Combining cluster and value chain approaches to analyze the competitiveness of fresh vegetables producers: case studies in Germany, Italy and Spain

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Abstract. European producers of fresh vegetables are under pressure to improve their performance in order to increase competitiveness. Innovative products and processes and competitive advantage can be gained by the creation and use of unique resources as an outcome of cooperation between producers and complementary actors in local clusters. However, locally clustered producers do not sell to open markets but instead need access to value chains governed by lead firms: the large European retail chains, which decide the rules and conditions of participation. The study claims the necessity to combine aspects from cluster theory with ideas from global value chain approach to discover elements in European fresh vegetable business that could enable local producers to gain competitive advantages in the global market. The study presents results from a multiple case-study analysis involving three different European fresh vegetable producing regions in Germany, Italy and Spain. In-depth interviews with practitioners from the respective fresh vegetables businesses revealed interesting changes in organization of business relationships in the European fresh vegetables sector.

Keywords: fresh vegetables, clusters, global value chains, knowledge, competitiveness, governance

1. Introduction

European producers of fresh vegetables are under pressure to improve their performance and increase their efficiency in the highly competitive fresh-market sector. Fierce competition, strict quality and service requirements, technological changes and high concentration levels make collaboration of business participants an essential prerequisite to meet market demand and to be competitive.

The European fresh vegetables business reveals the picture of locally concentrated phenomena, with specialisation and long-established tradition in horticultural practice in specific regions. Aside from natural features, context-bound socio-cultural, political and historic factors are assumed to be responsible for the ability of horticulture business participants to adapt to, cope with and anticipate the demand of the markets. This leads to argumentation in economic geography and regional science literature, where determining factors of competitiveness in the globalising world are increasingly seen to be situated at the regional level, making the spatial organisation of production an important parameter for knowledge transfer, development and diffusion of innovations and trustful cooperation.[1,2,3,4,5,6,7]

However, locally clustered producers do not sell to open markets. Large European retail chains are the decisive actors that decide about access of producers to the international fresh vegetables market by setting rules and conditions for participation. The most dynamic trends characterising the fresh vegetables industry are increasing vertical coordination among globally dispersed firms and advancing concentration at all stages of agribusiness value chains. A direct consequence of these tendencies is the creation of inequalities in power, benefiting leading firms with the highest endowment of strategic assets (knowledge, control over information, market power, and veto potentials) at the expense of others in the value chain and in the local production area.[8,9,10,11,12,13,14]

A decisive problem for the efficiency of the local fresh vegetables production and marketing system is that retailers evolved from resellers of products to actors that play a critical role in product development, branding, supplier selection and distribution.[12,16] This raises the question on how independent the local actors can be to actively create valuable and innovative regional production and marketing systems for being competitive in the market and for gaining bargaining power towards the powerful distribution side.

Given this background both the cluster and the value chain approach are useful to analyse the fresh vegetables industry, but they both may prove inadequate under certain conditions. This paper reports first results from a multiple-case study conducted in Germany, Italy and Spain.

This multi-case study is aimed at:

1. Identifying factors of sector coordination explaining differences in the competitiveness of regions.
2. Discussing the possibility for local strategies to guarantee access and continuous participation of local producers in global markets.

Since both value chain and cluster specific issues may play a key role for fresh vegetables business organisation, we make an attempt to combine the two approaches. An explorative research approach has been chosen to uncover the relevant variables regarding the coordination of inter-firm relationships and their importance for the competitiveness of the European horticultural businesses on the global and the local level. In-depth interviews with central figures of the respective regional fresh vegetables sector were the primary method of data collection.
A value-chain approach was chosen to be the main analytical tool due to its effectiveness in explaining the distribution of tasks, risks, responsibilities and margins along the market chain.[12**Erreur ! Signet non défini.**,15] The analysis is complemented by a cluster-approach technique to determine interdependent relationships between regional cooperation forces and the development of regional economies[3,4].

To the authors' knowledge, few attempts have been made to apply the global value chain approach to analyze fresh vegetables value chains in Europe and even less so to combine it with aspects from cluster research. Therefore we attempt to merge the information we can get from the two frameworks in order to provide a more accurate picture of relationship organization and underlying mechanisms of the European fresh vegetables business.

The paper is organised as follows: first we discuss the cluster and the value chain theories in the context of the food industry, then we describe our research areas, data and methodology, and we illustrate the results of the analysis. We conclude with few comments and suggestions for further research.

2. Competitiveness in global value chain and cluster theory

New low-cost producers are entering global markets intensifying competition in markets for labour-intensive produce like fresh vegetables. The literature on competitiveness suggests that the most viable option for producers to maintain or increase incomes in the face of increasing pressure is to 'upgrade' – to make better products, make them more efficiently, or move into more skilled activities. [3,7,16]

Scholars from various academic disciplines maintain that both value chains and regional clusters are key organizing principles that enable firms to become more competitive. The recent literature on clusters is optimistic about the possibility of fostering competitiveness through local cooperation and governance activities.[17] Value chain literature, in contrast, emphasizes that globalised lead firms coordinate the value chains in which clusters operate. Cluster firms are seen to be increasingly incorporated in national and global value chains rather than having only relations at regional level.[16] Governance – as the explicit coordination of economic activities through non-market relationships – is particularly important for the generation, transfer and diffusion of knowledge leading to innovation, which enables firms to improve their performance.[18] The two approaches see governance operating at quite distinct levels, as it is illustrated in Table 1.

Table 1. Governance, relations and key challenges in cluster and value chain theory

	Clusters	**Value Chains**
Governance within the locality	Strong local governance characterised by close inter-firm co-operation and active private and public institutions. Risks attenuated by local mechanisms for risk-sharing.	Not discussed. Local inter-firm co-operation and government policy largely ignored.
Relations with the external world	External relations not theorised, or assumed to be based on arm's length market transactions.	Strong governance within the chain. International trade is increasingly managed through inter-firm networks. Risks attenuated by relationships within the chain.
Key competitive challenge	Promoting collective efficiency through interactions within the cluster.	Gaining access to chains and developing/keeping linkages with major customers.

Source: Humphrey/Schmitz 2000[19], p. 14.

By combining the two approaches advancements can be made to overcome the most criticized shortcomings of both approaches, i.e.:

(1) Cluster analysis doesn't theorize the links of regional cooperation system to the external world. This is a great handicap because decisions made in the cluster-external surrounding have a clear impact on how coordination is carried out locally.

(2) Value chain theory instead tends to overlook that not only decision made in the chain are responsible for coordination structure. In this sense also the local level counts, because an important part of the chain is integrated in a locally bound network and is influenced in its decisions by the integration in exchange relationships in the local network. This issue is particularly relevant for farmers.

2.1 Cluster - the local determinants of competitiveness

Since the early 1980s there has been a well-documented interest in the region as a site of economic interaction and innovation. Several schools of thought, including the new economic geography, business studies, regional science and innovation studies, have emphasized the local determinants of competitiveness.[20] This literature is optimistic about the possibility of strengthening competitiveness through local or regional governance, and argues that in a globalizing economy the only permanent basis for competitive advantage will be localized and based on tacit knowledge.[7,21,22]

A regional cluster is defined as a geographically bounded concentration of interdependent and complementary firms, which are connected to each other by using the same technology and knowledge base as well as the same raw materials. Since economic activities tend to agglomerate at certain places clusters are specialized in the production of certain products. To be not just an agglomeration of firms but a valuable local production system clusters have to feature vertical as well as horizontal co-operation between the participating firms, i.e. there are active channels of business transactions and knowledge transfer between the cluster participants.[23]

The common fundamental principle of all of the named cluster approaches is their emphasis on intraregional interactions and relationships between firms and their institutional environment. The concepts try to capture the essence of localized clusters of activity characterized by high-intensity interactions involving tangible (economic, social and political institutions) and intangible (knowledge, know-how, conventions, long term customer loyalty) elements. According to this argument, the growing demands placed by the world economy can be dealt with the best by focusing local potentials. The main potential advantages of spatial clustering that have been identified in these research literatures are shared costs for infrastructure, the buildup of a skilled labour force, transaction efficiency, and knowledge spill-over leading to firm learning and innovation. With a chronological view of research on clusters we can observe a general shift away from the concern about input-output relations and material linkages towards

a broader examination of the social and institutional foundations of growth which is manifested in the prominence of concepts on 'learning regions' and 'innovative milieu'.[24,25,26,27,28,29,30]

Critics on cluster concepts focus on the fact that the work of different schools of thought created a confusing variety of agglomeration concepts, without resulting in a unified theoretical framework for analyzing spatial clustering. Another problem with the approaches on regions is their implicit claim to see regions as distinct objects with causal powers of their own. The approaches tend to ignore problems concerning intraregional divisions and tensions and presuppose the capacity of local actors to intraregional cooperation. Important for this study is the critic that much of the work on regional economic development remains isolated from broader analysis of external relationships and events. This is a problem as adaptation to changing external circumstances is a key issue of innovative regional systems.[24,31] The method used in this study to combine the analysis of a local cluster with the value chain approach which has its focus on inter-firm relationships with an extra-regional, sometimes global reach, helps to make first advancements in the direction of these critics.

2.2 Global value chain research on determinants of competitiveness

Global value chain (GVC) analysis has emerged since the early 1990s as a novel methodological tool to analyze trends in global manufacturing, and in particular the increasing role of retailers and brand-name companies in creating global production, distribution and marketing networks.[32,33] The global value chain perspective attempts to provide an explanatory framework for the development of vertical coordination between firms. A value chain can be defined as a socioeconomic system which consists of a set of interdependent firms performing a sequence of value adding activities required to bring a product from conception to consumption.[13] The tacit coordination of markets is being replaced increasingly by 'explicit coordination', i.e. coordination through direct exchanges of information between firms. This coordination is usually referred to as value chain governance.[12] Networks of inter-firm relationships were described first as commodity chains, later as global commodity chains, and most recently as global value chains.

The book "Commodity Chains and Global Capitalism", published in 1994 by Gary Gereffi and Miguel Korzeniewicz [8], can be seen as the beginning of Global Commodity Chain (GCC) analysis as a relatively coherent paradigm. The analytical emphasis of GCCs is on the activities of firms, and especially the chain drivers that play the lead role in constructing and managing international production networks. Gereffi and Korzeniewicz framework lays out four key structures that shape GCCs: input-output, geographic, governance, and institutional. The governance function within GCC framework captured variation in the way how firms organized their cross-border production arrangements. They made a key distinction between global chains that are driven by two kinds of lead firms: buyer-driven and producer-driven chains.[9]

The governance concept in the GCC framework as well as the buyer-driven chains attracted by far the most attention by research. The most recent approach of GVC analysis has its origins in an interdisciplinary initiative of researchers in 2000, who examined different approaches to the study of value chains and global production networks. GVC analysis draws inspiration from its GCC predecessor but also from the distinct tradition of transaction cost economics with the aim to create a coherent unique approach to study global value chains.[13,14,33,34]

The main theoretical concepts in the GVC approach are:

1. *Governance*: In GVC analysis, governance is conceptualized as the coordination of inter-firm relationships through direct exchanges of information between firms by the definition and enforcement of instructions relating to what products are to be produced (product design), how they are to be produced (process controls) and when (timing). Apart the question what different forms governance can take, there are two further aspects of governance to be addressed: the reasons for governance, and how governance is enforced.[12,15,35]

2. *Power*: Governance in value chains is associated with coordination power (the ability to provide and enforce instructions) and differences in market power. Identification of powerful actors in the chain, and an examination of the sources of this power and the ways it is used, remain a central issue in GVC theory-building. Lead firms in value chains are able to make key decisions about inclusion and exclusion of particular suppliers, the distribution of particular activities between different actors in the chain and the structure of production. The consequences of power

asymmetries in value chains are that profits, and hence resources for innovation and growth, gravitate to points of concentration on the value chain and that different actors in the chains are differently exposed to risk.[36,37,38]

3. *Institutions*: the role that institutions play in structuring business relationships and industrial location. Institutions can be defined as the rules that govern society. As institutions we understand bureaucratically rules, codified in legal cannons and regulatory systems, as well as societal norms and expectations.[39] Consideration of institutions in the context of GVCs is important because routines of interaction between suppliers and lead firms can be deeply rooted in domestic or local institutions and culture and they structure (enable and limit) firm-level GVC governance in an ongoing manner. Firms and industries clearly adapt in response to institutional pressures.

2.3 Value chain approach applied to agribusiness

We can recognize two important trends in the development of global agricultural markets that are associated with value chain approach: Concentration at all points in the value chain and an increasing scope and complexity of food standards.

- **Standards** matter for two main reasons when we analyze global value chains: (1) they have an impact on the extent and codification of information required to sustain transactions and (2) they have an impact on supplier competence. New standards requirements frequently change the level of competence required from suppliers. The possible solutions are that suppliers adapt to the new requirements or that buyers switch to suppliers that can meet the challenges.[12] We may ask ourselves whether changing standards may change the relationships between suppliers and buyers in value chains but also whether a cluster context could affect the adaptation capacity to new value chain requirements of the whole cluster or of the single producer in the cluster.[40]
- **Concentration** in value chains is an important aspect because it changes the organization of value-chain relationships. The important effects related to concentration in value chains are: (1) concentration at one point in the value chain drives further concentration at other points in the value chain; (2) concentration at one point in the value chain generates oligopolies and inequalities, so that some enterprises in the value chain gain market power to the expense of other firms. Especially important for fresh vegetables value chains is the concentration at the point of sale to consumers and the successive concentration in production which is supposed to influence the organization of inter-firm relationships in the local production system.[12]

3. Methodology

Our research questions derive from the assumption that competitiveness is not just depending on the productivity of the single firm, but on the integration of fresh vegetables producing firms in local production contexts and on the inter-firm relationship coordination in value chains.

Figure 1 illustrates the conceptual framework based on the theoretical background introduced in the previous chapter and allocates the research questions to the two loci of interest: local network and extra-local value chain.

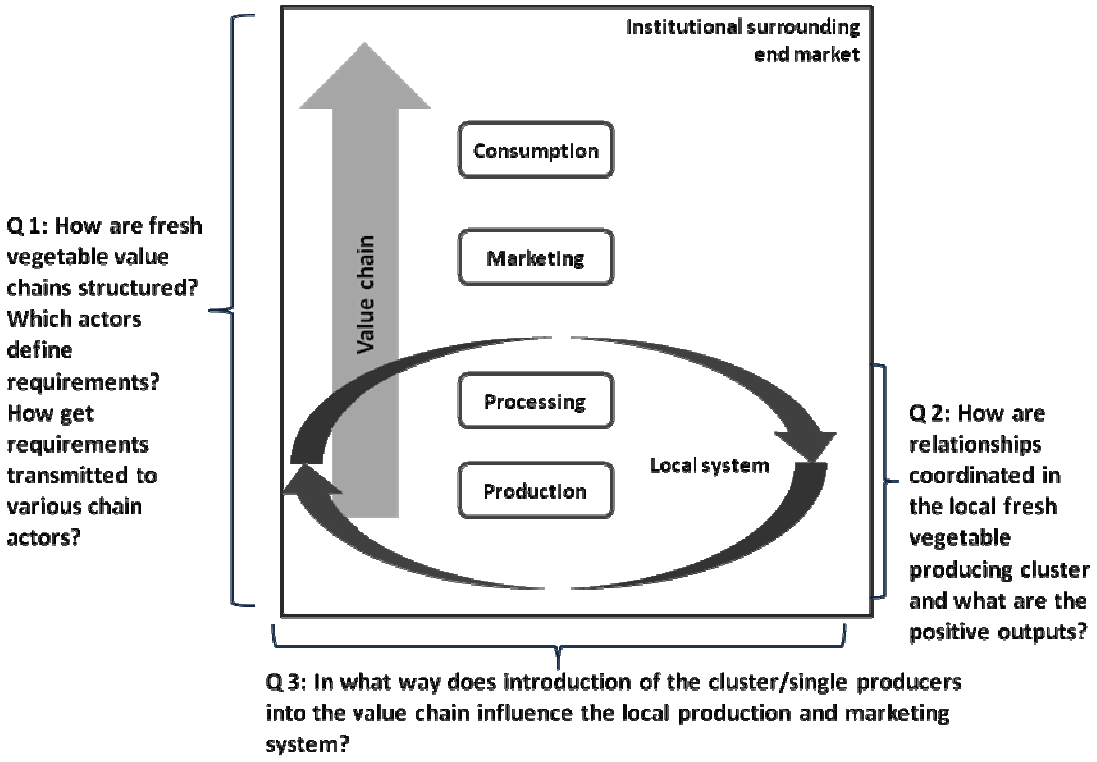

Figure 1. Conceptual framework and research questions

The focus of the research lies on discovering variables for fostering local strategies aimed at securing competitiveness. Application of value chain research to analyse European fresh vegetables competitiveness and the combination of ideas from value chain and cluster studies to study this problem is relatively new. Therefore, an explorative approach and a qualitative research methodology is appropriate, allowing for searching in-depth and reveal relevant categories from the local cluster level and the vertical value chain level and to advance our understanding of interdependencies.

The application of three case studies allowed for discovering a greater variability of coordination mechanisms and decisive variables in three different socio-cultural contexts. The concentration on three field studies allowed studying them on site. An in-depth qualitative analysis is performed through intense communication with central and experienced business actors.

This multi-case study focuses on three important European fresh vegetables producing regions: Palatinate in Germany, Emilia-Romagna in Italy and Murcia in Spain. These regions were chosen due to their economic value of the fresh vegetables business and for perceived differences in business organization and institutional environments. The main summary data for the three regions and the number of interviews are shown in Table 2.

Table 2. Summary data on the case studies

Region	Hectares	Domestic share (%)	Producers (no.)	Production (tons)	Interviews	Period
Palatinate (Ger)	16,858	15	560	496,000	19	Spring-Summer 2007
Emilia-Romagna (I)	46,537	11	5,742	639,496	16	Winter 2007-2008
Murcia (E)	42,165	10,5	2,986	1,571,037	12	Autumn 2008

Source: Palatinate: ZMP 2008; Emilia-Romagna: Istat 2008; Murcia: Consejeria de Agricultura Murcia 2007

Palatinate, Germany
The Palatinate is one of the most important German regions for fresh vegetables business, with intensive, highly concentrated fresh vegetables production and a long tradition in cultivating several species. This region is of special interest because as prior research indicates it's presumed that it shows some evidence of clustering. Furthermore, lately the fresh vegetables business of Palatinate is characterized by extreme structural changes in the organisation of its business, especially regarding increasing size of producing farms and the organisation of commercialization of the products.[1]

Emilia-Romagna, Italy
Emilia-Romagna is an important region for fresh vegetables production in northern Italy. The interesting aspect of this region is the high concentration and importance of modern distribution and logistics facilities for the commercialization of fresh fruit and vegetables.[2]

Murcia, Spain
Murcia is the second most important Spanish region for fresh vegetables production, so that 26% of Spanish fresh vegetables exports originate from this region. Export represents the main destination (90%) of Murcia's fresh vegetables production. This made us assume a modern organization of business, probably affected by interesting changes in organization of business relationships between the single actors of the regional production and marketing system.[3]

3.1 Data collection

Qualitative data were collected via problem-based interviews with participants from various tiers of the marketing channel in the regions of Palatinate/Germany[1], Emilia-Romagna/Italy[2] and Murcia/Spain[3].

Aim of the in-depth interviewing of actors from different tiers of the chain and the regional horticulture economy was to unveil the decisive factors that define the market performance of the studied regions, to understand the phenomenon of competitiveness on the local level and its changes by asking directly the involved people, to capture their ideas and views of the situation of their business environment. The major benefit of collecting data through individual, in-depth interviews is that they offer the potential to capture the person's perspective of the phenomenon under analysis.[41,42,43]

The choice of the single interviewed actors was determined by the importance of the enterprise they were working for the regional horticultural business and the position they had in the respective company. We tried to talk to persons in leading positions who are assumed to dispose of insight and overview of regional horticulture business. Aim of the sampling strategy was to cover as many different actors with complementary or possibly contradictory views of the regional fresh vegetables business as possible, trying to capture the perceptions of practitioners along the whole chain from seed producers to the retail level. Interviewing several complementary participants allowed capturing a multifaceted picture of the horticulture business performance.

The interviews were guided by an interview guideline, but questions were kept deliberately broad to allow interviewees as much freedom in their answers as possible. The researcher used the study's research questions as the framework to develop the interview guideline. The interviews were taped and transcribed to increase the accuracy of data analysis.

[1] In Palatinate we interviewed 3 plant managers, fresh vegetables producing farms; 1 crop coordinator, seed breeding firm; 2 chief executive officers, intermediary traders; 2 members of the regional ministry of agriculture; 2 plant manager, seedling production; 2 executives of cooperatives; 1 director of association for water management; 2 members of the German association for horticulture business; 1 management and 1 consultant of the regional public research and education institute; 2 executives of private consultancy.
[2] In Emilia-Romagna we interviewed 3 chief executive officers and 2 technical staff of cooperatives; 2 executives of wholesale businesses; 1 Crop specialist and 2 sales manager, seed breeding firm; 1 sales manager, seed breeding firm; 1 quality manager, retail; 1 private trader; 1 member of the regional department of agriculture; 1 executive technology firm; 1 producer.
[3] In Murcia we interviewed 4 executives cooperatives; 3 executives export consortia; 1 chief executive officer and 1 director of regional research institute; 2 crop coordinator, 1 seed breeding firm.

3.2 Data analysis

The challenge throughout data collection and analysis was to make sense of large amounts of data, and to identify significant patterns. The transcribed interviews produced many pages of textual material in German, Italian and Spanish from the three studied cases. Recurring topics emerged out of the conversations also without especially launching the discussion in the direction of the upcoming problems. The first step was to summarize the interview texts to the main ideas that were held to be important during reading and re-reading of the text materials. Subsequently the material has been coded to main categories which evolved from the interview material. Analysis followed methods proposed by Corbin and Strauss [44]in grounded theory who propose a stepwise advancement of organizing data into categories and Miles and Huberman [45]who use displays to understand complex data. Coding was guided by literature and the conceptual framework but kept open enough for allowing new, inconsiderate categories to evolve directly from the interview texts. The decisive categories that have been filtered will be used to compare and assemble a complex-variable causal model that should offer insight into structure and underlying causes of value chain structure in European fresh vegetables business and the interdependence of vertical inter-firm relationship coordination with the locally bound producing cluster.[41]

4. Results

Interim results are presented in form of examples organized in three tables for the respective case studies to give to the reader some insight into the application of a combination of value chain and cluster approach to analyze inter-firm relationship coordination in the fresh vegetables industry.

The exploratory approach of the study offered the possibility to uncover a vast variety of concepts of how relationships in value chains and clusters are actually organized. The tables should help to understand the complexity of interdependencies of relationships between value chain and cluster level with the objective to come to preliminary conclusions regarding the scope for local strategies.

4.1 Palatinate

Findings	Value chain	Cluster	Evaluation and Scope for local strategies
(1) Increasing direct relationships between large scale producers and retail because of value chain requirements	Retail needs direct information exchange and centralized purchase. Specifications of quality and safety standards and other attributes require explicit coordination with key suppliers.	**Enabling conditions** Bad cooperative commercialization because of reciprocal mistrust of local producers. Prevalence of local large-scale producers who are able to fulfill retail requirements on their own. Long tradition of independent commercialization by producers. Positive cluster effects allowed producers to develop to actual performance. **Consequences** Producers have to commit to specific buyers because of detailed specification of product attributes and the production process. Producers make specific investments in relationships to certain buyers. Medium-scaled farms loose market access. Increasing exclusion of cooperative from value chain.	Mutual dependency between producer and retailer because both have to commit to determined suppliers/buyers. Retailer remains nevertheless the more powerful actor because of high concentration on retail level and sheer market power. Concentration of production will continue: in direct relationships with buyers producers are forced to grow. In the cluster competition between producers is increasing and willingness to cooperate decreasing. Value chain relationship becomes more important for large-scale farmers than local linkages.

Requirements of value chain leader (the retailers) change organization of inter-firm relationships in the cluster.			
(2) Partnership between intermediary trader and producers in the cluster as a consequence of value chain requirements	Intermediary trader sells products to/programs upcoming season with retail guaranteeing collaboration with determined producers. Compliance with value chain demands requires permanent collaboration between trader and producer. Intermediary trader has to guarantee safety of supply to chain leader 'retail' and therefore needs to have trustful relationships with his producers.	Commitment to long-term partnership between local producers and local trader. Intermediary trader gives 100% purchasing guarantee to producers to secure partnership. Production planning, food quality and safety monitoring and their costs require partnership between trader and producer. Preference of large-scale farms (innovative and reliable) by trader. Exclusion of small-scale farms from value chain (risk of non-compliance, dishonest information exchange)	The need for concentration and direct relationships in the value chains is reproduced the cluster – local relationship organization changes as a consequence.
Retail has power to introduce new standards regarding pesticide residues without consulting other chain members.			
(3) Introduction of new safety standards by chain leader 'retailer' proved vitality of cluster cooperation	Retail reacted to pressure from private actors (NGOs). Institutional environment (EU) to weak to put harmonization of plant protection into action. All upstream actors had to adapt to new requirements set up by the chain leader because they had no other possibility.	Experience, knowledge and rich data base allowed for immediate adaption of producers in Palatinate to new standards. Cluster cooperation seems to work better in case of external threats than as a foresighted strategy.	New standards decreased flexibility of selling/purchasing for both producers and retail. Costs for monitoring of new standards and risk of non-commitment rest on producer. The capacity of cluster firms to fulfill new retail demands reinforced relationships between cluster producers and external retail. Cluster cooperation seems to work better in case of external threats than as a foresighted strategy.
Chain leader the retailers determine chance and success of product upgrading in value chain and cluster.			
(4) Positive condition for innovation shift from cluster level to large-scale producers in value chain relationships	To be interesting for buyer producers need to present new products in large volumes. Retail is often not willing to offer shelf space to new product placement. Cooperation in so far that retail is disposed to offer new product over longer period of time in stores. But: No direct investments of retail in development of new products.	Advantage for large-scale producers because they can offer large volumes and have more efficient decision and implementation processes. Problematic situation for new product development in cooperation between cluster farms: inefficient decision making and implementation.	Risk of investment in new products rests completely on the producer. We can observe privatization of research in value chains. This development is jeopardizing the positive outcomes of interrelation the cluster performed so far. Concepts of concentration and innovation in value chains are interrelated. Trend to increasing firm size continues.

The four examples of the German case study confirm value chain theory statement that retailers are the leading firms in fresh vegetables business who coordinate inter-firm relationships in the chains by enforcing their requirements. Changing requirements in the value chains and their influence on relationship arrangements in the value chain between producer and supplier clearly implicate changes and adaptation of inter-firm relationships in the local production system. In the Palatinate, the observed development of the cluster and the relationship coordination between local actors make us presume that there are positive cluster externalities that help local producers to cope with market requirements.

Nevertheless it seems that forces of inter-firm coordination in value chains are becoming more and more intense and important, weakening relationships in the local production system.

4.2 Emilia-Romagna

Findings	Value chain	Cluster	Evaluation and Scope for local strategies
(1) Retailer's private brands require explicit coordination of value chain	Governance of key suppliers by retail: Planning and monitoring of production Retailer's aim: creation of long-term relationships with key suppliers because they guarantee constancy, quality and safety of supply. Retail gives privileges to key suppliers. Retail cannot run the risk of performance failure because in case of private brand he guarantees with his name to consumer.	Special cluster effects couldn't be observed in this case.	Retail remains the more powerful actor, but dependency is mutual.
(2) Explicit coordination of chain by retailer in the case of introduction of new packaging material	Retailer choosing specific suppliers for new packaging material Order producers to buy packaging from specific suppliers. Communication and long-lasting relationship necessary: long-term project Retail needs to be innovative to offer alternatives to consumer.		Intense communication between retail, producers and cooperative. Retail decides about product characteristics concerning private brands. Producers less autonomous in his decisions.
(3) Compliance with value chain requirements demands enlargement of local cooperatives to other regions	Cooperatives have to grow They are doing it by merger with cooperatives in other regions. Organizing supply from the whole country.	Not only local linkages of the cooperative. So far local producers remain small-scale.	Region seems to be in post-cluster phase with nation-wide business relationships. Producers do not seem to have special cluster-based advantages.

The examples chosen for the representation of the Emilia-Romagna case study reveal two variables that will be more and more crucial for the structure of relationships in the value chain: private labels and introduction of new products (packaging material). Example number one underlines how the ever more important private labels of supermarkets determine the coordination of fresh vegetables value chains. Private labels as they are becoming more and more important as a supermarket strategy will continue to change value chain relationships.

Also the introduction of new packaging materials by supermarkets demands stricter governance of the value chain. In our research we are also interested how generation and implementation of innovations is organized in value chains. In the Palatinate example we could read that introduction of new products by producers is often hindered by the disposition of supermarkets. In the example mentioned for the Emilia-Romagna case, the retailer had a clear interest to innovate packaging material to remain interesting for his own customers. The difference is that the retailer, being in the more powerful position, could force his

suppliers to change their packaging methods and to buy packaging material only from certain manufacturers.

In a general evaluation of the Emilia-Romagna case study we can observe weaker local linkages.

4.3 Murcia

Findings	Value chain	Cluster	Evaluation Scope for local strategies
(1) Adaptation of regional production system to changing retail standards in value chains	NGO campaign created bad image of local fresh vegetables sector. Retail changed his requirements for product safety.	Investment in regional project 'clean agriculture' of regional agricultural ministry. Cooperation between regional research institute and cooperatives. Application of new production system to anticipate further retail requirements.	Daily relationship coordination more organized on the cooperative level. In case of special larger research aims we can observe cooperation between regional agents.
(2) Concentration and power of retail require concentration on cooperative level	Trying to control retail buy concentration of supply. To take advantage of synergies: logistics, high quantity supply, to diminish costs. Be united for trying to maintain a balance between supply and demand.		There's no balance in producer-buyer relationship. Supply is in a discriminated position. Level of the cooperatives/private commercializing firms the most important relationship coordination format.
(3) Vertical integration of seedling producers in cooperative	For better control of quality and safety of plants To guarantee disposing over the best plants for fresh vegetables production To buy for better prices.		Vertical integration in the local production system because of little trust to third parties.

Also the first example of the Spanish case shows that adaptation of local production systems is occurring in reaction to changing requirements coming from external agents. Producers and cooperatives together with the support of regional public institutions try to adapt to and advance requirements coming from the global end market. This underlines the importance of combining the analysis of local relationships to the study of its interdependence with extra-local events.

Also in the Spanish case, positive cluster elements were less evident than in the Palatinate. Important organizational forms for inter-firm exchange seem to be cooperatives. In Murcia we can observe vertical integration on the local level as seedling producers become integrated into the cooperatives to reduce costs and to assure quality and safety of goods.

Main players of Murcia's fresh vegetables business stressed the importance of concentrating supply on cooperative level. In recent years, various export consortia have been founded trying to balance power asymmetries in buyer-seller relationships. Concentration helps to better fulfill requirements of the value chain leading supermarket chains, but the supply side remains in a weaker position.

4.4 Summarizing discussion of the results

The examples of the three case studies Palatinate, Emilia-Romagna and Murcia give first insights into the three groups of research questions addressed in this study: how fresh vegetables value chains and the local production systems are structured and why they are organized in a certain way, and how these two coordination formats are interrelated. By means of the examples reported in the tables the main theoretical concepts presented in the theory section - governance and power, standards and concentration - are addressed.

a. **Governance and power**: The concepts of governance and power are very much interrelated. The question is who is governing the chains and why and how this governance is accomplished. In all three case studies we can confirm that the leading firms defining and giving instructions are the retailers. The reasons for them to go to the expense of governing the chains are that they purchase non-standardized products with very specific characteristics. Relationships between buyer and seller have to be coordinated to transmit specific information and to diminish the risk of non-compliance. Coming to the question on how governance is enforced we have to consider the concept of power in value chain relationships. A condition for governance of the chain is that someone needs to have the coordination power to enforce instructions for other chain members. In the fresh vegetables value chain the definitely most powerful actor are the highly concentrated retailers. Differences in market power imply that profits, resources for innovation and risk are distributed unequally in the chain.

b. **Concentration**: As we remember from the theory chapter, concentration is an important concept when it comes to applying value chain approach to agriculture. Concentration is associated with the power concept explained above. The examples displayed in the tables for each case study confirm that concentration in value chains and clusters is a very important element. In all three cases the high concentration of the main national and international supermarket chains drives concentration of cooperatives, traders and producers. Reason is that upstream players try to balance the inequalities in market power in the relationship to the buyer by trying to grow and concentrate themselves.

c. **Upgrading:** Concentration, but also governance and power, are furthermore related to resources for innovation. Large-scale firms have better capacities to conduct innovative experiments concerning new products or packaging material, which is driving concentration further. The question in applying value chain and cluster approach to agribusiness is how do firms upgrade and who is introducing innovations in the value chain. The large supermarket chains do introduce new products, brands and packaging material as we saw in the Emilia-Romagna example and they have the power to do that and in sense of governance to change chain coordination when innovations do require that. For producers it is much more difficult to introduce new products into the market, since they are not in the leading position and they need supermarkets' support to offer the products in the stores.

d. **Risk and dependencies:** Associated with power, leading firms and governance is also the question of who is exposed to risk and how to manage risk. In value chain discussion it seems that only producers are extremely exposed to risk and highly depending on their buyers. Due to the power inequalities in the concentration levels, producers are more dependent, because there are few retail chains left and they are more powerful due to sheer market power. Therefore for producers the risk to lose market access is high. But according to the results of this research also supermarkets are getting more dependent on their key suppliers, because few producers actually have the capacity to deliver the specific products and to fulfill the rigorous requirements the retail demands.

e. **Standards:** As we saw on the Palatinate example of new standard introduction, standards are an important category because they change organization of value chain relationships due to the necessity of transmitting new information and they affect the competence of suppliers. Introduction of new standards expose producers to the risk of not being able to comply with the new demands and to lose chain access as a consequence. We can perceive also a dependency of the retailers on the capacity of their key suppliers to fulfill their demands. In the example of the Palatinate, retailers exposed themselves to the risk of remaining without products in their stores due to the new strict quality and safety requirements imposed on the value chain.

5. Conclusions

The objective of this research was to analyse the structure of fresh vegetables value chains and local production cluster and to discover the underlying structuring mechanisms with the main goal to discuss the possibilities for local strategies to secure competitiveness of local producers in the global market.

The empirical results of the three case studies allowed us to identify and evaluate main drivers for determined value chain structure as presented in the tables for the single case studies. A multiple-case study with data collection in different cultural settings was chosen as the appropriate research technique. Results from three different regional case studies in three countries permitted to identify a greater variety of variables and allows for comparison of similarities and differences of the driving mechanisms for chain and cluster structure. There are conditions in the global market that define a relatively similar business

environment for all the three regions, for instance do all local producers have to sell to nearly the same buyers according to the same requirements because of the high concentration of the largest retail chains. Nevertheless it is interesting to observe that actors situated in different cultural environments react differently to the challenges of the market and that we can find differences in local relationship organization that influence the competitiveness of the single local production systems.

Regarding theory development, the study tried to make advancements concerning the combination of ideas from global value chain analysis with concepts from cluster approaches to analyze European fresh vegetables business. On a theoretical level we tried to overcome the shortcomings of both approaches: value chain analysis doesn't account for local linkages and cluster theory instead is only concerned with the local relationship system ignoring links to the external cluster environment. We suggest that it is necessary to combine insights from both approaches when analyzing fresh vegetables business. The cluster approach is useful because of the local integration and concentration of most of the European fresh vegetables production. These local production systems, however, operate in a market that is getting more and more global, which means that it wouldn't be enough considering only local linkages for understanding competitiveness of local fresh vegetables producers.

The global value chain approach has proven to be useful to analyse relationship coordination and its impact for local producers in this context, since the actors of local systems have to deal with partners situated outside of the cluster and have to develop extra-regional, national and international linkages in a European and global market. Global value chain analysis offers very interesting insights to understand organisation and competitiveness.

Both approaches – global value chain and clusters - are very rich, considering many concepts and variables. The problem is the applicability and operationalization of this high variety of variables into a practical empirical research. The present paper is a contribution in this direction.

One of the research objectives was to consider which scopes for local strategies there are in the global fresh vegetables business. The research approach and the qualitative technique used in this study are not suitable to provide conclusive answers. However, examining the presented results in the tables of the single case studies it seems that the most important format for relationship coordination is becoming more and more the value chain level, dissolving important local firms out of their local context and integrating them in strictly governed direct vertical relations. This increasing importance of value chain relationships governed by lead firms in the chain questions the possibility of regional public and private firms and institutions to influence the local production system or the single producers for fostering competitiveness on a local level. For the Palatinate we can say that there have been positive cluster effects that seem to vanish giving more importance to direct relationships in value chains. For example it is getting more and more complicated for the very active regional research and advisory institute to influence and advice the leading local producing firms. On the other hand, we can observe in all three regions examples that clearly show how local cooperation and engagement from regional institutions together with local producers and other actors to cope with new requirements of the global market.

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