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Structures and Actors of the Organic Vegetable Value Chain for School Catering: a Case Study of the Berlin-Brandenburg Metropolitan Region

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ABSTRACT

With the European Union's move towards "green public procurement", there is an opportunity to bring more local organic produce into school catering. The present study investigates the value chain supplying school catering with organic produce, using the organic vegetable industry in the Berlin-Brandenburg region as an example. It employs a qualitative case study approach to explore industry actors' perspectives and their activities within the value chain. Data is collected by conducting ten in-depth interviews with actors on different supply chain levels (farming, wholesale, and school catering) and is analyzed using qualitative content analysis. The results suggest that, while organic food is generally important in school catering in Berlin, locally produced organic vegetables play only a minor role. Structural factors were identified that affect actors' local value chain activities, such as price or a lack of preprocessing infrastructure. A preliminary conclusion might be that coordination of value chain activities could help to overcome constraining factors.

Keywords: value chain; organic vegetables; school catering; structuration theory

Introduction

Green public procurement, the purchasing of environmentally friendly goods and services by public authorities, is a policy suggested by the European Commission that aims at reducing the environmental impact of the public sector and at creating incentives for the private sector to develop "green products and services" (European Commission 2016). A common example for green procurement practices is the purchasing of organic produce for the use in public institutions, such as schools (Netos & Caldas, 2017). As green public procurement is a voluntary instrument, its implementation into national law varies considerably across European countries. In Germany, there are a number of local authorities that include organic food in their procurement policies. One of them is the city of Berlin.

In 2014, Berlin authorities introduced a new public procurement policy for school catering, which requires a minimum percentage of 15% of organic produce in school meals and creates additional incentives for catering companies to increase the share of organic food beyond that quota up to 55% (Senatsverwaltung BJF, 2017). Through combining the requirement for using organic ingredients with a fixed price per meal, public authorities in Berlin aim for a situation where catering companies compete through quality instead of price (Senatsverwaltung BJF, 2017). Berlin public procurement rules, however, offer no guidelines about the origin of the produce.

The densely populated city of Berlin has very little agricultural land. Food that is considered local in the present paper is produced in the surrounding federal state of Brandenburg, which is a region largely dominated by agriculture (MLUL Brandenburg, 2017). In Brandenburg, organic farming is a well-established part of the agricultural sector. 10.5% (138.000 hectares) of the agricultural land is farmed organically by around 700 operations (AfS Berlin-Brandenburg, 2017a). About 50 farms produce organic vegetables on 344 hectares, which is a relatively small number and share compared to other parts of Germany (AfS Berlin-Brandenburg, 2017b; AMI, 2017).

The present study uses a case study approach to explore the current situation of the local value chain for organic vegetables in school catering, with a focus on value chain actors' practices and their perspectives on the structural factors that constrain or enable local value chains.

The value chain as social system

The study explores value chains from a structuration theory perspective. Structuration theory was originally developed by Giddens (1984) to describe and analyze social systems based on the interdependence between structure and agency. A range of research applies structuration theory to organizational and management studies (Den Hond et al., 2012; Orlikowski, 2000; Pozzebon & Pinsonneault, 2005; Sydow & Windeler, 1998) and, more specifically, to agri-food value chains (Dillard & Pullman, 2010). Recently, Heiss et al. (2015) investigated value chains for school catering in Vermont (U.S.A.) using a structuration approach. They show that structuration theory can be used to understand the relation between individual actors' practices and the value chain as a whole. The present study follows this notion.

From a structuration theory perspective, value chains can be seen as systems that are constituted by actors' distribution and sourcing practices. Following this notion, value chains are bundles of social practices that are commonly reproduced by actors within the value chain system. A core tenet of structuration theory is the duality of structure (figure 1). It describes the relation between (1) practices of agents within a system and (2) the structures that enable and constrain the agents in their practices.

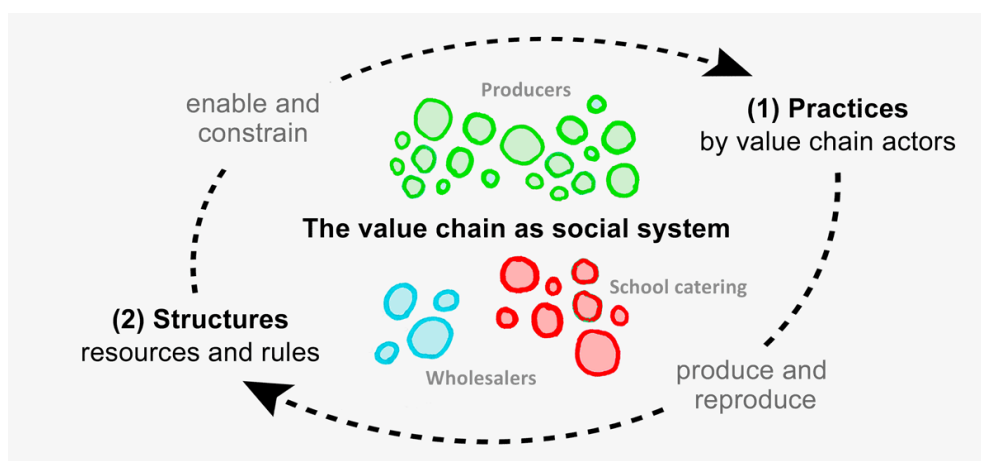


Figure 1: The duality of structure (Giddens, 1984), applied to the value chain

(1) According to Giddens (1984, p. 26), agents create and shape the structures within a system through social practices – repeated interaction with each other. Agents have an understanding of the system around them, reflect on their actions, and have the ability to “make a difference” within the system (Giddens, 1984, p. 14). In the context of this study, value chain actors are considered agents within a social system. This includes actors at different levels of the value chain – producers of organic vegetables, wholesalers, and catering companies.

(2) From a structuration theory perspective, systems have structural properties, rules and resources that constrain and enable agents within the system (Giddens, 1984, p. 17). In the context of the value chain, examples for resources are the access to logistics and infrastructure as well as the availability of a certain amount of a product at a given time and place. Examples for rules are certification or procurement rules, but also non-formal norms, such as the way value chain actors communicate with each other.

Giddens’s notion of structuration theory and the duality of structure operate on a highly abstract and general level (Den Hond et al., 2012). Stones (2005) provides a refined research framework that includes guidelines for the application of structuration theory in empirical research and puts more focus on the analysis of the context, motivations and values from their perspectives (internal structures) and their understanding of the structures that define their actions (active agency) (overview 1).

Overview 1: Purchasing decision by a school catering actor – a structuration theory example

<p>1. External structures</p> <ul style="list-style-type: none"> - Resource: Access to full-range wholesale companies - Resource: Access to local vegetable producers - Rule: Green public procurement rules - Rule: Customer demand for local produce 	
<p>2. Internal structures</p> <p>Perspectives on the context</p> <p>Knowledge about full-range wholesale company</p> <ul style="list-style-type: none"> - Availability of full range of products - Reliable on-time delivery - Simple ordering, handling and delivery - Higher prices for local vegetables - Option to substitute local products with, non-local products <p>Knowledge about local vegetable producer</p> <ul style="list-style-type: none"> - Direct distribution of specific products - Potential reliability issues - Communication required for ordering, handling, and delivery <p>Knowledge about green public procurement rules</p> <ul style="list-style-type: none"> - Minimum quota for organic food (15%) - No minimum quota for local food <p>Knowledge about customer demand</p> <ul style="list-style-type: none"> - Local food highly regarded – also with parents and decision makers at schools - Origin of ingredients not transparent to customers 	<p>General dispositions (motivations and values)</p> <ul style="list-style-type: none"> - Concern about dependency on one individual supplier - Desire to support local farmers - Concern about environmental impact of delivery traffic
<p>3. Active agency (agents’ practices)</p> <p>Draws upon internal structures to make purchasing decisions:</p> <p>Weekly orders at full-range wholesaler</p> <ul style="list-style-type: none"> - Reliable on-time delivery most important requirement - Substitution of higher priced local products with cheaper non-local products when necessary, because origin of ingredients usually not transparent to customers <p>Irregular orders at local vegetable producer</p> <ul style="list-style-type: none"> - Greater effort to purchase specific products locally in rare cases - Satisfaction when supporting local producers 	
<p>4. Outcomes</p> <p>Purchasing decisions change over time and reproduce external and internal structures:</p> <p>Example 1: Experiences with delayed deliveries lead to purchasing from alternative suppliers</p> <p>Example 2: Experiences with farmers’ timely and high quality deliveries lead to repeated orders with farmer</p>	

Methods

To explore value chain actors' perspectives, a qualitative case study approach was chosen (Stake, 2005). Case studies are commonly used in social science and have had a revival in agribusiness more recently (Bitsch, 2005; Muger & Bitsch, 2005; Sterns et al., 1998). This case study follows a constructivist paradigm that acknowledges the existence of relative truth and multiple social realities. As the study involves the perspectives of various value chain actors, this approach is considered appropriate.

Building on a review of relevant literature, ten in-depth interviews were conducted to explore the value chain from the interviewees' point of view. In-depth interviews serve to explore interviewees' knowledge and perspectives (Johnson, 2002) and therefore to obtain a detailed and comprehensive depiction of the value chain. The method is useful for gathering rich data about actors' realities and day-to-day practices (Bitsch & Yakura, 2007). The interviews were conducted face-to-face in November and December 2017 and lasted 60 to 90 minutes.

Interviewees included farm owners and managers in organic vegetable production, as well as managers working in wholesale and catering (table 1). They were expected to be knowledgeable about distribution and supply decisions, as well as related practices within their organization. Potential interviewees were identified through local organic food organizations and interest groups as well as through personal contacts.

Table 1: Interviewees and their backgrounds

	Interviewee	Characteristics	Size
Farm 1	Owner	Distribution through direct marketing	~ 1 ha
Farm 2	Owner	Distribution through retail	~ 5 ha
Farm 3	Owner	Distribution through direct marketing and retail	~ 20 ha
Farm 4	Vegetable production manager	Distribution through direct marketing and retail	~ 25 ha
Catering 1	Owner	100% organic, operating in Berlin	~ 900 meals/day
Catering 2	Kitchen manager	100% organic, operating in Berlin	~ 1,200 meals/day
Catering 3	Kitchen manager	56% organic, operating in Berlin	~ 7,000 meals/day
Catering 4	Procurement manager	40% organic, operating in Berlin and Brandenburg	~ 30,000 meals/day
Catering 5	Local director	40% organic, operating nationwide, centralized procurement	~ 40,000 meals/day
Wholesale	Managing director	Organic, focus on vegetables in school catering	3 employees

A semi-structured interview guide was used; it included specific questions for actors on each level of the supply chain. Topics covered different areas such as the interviewees' perspective on the organic vegetable industry, recent developments in the market, and the interviewees' own business. A special focus was on the interactions between value chain actors. The topics were addressed through open-ended questions that were asked according to the flow of the conversation. During the research process, the interview guide was adjusted to better reflect the interviewees' jargon. Interviewees also were asked to draw a sketch of the value chain and to explain it. This activity aimed at generating deeper insights into each actor's perception of the value chain structure. Drawing activities with participants in qualitative organizational research are a method suggested by Warren (2011, p. 573) as a tool for better participant involvement and for generating increased understanding.

Nine out of ten interviews were audio-recorded and transcribed verbatim using the f4 transcription software. One interviewee did not agree to recording, therefore field notes were created. Transcriptions and field notes were analyzed using qualitative content analysis. To ensure a systematic analysis of the data, the qualitative content analysis software atlas.ti was used. The software supports the development of a coding frame, assigning codes to text fragments, and managing codes and their relations (Friese, 2014).

The analysis was done using a hybrid approach of deductive and inductive category building approach (Schreier, 2012). At the beginning of the content analysis process, main categories were developed following a concept-driven strategy, guided by stones (2005) structuration theory framework. Subcategories were created inductively from the data using open coding (Corbin & Strauss, 2014, p. 220). Categories and subcategories were defined and described in atlas.ti. In the second phase, axial coding (Boeije, 2010, p. 113) was used to put categories in relation to each other to identify factors influencing value chain practices.

Results and discussion

This section describes the value chain actors' distribution, and sourcing practices as well as structural factors that influence value chain organization, based on actors' perceptions and practices. In addition, it provides insights into green procurement and demand for local organic vegetables in the Berlin-Brandenburg region.

Value chain actors and practices

In Berlin, about twenty private catering companies provide catering for schools. Each school selects their catering provider through an individual tendering process based on Berlin's rules for catering procurement (Senatsverwaltung BJF, 2017). According to these rules, all catering companies commit to use a certain proportion of organic food.

The interviewed catering companies described that they purchase organic vegetables mainly from intermediaries, while direct supply relationships with farmers are very rare (figure 2). The intermediaries range from large, conventional food wholesalers to smaller wholesalers specialized in organic food. In addition to these full-range wholesalers, school catering companies source vegetables from specialized providers of preprocessed produce (e.g., frozen, peeled, or sliced vegetables), none of which were located in the Berlin-Brandenburg region. Several interviewees pointed out a general lack of processing facilities within the region (see also Doernberg et al., 2016).

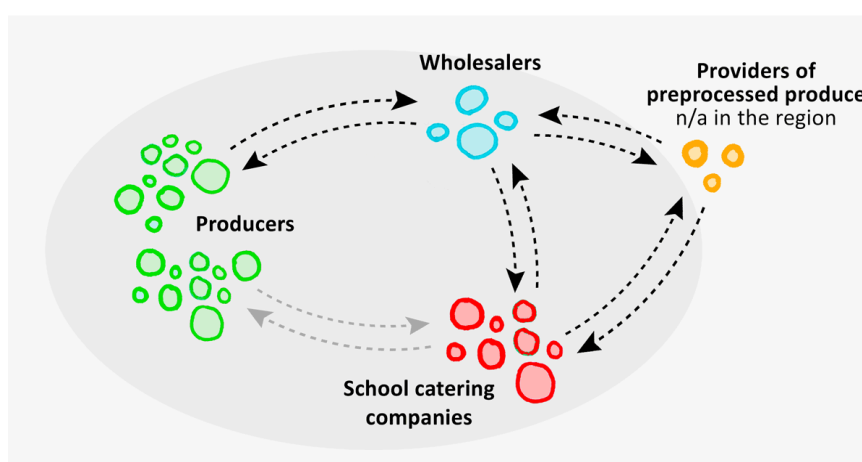


Figure 1: Interaction in the organic vegetable value chain in the Berlin-Brandenburg region

If there are direct supply relationships with farmers, these depend strongly on the interests and motives of individual actors. School catering providers generally relied on bundled supply, preprocessed vegetables, and streamlined logistics. Due to the intermediaries in the value chain, it is often not transparent where raw materials were originally produced.

“Let’s use potatoes as an example. So you would like to buy an organic potato. It should have a certain size and it should be peeled. Our vendor will find this potato for you, but it will be hard to say whether he got it from Brandenburg or maybe from Bavaria” (Manger of a school catering kitchen).

Agriculture in Brandenburg is commonly described as dominated by large scale farming operations (MLUL Brandenburg, 2017), but this does not apply to organic vegetable production. Based on the interviews and statistical data on organic vegetable production (AfS Berlin-Brandenburg, 2017b), there are many small and medium sized farms, and only a few larger farms with more than 20 hectares of vegetable growing land (see also Nölting and Boeckmann, 2005). In terms of marketing practices, farms that rely on wholesalers as their main distribution channel were more likely to focus on a small number of specific crops. Farms that sell their produce at farmers’ markets and through box schemes, as well as direct sales to local restaurants and small, independent retailers were more likely to produce a wider mix of crops. Generally, the interviewed farmers’ marketing was highly focused on local distribution.

Green procurement and demand for local organic vegetables

For Berlin’s school catering companies, green procurement rules result in quality competition. At a fixed price per meal, properties such as taste, organic ingredients, or other sustainability factors are pivotal. The analysis suggests that the share of organic ingredients in school meals is generally higher than the minimum, because a higher share of organic ingredients is explicitly rewarded in procurement decisions while local origin, play only a minor role, as there are no explicit incentives for local sourcing in the procurement rules (see also Haack et al., 2016). School catering actors, however, emphasized that they strive for local sourcing because customers increasingly ask for locally produced organic produce. Structural factors that limited the actual use of local organic food were availability, particularly of preprocessed vegetables, and price.

“We always tell our suppliers that we want [local and seasonal produce] when it is possible. The determining factors are (a) [preprocessed] qualities and (b) price. It is that simple” (Owner of a small school catering company).

The fixed price of 3.25 EUR per meal was largely considered to be too low to use a significant share of locally sourced organic ingredients, which the interviewed catering company actors described as more expensive than conventionally sourced or non-regional organic ingredients. As catering companies are primarily sourcing from wholesalers, it is particularly easy for them to substitute local produce with produce from other origins whenever necessary. This was confirmed by a local wholesaler who described prices for certain local crops, such as cucumbers, to be non-competitive due to low prices at import markets.

With regards to vegetable producers, it is worth noting that the procurement rules from 2014 were unknown to most of the farmers interviewed. There is a perceived trend, however, towards a customer interest in local organic food, which leads to what a farmer called a demand-driven market.

“Because the total amount of crops produced is relatively small, a lot of people contact us. We had calls from restaurants that were looking to buy from us, but we refused because we already have working distribution channels” (Owner of a farm with distribution through direct marketing).

This situation was also confirmed by the wholesaler who described demand for local organic vegetables as beyond what he can source from local producers. The unmet potential for local organic food in the Berlin-Brandenburg region was also described in earlier studies focusing on distribution channels (Doernberg et al., 2016; Haberland et al., 2008).

Conclusion

The present study explores the perspectives of organic farmers, wholesalers and school caterers on a local value chain in Berlin-Brandenburg as a case study. Structuration theory was used as a framework for analyzing the relationship between structures and value chain actors' practices. It provided insights into the structures as perceived by the value chain actors as well as the values and motivations that determined their actions. This approach helped to identify the relationships between the actors and showed the factors influencing value creation activities.

To sum up, the results show that there is no discernable local organic vegetables value chain for school catering. School caterers purchase vegetables mostly from intermediaries. Only a few attempts to build direct business relationships between producers and school caterers were identified. Vegetables for school catering are usually sourced from trans-regional structures, and are not necessarily organic. Organic vegetables grown in Brandenburg are largely sold through farm-to-consumer direct marketing or through local organic wholesalers. Farmers describe a demand-driven market for locally produced organic vegetables. Constraining factors for local value chains are price and a lack of preprocessing infrastructure.

A preliminary conclusion might be that coordination of value-added activities could help to organize a local organic vegetable value chain for school catering. Further research could identify the changes in actors' activities over time and how these practices are affected by value chain coordination.

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