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Administrative Sciences

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Suggested Citation: Laginová, Lucia; Hrivnák, Michal; Jarábková, Jana (2023) : Organizational models of alternative food networks within the rural-urban interface, Administrative Sciences, ISSN 2076-3387, MDPI, Basel, Vol. 13, Iss. 9, pp. 1-15, <https://doi.org/10.3390/admsci13090193>

This Version is available at:

<https://hdl.handle.net/10419/320759>

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Article

Organizational Models of Alternative Food Networks within the Rural–Urban Interface

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Abstract: Alternative food networks (AFNs) represent local food systems and short supply chain networks alternative to global food systems. These networks are often developed within rural–urban interfaces and take various forms, due to the high propensity towards the innovative organization of the network. The aim of our study is to map the currently applied, distinctive innovative organizational models of alternative food networks by identifying the organizational innovations of these networks in available case studies. Adopting the lens of organizational sociology and using space-filling visualization, the study compares various forms of localized and spatially extended AFNs. The results of our comparative analysis suggest that main aspects of AFNs’ differentiation are the models of network organization, applied coordination models, competences structures of the involved actors, nature of the intermediaries and their roles within the AFNs, and the level of customer engagement. Innovation processes within short food networks can be driven by the producer, intermediaries, and communities of consumers. We identified three types of AFNs defined with regard to the predominant direction of flows in the urban–rural interface: (1) AFNs localized within the borders of the city, (2) AFNs based on interconnecting the rural farmers located within rural settlements adjacent to the city and to the consumers in cities, and also (3) AFNs localized in peri-urban interfaces with distant customers.

Keywords: supply chains; alternative food networks; food systems; rural–urban interface; organizational models



Citation: Laginová, Lucia, Michal Hrivnák, and Jana Jarábková. 2023. Organizational Models of Alternative Food Networks within the Rural–Urban Interface. *Administrative Sciences* 13: 193. <https://doi.org/10.3390/admsci13090193>

Received: 12 June 2023

Revised: 1 August 2023

Accepted: 18 August 2023

Published: 22 August 2023



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1. Introduction

The development of short, alternative food chains or networks has attracted considerable attention in the scientific literature for several decades. With the growing public interest in the origin and handling of food, alternative food networks (AFNs) represent a response to the demand for a revival of interest in “more natural”, “local”, or “healthier” foods. At the turn of the millennium, researchers (Marsden et al. 2000) were the first to respond to the need to bridge traditional SFSC definitions based on the number of steps, intermediaries within food networks, and geographical proximity between producers and consumers. Researchers (Watts et al. 2005) first introduced the “umbrella” concept of alternative food networks. AFNs can be defined primarily as food systems alternative to global food systems (Jarosz 2008), characterized by agribusiness control, large-scale monocrop cultivation dependent on mechanization and chemical inputs, global supply and marketing strategies, and significant distances between production and consumption sites (Brunori et al. 2011). AFNs represent a wide range of alternatively organized food networks between producers, consumers, and various types of other spatial actors, and especially small local sellers (Kneafsey et al. 2013), while these networks are an alternative to standardized industrial, long, global, and industrial food networks (Grando et al. 2017).

Overview of identified elements of the AFNs definition is available in Table 1. Among the basic characteristics of these alternative food networks are rather the small-scale production activities, the involvement of local communities, an alternative perception of quality,

personal or informal ties, organic practices, welfare, or the application of alternative sales and logistics models (Goodman 2003; Watts et al. 2005; Holloway et al. 2007). AFNs contribute to the development of sustainable and environmentally responsible production not only through production approaches, but also by contributing to the minimization of transport distances, oil consumption, and energy consumption during long-term storage, and in many other ways. They have a tremendous impact on building social capital, as they are based on trust that functions as a mechanism that creates coherence and facilitates cooperation in the food networks (Thorsøe and Kjeldsen 2016).

Table 1. Overview of identified elements of the AFNs definition.

Authors	Element	Description
Marsden et al. (2000)	distance	shorter distances between producers and consumers
Jarosz (2008)	size of participating farms	small farm sizes and small production scale
La Trobe and Acott (2000)	holistic production approaches	holistic production processes, contrasting with large-scale production
Werkheiser and Knoll (2014)	traditional, organic, or welfare production methods	commitment to the environmental and social dimensions of sustainable food production
Kloppenburger et al. (2000)	participation of non-certified alternative agriculture farms	organic food producers whose food does not have to be formally certified also participate in AFNs
Jarosz (2008)	alternative outlets	e.g., food cooperatives, farmers' markets, food banks
Thorsøe and Kjeldsen (2016)	demand and intermediaries support the growth of small, organic farms	this support relationship is characterized by willingness to pay significantly more for quality product
La Trobe and Acott (2000)	a common-value niche pervades the entire network	producers, intermediaries and consumers often share the same value framework
Jarosz (2008)	parallel use of several sales markets	considering the range of sales markets, they can be considered combinable
Pedersen and Kjaergard (2004)	use of seasonal labor	AFNs are often tied to seasonal production, and therefore entire chains are of seasonal nature
Holloway et al. (2007)	integration of organic and traditional practices with the use of ICT	producers in the "bottom of nature" also ensure sales or promotion in an urbanized area using modern technologies

However, some authors still argue that global food systems and AFNs may not differ so distinctively in all cases. Goodman et al. (2012) noted that not all AFNs can be considered inclusive, fair, and promoting equal and non-discriminatory access to food. Similar to global food systems, AFNs can use industrial production techniques, intensively use employees, and still produce organic food (Qazi and Selfa 2005). Also, farms involved in AFNs may employ labor from different regions and countries and internalize knowledge and practices that are not local, or "traditional" (Holloway et al. 2007). The common-value niche of consumers demanding local food security and access to healthy food has led to the emergence of "food sovereignty movements", which demand a local approach to achieving food security and at the same time bring wider social, economic, and environmental benefits through various local food-oriented projects. These movements tend to integrate at the national and international level, such as the Australian Food Sovereignty Alliance (Leventon and Laudan 2017). AFNs are stimulated by many external influences. In addition to the often-discussed role of shifts in consumer preferences and behavior, growth in the volume of AFN can also be indirectly caused, for example, by the legislative changes in agricultural land protection laws (Condon et al. 2010).

Direct sales, or adoption of novel marketing tools, allow farmers and consumers to build a closer relationship and develop bonds of trust and cooperation (Pearson et al. 2011). The involvement of consumers in alternative food systems is much more difficult to

describe due to the multidimensionality of their involvement, as the traditional neoclassical model of product selection based on the trade-off between price and quality does not apply (Khan and Prior 2010). The consumer becomes an active actor, or even a planner or implementer, of the AFN. Consumers within AFNs share a wide spectrum of social and environmental values, ethical and moral values, and values of collective health and responsibility (Kirwan 2006). They are motivated to participate in AFNs to gain access to high-quality food in terms of taste or freshness, due to adopting a healthy lifestyle, or due to political or environmental motives, such as opposition to conventional agriculture or protection of nature. In addition, consumers often want to support a particular farmer and their philosophy or appreciate the community-building aspect. If we want to understand the diversity and contingency of AFNs, it is necessary to consider both rural and urban contexts (Jarosz 2008). There is a sufficient volume of population living in urbanized centers, representing a subsoil for the dynamic development of actors with small-scale production, and small isolated food networks focusing on different consumer segments (Grando et al. 2017). AFNs operating in the urban–rural interface use the opportunity of relative geographical proximity to urban markets (Jarosz 2008) to allocate themselves in peri-urban zones (Zoll et al. 2017). Specialized short food chains can ensure access to fresh and high-quality food in urbanized areas, otherwise inaccessible to different segments of consumers. Indeed, AFNs develop in the context of the processes of growing urbanization and restructuring of rural economies, as the agricultural sector in rural regions adjacent to metropolitan areas restructures from agro-industrial forms of production towards small-scale farming. Urban growth creates demand for seasonal, locally grown food as well as space for housing and business development (Jarosz 2008). However, the potential for the development of AFNs is also determined by the amount of agricultural land in the city's surroundings and the amount of agrarian activities within the nodal region (Sage 2003; Werkheiser and Knoll 2014; Zakic et al. 2014).

AFNs were themselves conceptualized as innovations per se as part of the initial interest in the topic (Vercher 2022). Other studies perceive AFNs as a form of social innovation stemming from food communities (Kirwan et al. 2017), which can be understood as grassroots communities in the context of socio-technical transition theory (Geels and Schot 2007). A number of authors therefore understand the formation of alternative, localized links between consumers and producers in small food systems as an SI process (Vercher 2022), while several studies have already evaluated its evolutionary patterns (Geels and Schot 2007; Marletto and Sillig 2019). Despite the fact that AFNs are not necessarily associated with the emergence of new technical solutions, as long as they are based on DIY solutions of local communities (Neumeier 2012), a number of case studies have pointed to new, mainly digital technological solutions that enable the operation of AFNs from an organizational and process-based point of view (Samoggia et al. 2021).

This article presents a comparative study based on a series of case studies, within which it is possible to identify models of rural–urban AFN organization. We respond to the propositions of several authors (Grando et al. 2017; Mundeler and Rumpus 2012; Lutz and Schachinger 2013) to better describe, compare, and conceptualize the organizational models of alternative food networks, while we choose to focus on those AFNs allocated within rural–urban interfaces. Thus, the aim of our study is to map the currently applied, distinctive innovative organizational models of alternative food networks by identifying organizational and process innovations of these networks in available case studies. Such a research framework should lead to outcomes that can serve as the basis for implications both for policy and managerial practice. At the same time, the huge volume of the literature on the topic does not even attempt to conceptually define “set-ups” or “alternatives” in the models of specific AFNs (Paül and McKenzie 2013). In this study, we put forward the following research questions:

Q1: How can different models of AFNs be conceptualized?

Q2: How are these AFNs deployed within the space of urban–rural interfaces?

Q3: What innovative approaches towards AFN organization can be identified in a sample of investigative case studies?

Based on the current knowledge in the scientific literature, we hypothesize in particular that AFNs cannot be uniformly defined due to the fact, that from an organizational point of view, they represent considerably heterogeneous socio-technical innovations that can be differentiated in terms of the motives for their creation and development; the position of customers, producers, and intermediaries in the network; competence structures of the involved actors; and even the extent of their localization.

2. Materials and Methods

The aim of our study is to map the currently applied, distinctive innovative organizational models of alternative food networks by identifying organizational and process innovations of these networks in available case studies. In order to achieve this goal, it was necessary to carry out a systematic review of the literature on the topic. However, the volume of the available literature for the keywords “Alternative food network”, or “AFN” for short, is still rather low.

The initial filter of the available literature was implemented in the Scopus database. In the first step of the selection, using a combination of keywords “Alternative food networks”, or “AFC”, and “urban”, we identified only 37 articles in total. We identified an additional 6 articles (total $n = 43$) through an additional search using the Research Gate and Google Scholar services. In the case of these 43 articles, we evaluated the objectives of the study, the methodological apparatus used, and the main conclusions in order to implement the second round of reducing the number of studies. In the second round, only case studies that described specific parameters of distinctive and innovative AFN networks were used for comparison. The remaining part of the literature was mainly used for processing the theoretical background. The criteria for the selection of articles for the systematic literature review were set as follows:

- Studies were published in a peer-reviewed journal;
- Studies were available in electronic form;
- They must be empirical studies, case studies, or the conclusions of another literature review;
- For the second round of selection, the content of the article must be a case study from which food flows in space can be identified;
- These studies must contribute to the knowledge of the diversity of AFN models.

In the final stage, our comparative study was based on 7 AFN models identified in 7 case studies (see Table 2 in Section 3). We used the methods of content analysis (Given 2008) and text mining (Salloum et al. 2018) in order to identify the “parameters” of AFNs, which we divided into the following categories: (1) types of producers involved in AFNs, (2) spatial distribution of producers within AFNs, (3) AFN coordination and management, (4) seasonality of AFNs, (5) intermediaries within AFNs, (6) storage models of organic products, (7) models of distribution to end consumers, (8) models of consumer involvement, (9) self-government involvement benefits, and (10) alternative activities within AFNs. Our intention was to evaluate the spatial distribution of individual AFN-related actors in a space and to understand the flow of organic food within the rural–urban interface. Therefore, we used a space-filling visualization technique referred to as a “sunburst”, which allowed us to display networks within a spatial hierarchy from the center (nodus) towards more distant layers of the space (Patterson et al. 2014). Such a schematic modeling approach is a suitable tool for the visual comparison of identified models. The resulting scheme represents a certain form of demonstration of a mix of opportunities; how the urban consumer can “get to” fresh food in the city thanks to alternative food networks.

Table 2. Overview of organizational models of AFN selected for comparative study.

AFN	Coordinator	Coordinator	Description	Article
Willem & Drees	SME	intermediary	grocery wholesaler of fresh products	Goodman (2003)
Swiss Retailer Pico Bio	SME	intermediary	wholesaler of regionally produced food	Goodman (2003)
Agricoltura Nuova	cooperative (producer)	producer	cooperative acting as producer, intermediary, and service provider	Goodman (2003)
BLAP Barcelona & Parc Agrari	public–private partnership	consortium (both horizontal and vertical)	a public–private consortium managing the agricultural park, which founded 4 sales companies	Paul and McKenzie (2013)
Bioagriturismo farm, La Porta dei Parchi	large enterprise and consortium of small farms	producer	a consortium of farms of various sizes that have introduced the “Adopt a Sheep” program	Holloway et al. (2007)
‘Fødevarefællesskaberne	food co-ops	intermediary / consumer	a community of consumers satisfying their own needs	Thorsøe and Kjeldsen (2016)
FOOPLE project Australia	AFSA—Food Sovereignty Alliance	intermediary	the intermediary searches for and contracts land that will be cultivated by small farmers sharing the profit with the landowners	Dixon and Richards (2016)
Meine Ernte & Erntekeilgarten	actors of urban agrisystems	producer	self-cultivation or collection within (mobile) community gardens or public orchards	Opitz et al. (2017); Gauder et al. (2018)

3. Results

3.1. Identified Organizational Models of AFNs

In this chapter, we present the results of the comparative analysis. In the 37 filtered case studies, we identified a total of seven significantly different AFN organizational models. For our comparison, we therefore selected seven distinctive case studies of AFNs which represent different organizational models of AFNs, characterized by the successful co-deployment of certain organizational and process innovations. These AFNs are described in more detail in Table 2. Each of the seven identified AFNs meets the criterion of connecting producers in the peri-urban interface with consumers in the city in a certain way. Specifically, we evaluated alternative food networks: Willem & Drees, Swiss Retailer Pico Bio, Agricoltura Nuova, BLAP Barcelona & Parc Agrari, Bioagriturismo farm, ‘Fødevarefællesskaberne, and FOOPLE project Australia.

These AFNs differ in their philosophy, network organization, coordination models, competence structure of the actors involved, spatial distribution of actors involved, who represents the intermediary and what are the roles of the intermediaries within the model, and the roles and responsibilities of the consumers. First, we briefly introduce them, and explain their organizational patterns using the figurative concentric zones model.

The example of Willem & Drees is represented by “Model A” in Figure 1. It can be considered a relatively conventional AFN model on the rural–urban axis, where the large warehouse represents an intermediary that ensures the purchase of organic food on small farms located mainly at the level of rural municipalities within the nodal region of a city, or at the level of slightly more distant locations, but still mostly on a regional level. The innovation, or the “alternative” aspect, of the model of Willem & Drees consists in packing food directly on farms and transporting it to their own warehouses, which is an example of cross-docking (i.e., without storage—on one side of the warehouse, shipments of fresh food arrive; on the other side, they are directly loaded for delivery to the city). They supply fresh food to schools and other social facilities, or directly to kitchens and canteens of companies

in the private sector. At the same time, they also allow for orders from households on their website. This is therefore an example of a network in which the coordinating actor is the intermediary.

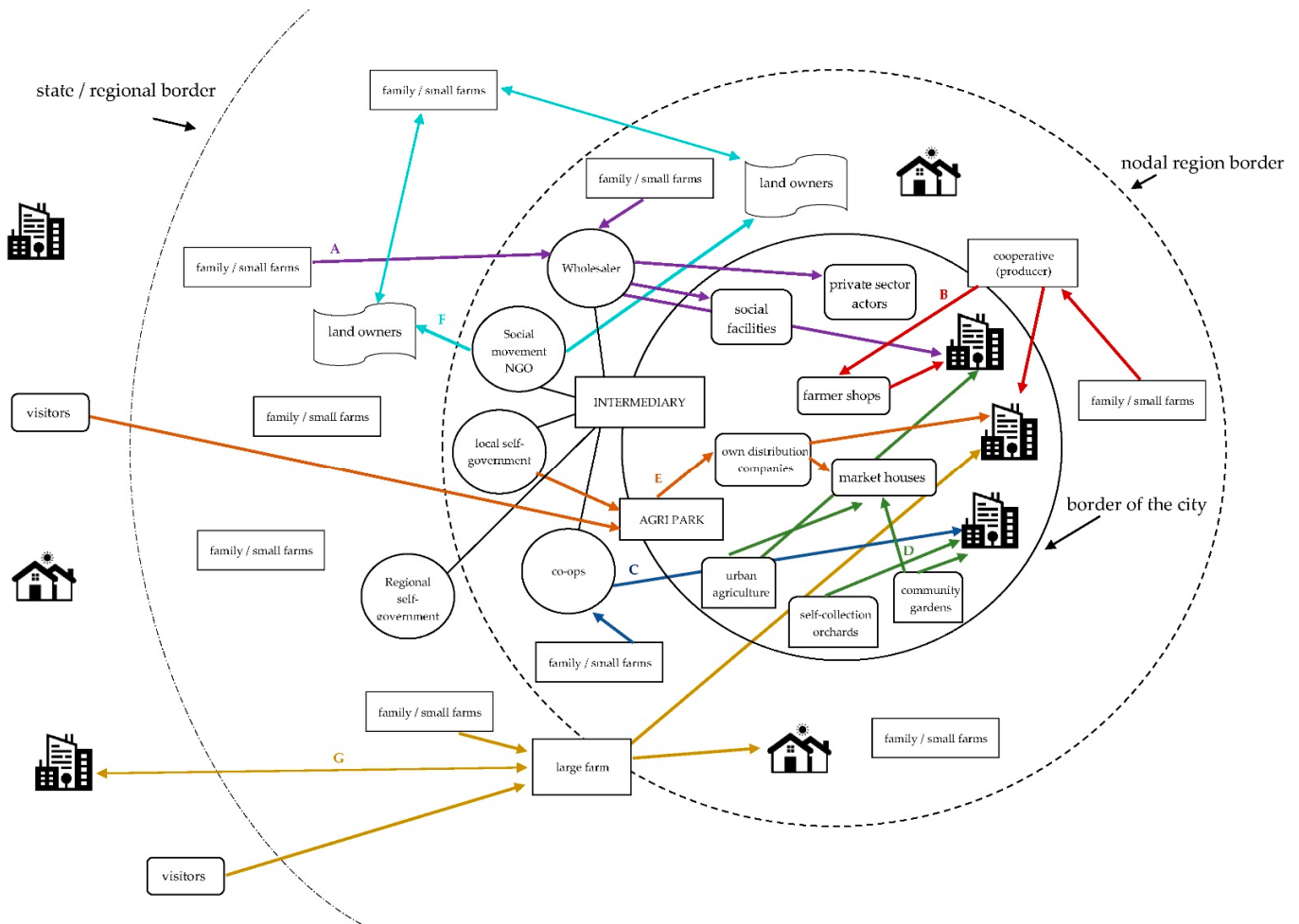


Figure 1. Expression of identified models of AFN (marked A–G) within a concentric-zones-based scheme. Concentric zones refers to the different spatial levels at which the scheme distinguishes unidirectional and bidirectional flows; flows represent the flow of food, capital, or people (more detailed explanation of flows can be found in case studies); wholesaler, social movement NGO, local self-government, regional self-government, and food co-ops (linked by dashed lines) can be localized as intermediaries either in the city or in the nodal region.

In “Model B”, the agricultural cooperative Agricoltura Nuova is the initiator of the AFN and the coordinating actor. The cooperative acts as a producer and importer from other small farms with the active involvement of consumers. The cooperative distributes products using a wide range of distribution channels (four direct sales points; two own farm shops with an expanded assortment, e.g., organic drugs, also distributes food to a network of healthy shops, while additionally providing services to the city in the field of green space maintenance). The cooperative is mainly engaged in the production of food, but it also delivers green services to the city both “on-farm” (direct selling, hospitality, locations for picnics and parties, didactical farming, etc.) and “off-farm” (biomass collection and composting, garden maintenance). The farm is also experimenting with more sustainable resource use (solar energy, organic waste, and biodynamic farming).

Models A and B can be understood as “baseline models” of AFNs, when the intermediary uses the opportunity to satisfy the demand for “fresh” and “local” food in the

conditions of different communities living in the city, while the described organizational models of AFNs are highly replicable. In both cases, a private venture initiates and manages the network; however, in Model B, it is intermediary. They are not a source of formation of local grassroots communities, but rather, through the use of digital technologies, the intermediaries look for ways to selectively target potential customers in the city or link the offer of fresh and local food to existing businesses or social facilities.

“Model C” represents food co-ops—associations or cooperatives of consumers who want to ensure joint purchases of fresh food from small farmers with organic production. They can be considered “community NGOs” or “community-led enterprises” with a flat hierarchical structure without decision-making bodies. Consumers fully define the activity of food co-ops. They establish the so-called “work schedules” to divide tasks between them (shopping, logistics, packing, etc.). In the case of the famous Danish Fødevarefællesskaberne, these communities usually buy from 3 to 15 farms and create “food packs”. Packaging, logistics, marketing, events, and administration are provided by members. Each person pays a one-time membership fee of DDK 100 (EUR 15) and is committed to at least 3 h of work each month for the food communities. Orders are placed from one week to the next and no long-term contracts securing delivery are signed. Members pay DKK 100 for a bag and the next week they can pick up a bag of locally produced organic vegetables.

There are actually several micro-models behind what we mark as “Model D”. They are the so-called models of urban agriculture, when fresh food is produced directly in the city and is also consumed in the city. Examples of urban agriculture are developing companies and community activities that are dedicated to hydroponics (conventional urban agriculture), but also community-led social innovation actions, such as community gardens, self-harvesting gardens, and urban edible gardens. A characteristic feature of these AFNs is that the consumer either performs self-harvesting, or are themselves in the position of producer and consumer. However, an important insight is that the activities of community-led urban agriculture can eventually lead to the development of food delivery schemes that can cross the borders of the city. For example, a community garden could set up a daily sale scheme and start providing surpluses to the public for a fee.

“Model E” in our scheme represents the agricultural park governed by the public–private consortium BLAP Barcelona, consisting of associations of small farmers, associations of municipalities, and regional self-government (organizational scheme along the vertical and horizontal axis) cooperating with experts and universities, while most farmers are located in one area—agricultural park Baix Llobregat. The agricultural park was established as a result of the high concentration of small farms near Barcelona. The land here is plowed by a large number of farmers who are jointly connected to centrally organized sales networks. Farmers’ sales are realized in the form of several direct sales points and four enterprises with their own box schemes. This park is referred to as the “Courtyard of Barcelona”. The Baix Llobregat park area today encompasses nearly 3000 hectares of cultivated land and continues year-round to put fresh lettuce, tomatoes, carrots, cabbage, cauliflower, and a profusion of fruits on Barcelona’s tables. This model represents an innovative example of the use of agricultural activities for the development of tourism. Within the park we can find cycle paths, rest areas, and a large arboretum (botanical garden). In addition to supplying Barcelona with fresh food, the park can be considered a significant tourist attraction.

Under certain circumstances, a social movement can also be the initiator of the creation of an AFN. “Model F” is an example of the activity of the Food Sovereignty Alliance in Australia, which initiated the FOOPLE project. The essence of the project is to start activities that support and encourage new farming ventures on existing farms and underutilized land, including support for young and new farmers to develop skills and tools for successful farm enterprises. The model is simple—AFSA acts as an intermediary between landowners and future producers. Landowners can receive additional income or access to food by renting land, even if they are located in the city. The small farmer organizes sales via various channels.

In the latest “Model G”, different spatial levels are connected thanks to an innovative solution. The producer is a large farm, but it is part of a consortium with many other small farms (140) in the Abruzzo region of Italy. The farm introduced the innovative product “Adopt a sheep” with the aim of supporting small farmers in partnership and supporting the maintenance of the tradition of sheep grazing. Residents of cities, even residents of very distant cities, can adopt a sheep and thereby contribute to the operation of the farm and in return receive a package of sterilized or preserved, but high-quality, products directly to their home and a discount for the purchase of other goods and services at the farm. At the same time, this approach supports the growth of visits to agro-guesthouses or restaurants in the region, which arose as a result of the successful promotion of the territory with this innovative tool. In addition to direct sales at the farm, this consortium is able to distribute its products worldwide through distribution companies. These also help with “adopt a sheep” marketing. “Adopt a sheep” in itself makes little profit, but is the basis for making all the other activities viable and sustainable.

3.2. Identified Spatial Patterns of Observed AFNs

Scheme no. 1 demonstrates the links between producers, intermediaries, and consumers at four spatial levels: (1) at the level of the city, (2) at the level of the nodal region of the city (usually at the level of LAU 1 of the region according to the LAU classification), (3) at the national level, that is, in other regions in the country, and (4) outside the country. The individual colored lines describe the links and flows between individual types of actors located in various types of spaces in the case of Models A to G. Within our space-filling visualization, we differentiate specific spatial levels applying the principle of concentric zones. From the organization of networks within AFNs displayed in Figure 1, the following organizational models of AFNs are derived:

1. **AFNs localized within the borders of the city**, based on urban agriculture practices, that can potentially be a source of fresh food for citizens of other smaller settlements within the nodal region as well (D).
2. **AFNs based on interconnecting the rural farmers located within rural settlements adjacent to the city to the consumers in cities**, in which a key, coordinating role is usually played by a mediator providing logistics, temporary storage, and various forms of distribution to other-end sellers or directly to consumers. Consumers are mainly within the city (A, B, and C).
3. **AFNs located in peri-urban interfaces with distant customers**. Such AFNs can be understood as a network of small producers in the countryside near the city, or even a combination of producers in the city and surrounding rural villages, who deliver their high-quality durable or preserved products over long distances (E, F, and G).

Our investigation also revealed that defining an AFN as a type of short food supply chain over distance does not make sense. The distance between producers, intermediaries, and consumers varies with the size of the city, its nodal region, or the NUTS II or NUTS III region of the country. An SFSC can also be considered a short, two-step network between the producer, the intermediary, and the consumer, whether at a distance of 50 km and 500 km. The compared cases also demonstrate the considerable degree of organizational diversity in AFNs. Firstly, it appears that AFNs emerge both from the bottom-up principle—from the initiative of farmers, their associations, or intermediaries looking for access to markets in an urbanized area with the aim of increasing the value from production—as well as from the top-down principle—when the local government, or cross-sectoral local development partnerships, can look for opportunities to ensure access to more fresh food than those offered by standard wholesalers. Thus, it is possible to determine both AFNs driven by the needs of customers, or local communities, and AFNs initiated by producers and suppliers using the opportunity to satisfy the demand for high-quality, fresh, and local food. AFNs, in a narrower definition, can arise directly within urban systems, based on the interaction of a small volume of consumers with a small volume of producers in adjacent rural settlements. However, the evolution of small AFNs can lead to the linking of actors

even in a wider regional or national space, as demonstrated by, e.g., Models E, F, and G in Figure 1. Model B, for example, demonstrates the possibilities of integrating several small AFNs into larger food chains. The spatial extent of these networks is determined by the requirements for freshness and the speed of movement of food through the network, but this does not apply in the case of specially processed, high-quality food products that are canned or sterilized, in case of which AFNs may not be localized and may even cross the national border. The methods of cultivation, packaging, logistics, and transportation of food used determine the distance at which the product can still be considered fresh and of high quality. In this context, spatial definitions of “product locality” may also differ.

From an organizational point of view, the AFNs described in the sample can all be considered innovations, or a form of social innovation, generating both economic and social value. Models C and D are a demonstration of the fact that, if the demand for fresh, active foods in an urbanized space is not met, local innovative communities are able to provide access to them through their own, community-led solutions.

3.3. AFN Model Set-Ups

If we want to better understand the possibilities of the “design” of AFNs and their management models, it is necessary to decompose the identified innovative networks into actors, institutions, links, competences, and applied models of coordination, or management.

The overview of the organizational set-ups of AFNs that were a subject of this comparative study are summarized in Table 3. AFNs can represent a combination of different types of producers, from small-scale organic farms, through to large organic farms, organic cooperatives, and hobby farms. The list of potential intermediaries between producers and consumers is even wider. In some models, the intermediary does not appear at all; in others, it is one or more of: producers, associations of producers, inter-sector partnerships, social movements, consumer organizations, or self-government. Among the main determinants are the traditionally quoted number of steps in the network, the spatial extent of the AFN, seasonality—that is, whether food is distributed year-round or only in a certain part of the year depending on the nature and properties of the food—and applied models of storage, logistics, and ordering. However, AFNs also differ considerably in the degree to which the consumer is involved in the activities associated with AFNs. In some cases, it is consumption-only; in others, self-harvest, provision of land to producers, participation in AFN planning, direct decision making within the AFN, direct participation on logistics, or preparation of food and packaging. The involvement of vertical partners, mainly the local or regional self-government, leads to the strengthening of mutual cooperation between network actors; supports the creation of social capital, the mutual exchange of knowledge and know-how, and the promotion and publicity of the AFN; improves access to external sources of financing activities within the network; and enables the farmers to enter planning processes (e.g., in the creation of soil protection legislation), whether or not it enables them to obtain a regional-quality label.

AFNs consist of a mix of various specific organizational, process, and often also technological innovations, which we found in the case of various aspects of network configurations, as shown in Table 3. Most of the models described above require technological innovation. For example, the operation of a large warehouse, which in Model A appears as an intermediary, requires advanced technological solutions for the field packaging of food, transportation, and refrigeration. These technological innovations are tools for the implementation of organizational innovations, such as the implementation of loading and distribution from a warehouse organized in the form of cross-docking, or for the operation of food banks. In addition to hard technologies, however, intermediaries in AFNs also use software solutions that can be considered investment-intensive (own communication platforms with network actors, customers, platforms for warehouse management, ordering applications, etc.) compared to conventional solutions (basic e-shops for direct sales). There are a lot of process innovations in only the seven presented models. These are related, for example, to crop harvesting processes, the distribution of food packages by consumers,

consumption directly on the farm, etc. AFNs also generate secondary innovative services that are co-deployed along with activities, securing the movement of fresh food within the network. In the case of our seven compared AFNs, we identified emerging shared-economy programs both within cities and directly on farms, agro-tourism and gastro-tourism on farms involved in AFNs, services taking care of farm animals by customers, educational activities and events connected with AFNs, the emergence of urban on-school farms, the filming of movies and series, and others.

Table 3. Overview of basic AFN model set-ups.

Types of Producers Involved in AFN	Spatial Distribution of Producers within AFN	AFN Coordination and Management	Seasonality of AFN
small-scale organic farms	within the borders of the city	producers	full-season AFNs
large organic farms	concentrated around the city	consortiums of producers	part-seasonal model
hobby farms	scattered around the city	public–private partnerships	chaotic model (e.g., co-ops)
organic cooperatives	scattered in wider space	associations of farmers	
		intermediaries	
		food co-ops	
		social movements	
		grassroots communities	
Intermediary within AFN	Storage Models of Organic Products	Model of Distribution to Final Consumers	Models of Consumer Involvement
without an intermediary	long-term storage model	continuous order system	consumption only
wholesalers of food	short-term storage model	pre-order system	self-harvest
public food banks	cross-docking	ordering apps and websites	providing land to consumers
food co-ops	food banks	through a networks of importers	participation in AFN planning
social movements		distribution by consumers within the community	direct decision making within AFN
		self-collection of products	participates directly in logistics
			participates in preparation and packaging
Self-Government Involvement benefits	Alternative Activities within the Frameworks		
land use planning	shared-economy shops		
social capital for farmers	agro-tourism and gastro-tourism		
transfer of know-how	taking care of farm animals		
joint promotion	gastro right on the farm		
improved access of farmers to external financing	educating children from urban schools on the farm		
marks of quality	filming movies and series		
better strategic plans	organization of educational events		

AFNs are not just simple supplier–customer logistics models. Within the framework of AFNs, the distribution of fresh food is further connected with additional activities. Alternative outlets are created at various “points” in the network, e.g., shared-economy shops,

agro-tourism and gastro-tourism facilities, and alternative programs for consumers, such as taking care of farm animals and educational activities on the side of both producers and consumers (e.g., educating children from urban schools on the farm, but also educational events focused on a healthy lifestyle or vegan culture on the side of civic associations or consumer co-ops). There are often key places in the network associated with the development of secondary activities of gastronomic tourism, agro-tourism, adventure tourism, or even film tourism. The majority of AFNs can be considered innovative in organizational and process-based contexts. The farms Fødevarefællesskaberne, Baix Llobregat park, FOOPLE project and Abruzzo can be considered cases when first, a consortium of actors delivered an innovative solution, and then this solution became a central part of the development of alternative food networks.

4. Discussion

Alternative food networks are predominantly, although not exclusively, bottom-up-formed (Berti and Mulligan 2016) supply–customer chains that operate outside the industrial globalized supply chains (Forsell and Lankoski 2016). However, their conceptualization is still insufficient (Lutz and Schachinger 2013; Grando et al. 2017) due to the significant diversification of various organizational parameters of AFNs (Paül and McKenzie 2013). In this study, we focused on the evaluation of selected parameters of these networks, mainly the organization of networks, applied coordination models, competency structures of the actors involved, spatial distribution of the actors involved, roles of intermediaries within the model, and the roles and responsibilities of the consumers. We specifically addressed the question of the role of space and geographic proximity in the organization of these networks (Jarosz 2008). AFNs in many cases go beyond what we understand as supply–demand chains (Forsell and Lankoski 2015; Allen et al. 2017). Identified AFNs, in most cases, can be understood as a form of an SFSC, or an SFSC extended in time and space, which in principle does not deviate significantly from the dimensions of SFSCs defined by Renting et al. (2003). The vast majority of authors understand the term “Alternative Food Networks” (AFNs) as more than an umbrella term and rather as an academic body of literature concerning the emergence of alternative food practices as a reaction against the standardization and globalization of the industrial food system (Goodman et al. 2012). However, some authors still prefer to use this “umbrella” term due to the fact that it inherently integrates the aspects of organizational innovativeness, heterogeneity, and continuous evolution of SFSCs (Holloway et al. 2007; Kneafsey et al. 2013; Thorsøe and Kjeldsen 2016), which is caused by the growth in the level of involvement of engaged consumers, active local communities, and various “social innovators” in the emergence of AFNs. Therefore, we consider AFNs to be a broader concept that can be defined more accurately by the introduction of organizational innovations than by the degree of localization, which is the dominant element of SFSC definition.

Based on the evaluated cases, we hypothesize that the defining elements of AFNs compared to the understanding of conventional LFSs can be considered to be: (1) multi-dimensional links with various horizontal and vertical actors (e.g., intensive cooperation of network actors with self-government and state authorities, and on the other hand with citizen grassroots initiatives), (2) innovative organizational models of the network, which in certain circumstances enable overcoming distances, and (3) the use of innovative models for the organization of production, distribution, or sales. At the same time, we have identified three types of AFNs defined with regard to the predominant direction of flows in the urban–rural interface: (1) AFNs localized within the borders of the city, (2) AFNs based on interconnecting the rural farmers located within rural settlements adjacent to the city to the consumers in cities, and also (3) AFNs localized in the peri-urban interface, with distant customers. Even highly localized AFNs can gain access to consumers outside their locality or region through tourism. AFNs break certain ideas about LFSs; sometimes they are created by the fusion of smaller LFSs, and despite the frequent assumption that small-scale farmers are involved in them, we have identified cases of the involvement of

large farms (Kneafsey et al. 2013), which can be practically initiated and coordinated by any actors, from activists to governments.

Finally, addressing the results of Geels and Schot (2007), we do not suggest considering the majority of AFN cases as social innovations. Community-led AFNs could be perceived as organizational SIs. However, short networks satisfying today's ubiquitous demand for organic food, organized by a commercial private firm (regardless of whether it primarily figures in the network as a producer or some commercial sale intermediary), may not meet the criteria for addressing the specific social needs and social values that are, in a sense, characteristic for SI. The models of food production, distribution, and sales within AFNs are connected with the introduction of organizational, process, and technological innovations (Manganelli et al. 2020), which make it possible to increase the efficiency of food distribution through the network, increasing the environmental sustainability of food production and the inclusiveness of access to fresh food. Organizational innovations connected with the management of food flows in the network are usually associated with the deployment of both operational or informational and communication technologies. AFNs emerging on a bottom-up basis can have the characteristics of a partnership, cooperative, community, or social movement (Leventon and Laudan 2017) which collectively addresses its needs to ensure access to fresh and high-quality food through community-based action. We are practically talking about the grassroots communities (Seyfang and Smith 2017), which are the source of AFNs formed based on the bottom-up principle. Therefore, we can conclude that AFNs emerge via the establishment of new networks initiated by coordinating entities (public–private partnerships, associations of farmers, large farms, intermediary wholesale ventures, self-government, etc.) or via the reconfiguration of existing mechanisms between actors in a network, in line with Vercher (2022). It is therefore possible to agree with the definition of AFNs as hybrid, bi-focal, and commercial and at the same time social innovations generating both economic and social value.

Certain implications for policies emerge from the presented results of this study. First of all, we believe that the networks themselves can be considered an innovation, whether we understand them as an organizational innovation of a market nature or a social innovation generating primarily social benefits, such as improved access to healthy food and an increase in the level of country's food security, the development of ecological agriculture and soil protection, or a contribution to public health. In the conditions of some, especially central–eastern EU countries, one cannot speak of an innovative system generally supporting the emergence of localized, innovative food chains. In this European area, local and regional government representatives are not aware of the issue, and at the same time, it can be assumed that there is a generally low recognition of the opportunities that AFNs could create in order to ensure access to fresh food for key social groups (children, seniors, disabled people, and sick people). AFN support programs are available mostly to actors within the agro-food complex, which, however, is also largely dependent on EU CAP resources. We would like to encourage the formation of local AFN projects in cities, which should be supported by special state-provided instruments and programs. The municipality can compensate for the lack of bottom-up AFNs through the organization of its own networks. In this direction, AFNs based on a public–private partnership of the city and a group of farmers in the nodal region could be a safe bet for local governments, while the city could, through a food bank and its own logistics and ordering system, meet a stable demand for fresh food from healthcare or educational facilities and other social services established by the municipality.

We would like to highlight the need for further research conceptualizing diverse SFSCs. Further research should be able to explain how community-led AFNs stem from various local communities and to describe the evolutionary patterns of the expansion of community-led AFNs. We still do not fully understand the role of relational proximity between actors in AFNs and how these relational issues affect applied models of network co-management. In addition to the above, research on the topic would need cost–benefit studies that accurately evaluate the value that customers and producers create for themselves, especially in the case

of community-led AFNs. Finally, we still require rigorous knowledge on the trajectories of the innovation process connected with the introduction of both unique and replicable digital solutions allowing the establishment of diverse AFNs.

5. Conclusions

Alternative food networks represent a multidimensional opportunity that leads to the satisfaction of consumers' demand for high-quality food on the one hand, and enables small farmers to increase value creation from production on the other. Actors involved in the network can be involved in different "points" of the network; the way they are involved can also change with the development of the network. The evolution of networks creates the expansion of their spatial distribution and the gradual implementation of new and innovative solutions in logistics, storage, marketing, ordering systems, and the involvement of consumers in the process. Variability in AFNs is mainly a consequence of the different arrangements of the networks in space, different types of producers involved, models of AFN coordination and management, the seasonality of AFNs, intermediaries within AFNs, applied storage models and distribution models, models of consumer involvement, and alternative secondary activities within AFNs. We have identified three types of AFNs defined with regard to the predominant direction of flows in the urban–rural interface: (1) AFNs localized within the borders of the city, (2) AFNs based on interconnecting the rural farmers located within rural settlements adjacent to the city to the consumers in cities, and also (3) AFNs localized in peri-urban interfaces with distant customers.

Author Contributions: Conceptualization, L.L.; methodology, M.H.; software, M.H.; validation, L.L. and M.H.; investigation, L.L. and M.H.; resources, J.J.; data curation L.L. and M.H.; writing—original draft preparation, L.L., M.H., and J.J.; visualization, M.H.; supervision, J.J. All authors have read and agreed to the published version of the manuscript.

Funding: This research and the APC was funded by grant of The Slovak Research and Development Agency, grant number APVV-21-0099.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

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