the competitiveness concept at a value chain level (this is the third sub-category, called *competitiveness analysis*). Sagheer *et al.* (2009) combine concepts of value chain analysis with competitiveness management, using both analysis at industry level (Porter's Diamond) and analysis at firm level (Momaya's asset-process-performance APP model), to study the competitiveness of a group of Indian agri-food chains. In a similar line, Lombana (2011) makes a more flexible interpretation of the Porter's Diamond, adjusting it so as to include government and external sector, and including the meso-level of analysis, with the aim to use this analysis in developing countries contexts.

A second main approach identified among the group of papers was called the *efficiency* approach. This is a perspective that is basically centered on how resources are used along the value chain. This is fundamentally a technical approach.

One analysis in this line, by Mvumi *et al.* (2016), study product losses along the value chain. A value chain that does not work efficiently generates losses of valuable products at every stage. The authors evaluate the banana industry in Zimbabwe approaching post-harvest losses along the value chain, and point the need of focusing on handling, storage and packaging efficiently to reduce such losses.

Bhandari and Vipin (2016) use a more generic point of view regarding the efficiency approach. They analyze the food and agro processing industry in India, benchmarking different value chains regarding their technical efficiency. They use a two stage methodology: (1) they obtain a technical efficiency (TE) score of the individual units in the industry by using data envelopment analysis and (2) they explain the obtained TE scores in terms of specific variables using ordinary least squares, in order to have an idea on the factors that may influence such performance.

Another approach of analysis identified from the review of the 19 papers is the one that determines the sources and beneficiaries of value derived from more socially and environmentally sustainable activities. This approach was named generically as *sustainability*, since it sees the value chain as a whole, but identifies other sources of value complementing the economic one. Analyzing a value chain from this point of view implies asking questions on whether the chain is producing value for the society in social and environmental aspects, in addition to the creation of economic value.

In this line, Liedtke *et al.* (2010) analyze coffee and cream cheese value chains in order to identify high priority areas ('hot spots', in authors' words) to conduct sustainability-oriented decision-making processes. The authors propose a life-cycle point of view, a cradle to cradle approach within the food value chain. In the same line, Fearne *et al.* (2012) study why and how value chain analysis needs to integrate the social and environmental aspects of sustainability in pursuit of a sustainable competitive advantage. They propose three main dimensions in a value chain analysis that need to be tackled in order to ensure that the analysis contributes to sustainable value creation: (1) boundaries of analysis; (2) scope of value considered, and (3) governance aspects.

A fourth approach that was identified in value chain analysis is the application of certain tools and techniques to analyze a value chain from a quantitative perspective. The focus here is to measure value: how much value is created, which actors create more value within the chain, and how this value is distributed. We generically called this approach *value assessment*.

Bertazzoli *et al.* (2011) follow a very interesting approach in determining how value is shared among different food chain stages, through the creation of consolidated financial statements. The authors analyze three chains, milk, tomato and cereals, within the Emilia Romagna region in Italy, and through a selection of companies and the creation of combined financial states in each stage, they study how the created value is distributed among stages.

In the same line but with a greater emphasis on functional analysis, Timsina *et al.* (2016) study the onion seed chain in Nepal. The authors use data collected from a sample made of actors within the chain, and by calculating the gross margin at different stages, they manage to proxy value creation along the chain. They also make comparisons of gross margins among different crops.

Another line of analysis that is widely spread between international cooperation agencies is the *development* approach. Focused on improving the business environment of value chains in low-income countries, by strengthening actors and relationships in value chains, this approach is oriented to empower local actors in developing countries to compete in international markets. This point of view aims to get involved in the chain, work with local actors to generate a joint purpose, and to implement tools that allow the chain to work as a business unit, in order to produce better working and living conditions for those involved.

Donovan *et al.* (2015) make a review of 11 guides for value chain development from 6 different dimensions, ranging from how the target value chain is selected to how the impact monitoring is made. The authors determine that in general these guides are designed to be implemented largely regardless the specific context, which is pointed as a weakness. They also observe that limited attention is paid to mutual learning. However, some positive aspects of these guides, as stated by the authors, are that they provide a useful framework to understand markets and engage with chain stakeholders, and that they are focused on strengthening institutions and achieving interventions sustainability.

In the same line, Habib (2011), provide an eight-step guidance for successful development of value chains that would very likely create sustainable employment for farmers and poor producers.

With a critical focus, Ricketts *et al.* (2014) study the cocoa value chain in Ghana, particularly regarding farmers' risk perception of value chain development processes. One of the reasons alleged to boost value chains in the context of developing countries is that this produces a better redistribution of risk along the whole chain when competing in external markets. The authors use survey data collected from 177 smallholder cocoa farmers in Ashanti, Ghana, to study the perceived risks and benefits of participating in such processes. The authors point out that in some cases farmers seemed to indicate they experience less severe risk, but at the same time they remarked they could access through other sources many of the benefits enjoyed from those programs.

Finally, the last approach identified for value chain analysis is the one linked to relationships among members and rules of functioning. We called this the *governance* approach. The authors that follow this line of analysis focus on power relationships among members of a value chain, which determines how financial, material, and human resources are allocated and flow within the chain.

Boniface (2012) points out the importance of relationships among actors in analyzing buyer-seller perceptions, mainly by studying demographic aspects and relationships perceptions of 133 dairy producers in Malaysia. Marques Vieira and Traill (2008) explore relationships between a Brazilian beef processor and two different distribution channels, export and supermarket own brand. Even when both channels may be considered buyer-driven and dominated by transnational companies, the role of the governor is distinguished: while supplying the supermarket the beef processor has little participation, there is more information transfer in this relationship than in the one with the international wholesaler. Finally, Tallontire *et al.* (2011) study the horticulture chain in Kenya, focusing particularly on private standard initiatives with the value chain

framework. Using empirical research, interviews and focus groups, the authors typify governance forms, and analyze private standards as a form of governance.

Having identified the previously described approaches, another way of systematizing the analysis is by paying attention to the goal proposed by each paper, regarding the actions that can be taken. It may be interesting to determine the goals for the value chain analysis. While in some cases the purpose is solely analytic, in other cases it is wider, including diagnostic and/or intervention.

We classified the group of papers reviewed into three main categories, regarding their main purpose:

- analysis: mainly descriptive approach to some aspect/s of the value chain;
- diagnostic: evaluation of one or more aspects of the chain and proposals for improvement;
- intervention: implementation of value chain methodologies for development in low-income countries, mainly proposed by international development organizations.

Table 4 summarizes the two typologies previously proposed to systematize the review: according to the approach used to analyze the value chain and regarding the goal of the analysis. Each of the 19 papers is classified under these two categories.

In Section 2.1 of this paper, we identified a group of dimensions that the concept of value chain embraces. We intend to combine these value chain dimensions with the six perspectives to analyze value chains we previously described. Each of the six approaches we identified and systematized in the review focuses on particular aspects of the concept of value chain while ignoring others.

Each perspective highlights the analysis of one or more value chain dimensions, as we show in Table 5 by an x-mark. For example, the *strategic* perspective, which focused on how the value chain is performing and competing, sees the value chain as one business unit in its own, so it highlights the analysis of value

Table 4. Systematization of the 19 papers found.

Category	Subcategory	General goal	Authors
Strategy	strategy evaluation / design	diagnostic	De Figueiredo <i>et al.</i> (2016)
	strategy evaluation / design	diagnostic	Howieson <i>et al.</i> (2016)
	customer/market orientation	diagnostic	Keivan Zokaei and Simons (2006)
	customer/market orientation	analysis	Grunert <i>et al.</i> (2005)
	customer/market orientation	diagnostic	Ariyawardana <i>et al.</i> (2015)
	competitiveness analysis	analysis	Sagheer <i>et al.</i> (2009)
	competitiveness analysis	analysis	Lombana (2011)
Efficiency	value chain product losses	diagnostic	Mvumi <i>et al.</i> (2016)
	value chain technical efficiency	analysis	Bhandari and Vipin (2016)
Sustainability	value chain social/environmental sustainability	diagnostic	Liedtke <i>et al.</i> (2010)
	value chain social/environmental sustainability	analysis	Fearne <i>et al.</i> (2012)
Value assessment	value creation and sharing	analysis	Bertazzoli <i>et al.</i> (2011)
	value creation and functional analysis	diagnostic	Timsina <i>et al.</i> (2016)
Development	value chain development/enhancement	intervention	Donovan <i>et al.</i> (2015)
	value chain development/enhancement	analysis	Ricketts <i>et al.</i> (2014)
	value chain development/enhancement	intervention	Habib (2011)
Governance	relationships/trust between agents	analysis	Boniface (2012)
	relationships/trust between agents	analysis	Marques Vieira and Traill (2008)
	relationships/trust between agents	analysis	Tallontire <i>et al.</i> (2011)

Table 5. Aspects of the value chain definition that each of the approaches highlights.

	Strategy	Efficiency	Sustainability	Value Assessment	Development	Governance
Inputs, outputs & activities		X	X	X		
Agents + vertical & horizontal bonds			X	X	X	X
Activities	X		X	X	X	
Final product(s)	X					
Consumers at the end of the chain	X				X	
Common problems & opportunities	X	X	X		X	X
Governance mechanisms						X

added activities, final product or group of products, consumers or a group of consumers, and problems and opportunities that may arise in the value chain. The *governance* approach is reasonably focused on power relations and governance, as well as on the agents of the value chain and common problems/opportunities (which necessarily require certain forms of governance). The *efficiency* approach, on the other hand, is more concentrated on input-and-output activities and problems and opportunities that may arise in a value chain.

The *sustainability* approach, which aims to identify the sources and beneficiaries of value derived from more socially and environmentally sustainable activities, highlights the analysis of issues such as input-output activities, agents in the value chain, value addition and value allocation as well as identifying problems and opportunities. The *value assessment* approach focuses on quantitative aspects of issues such as input-output activities, agents' coordination, and value added activities. Finally, the *development approach* focuses on the analysis of issues as value added activities, agents' relationships, consumers or a group of consumers, and identifying problems and solutions in value chains of low-income countries.

In Table 5, X-marks indicate on which aspects of the definition of value chain each of the six previously defined analysis categories is focused. This systematization intends to express that the concept of value chain is wide, and embraces several dimensions. None of the 19 reviewed papers encompassed all of those aspects, but each of them provided some tips or methodological outlines on how to analyze agribusiness value chains, by emphasizing some key dimensions of the value chain concept. An integral and methodic way to face a value chain analysis should consider different aspects from each of the proposed categories, in order to address the analysis in a broad scope.

In this paper we intended to produce a literature review through a systematic search that allowed identifying academic documents in a broad scope. Even when this literature review followed a structured procedure, every approach has its limitations. In this sense, some valuable documents may have not been captured in the review. For example, Neves (2007) proposed a method called CHAINPLAN, to develop demand driven strategic planning in food and bioenergy chains, which has been applied to several chains in different countries (Neves *et al.*, 2010). Trienekens (2011) presents a three-step framework to analyze value chains in developing countries that implies describing the value chain but also identifying upgrading constraints and options. Finally, Cucagna and Goldsmith (2018) propose a solid quantitative method by measuring the economic value added for firms and different stages along the agri-food value chain. These works should be considered as valid and useful methodologies for analyzing value chains in agribusiness, even when they may have escaped from the databases explored.

5. Final remarks and further steps

The concept of value chain embraces singular importance within the context of agribusiness. Enrooted in the very origin of the concept, agribusiness implies necessarily the existence of value chains, while the notion of value chain is an essential framework to explain and understand agribusiness. As stated by Sporleder and Boland (2011), there is a uniqueness of agri-food supply chain in terms of certain economic characteristics, and this uniqueness has implications for all the actors operating in, or related to, chains in this sector. In this sense, this work is an attempt to identify methodological approaches that provide a framework to analyze value chains within the agribusiness context. To that end, a literature review was done to identify academic documents that may help to attain this objective.

One first issue resulting from the search is that the concept of value chain is scarcely typified within the literature. The searches made not only yielded relatively few results, considering the importance of the issue, but most of those results were not relevant to the subject under analysis. While international development organizations have been developing guidelines for intervention objectives at a rapid pace (Donovan *et al.*, 2015; Nang'Ole *et al.*, 2011), the interest on value chain analysis has not proliferated within the academic sector. In this sense, a gap in the literature was observed, and consequently an opportunity to deepen in this topic from the Academia.

Another issue that could be extracted from the analysis is the absence of a common theoretical framework regarding value chains. This operates as a limit to generalizations that can be made from different analysis, and to comparisons between value chains. As stated by Gereffi *et al.* (2005), it is necessary to develop common parameters for defining different types of value chains and the taxonomy of value chains, which could be embodied in a robust framework.

Value chain is a complex and multidimensional concept that implies economic, technical and sociological aspects. Trying to analyze the concept from one single perspective, can conduct to biased, or at least incomplete, conclusions. It is important to clearly define objectives and motivations which lead to analyze a value chain. This helps to make clear where the analysis is going, and what the main issues to be tackled are.

Every value chain study needs clear boundaries, and researchers in their scholarly work should clearly delimit the extent and reach of the value chain, previous to any analysis. This is necessary to specify the dimensions of the value chain, and also to define the products, actors, activities, and markets involved, in order to make clear focus. Defining the limits of the chain through products and geographic boundaries is essential, and mapping the chain is useful to get the 'big picture' of the chain, and it is one of the key initial steps in value chain analysis.

From the literature review performed, we could identify six different approaches to the issue under analysis. Each of these approaches implies a focus on a distinct aspect of the concept of value chain.

The *strategic* approach gives us the notion that the value chain is a whole economic unit that includes a certain number of actors, financial and physical flows and a consumer at the end of the chain, whose expectations regarding the final product should be given priority. Seeing the chain as an economic unit implies the possibility of thinking in common goals and the consequent emergence of strategic aspects, regarding where the chain should focus, how to better serve the end consumer and to improve competitiveness. The consumer in the agri-food sector has evolved in the recent years, aiming at products with more value added, and more specific characteristics in terms of quality, traceability and branding. This implies an extra effort from actors in agribusiness value chains, to work together with a strategic frame of mind.

The *efficiency* approach focuses more on technical aspects, trying to understand how to improve processes within the value chain. Through every chain there is a constant flow of physical products that should be analyzed in order to avoid monetary and product losses. As mentioned earlier, agribusiness value chains imply

challenges in this regard, such as the risk emanating from the biological processes, product perishability or the role of buffer stocks.

Another approach that was identified is *sustainability*, with a growing interest within the agribusiness sector. Consumers are increasingly interested in knowing the impact of the products not only on their health, but also on the environment. The concept of circular economy is used more frequently, and this is a point of view that every analysis of agribusiness value chains should not avoid under any perspective. The social and environmental values are being evaluated at the same level of relevance as the economic value.

Within the value chain analysis, another topic that cannot be avoided is how much value is created, and how it is distributed. This is a more accounting point of view, and we called it *value assessment* approach. Particularly for the context of agribusiness chains, the question of how much value each actor creates, and how much it receives is on constant discussion. Since a main characteristic of agri-food chains is the different farm and at farm gate market structures (Sporleder and Boland, 2011), where primary stages show aspects of competition while industry and distribution tend to show degrees of market power, this conducts to frequent conflicts between actors. Being able to develop indicators in this regard, helps to better understand and tackle those conflicts. In this sense, the *governance* approach also plays a central role to determine how power relations occur within the chains, and who establishes the game rules. Governance is in the very core of the concept of value chain. Clear focus on governance mechanism should be made.

Finally, and as said above, *development* organizations have been playing a central role enriching the body of literature. Mainly with intervention objectives and with the aim of giving their technicians tools to work cheek by jowl with value chain actors, there has been a proliferation of manuals and guidelines. This is important particularly to the agri-food sector, as developing countries enter into food global value chains as primary producers, in most cases with scarce or none value added, and showing poor conditions for the actors involved. The development perspective is interesting for upgrading value chains within the food sector, providing tools to scale-up in global markets.

Having obtained these tools, approaches and point of views that operate as methodological frameworks for the analysis of agribusiness value chains, and with a better understanding of the multidimensional aspects of the concept, further analysis should be oriented to develop a methodological framework and objective indicators to measure and benchmark competitiveness and performance in agribusiness value chains.

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