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Abstract: This article based on the example of Lithuanian pilot areas (districts) aims to supplement the knowledge about the role and functions of stakeholders in the development of local food systems (hereinafter LFS). An analysis of the scientific literature has revealed a clear role of stakeholders in different countries, but this approach and experience are unique in each country. The results of the case study of Lithuania showed that an analysis of pilot areas and a questionnaire survey at the municipal level identified 14 institutions that could make a significant contribution to the organization of LFS. However, horizontal links between LFS stakeholders are relatively weak, functions and roles are not clearly defined in the pilot areas. Research methods used in the article: analysis and synthesis of scientific literature, document analysis, case study, questionnaire survey, logical abstraction, comparison method. The insights and results of this article contributed to a deeper understanding of LFS as a phenomenon in Lithuania, and from a practical point of view, other districts of Lithuania could discover, self-assess and adapt their LFS organization principles, identify stakeholders and their functions.

Keywords: stakeholders, stakeholders' functions, local food system, Lithuania

Santrauka: Šiuo straipsniu, remiantis Lietuvos pilotinių rajonų pavyzdžiu, siekiama papildyti žinias apie suinteresuotųjų šalių vaidmenį ir funkcijas plėtojant vietos maisto sistemas (toliau VMS). Mokslinės literatūros analizė atskleidė gana aiškų suinteresuotųjų vaidmenį skirtingose šalyse, tačiau šios patirtys yra unikalios kiekvienoje šalyje. Atlikus pilotinių vietovių analizę ir anketinę apklausą savivaldybių lygmenyje, buvo identifikuota 14 institucijų, kurios galėtų svariai prisidėti prie VMS organizavimo. Tačiau horizontalūs ryšiai tarp VMS suinteresuotųjų pilotiniuose rajonuose yra gana silpni, funkcijos ir vaidmenys nėra aiškiai apibrėžti. Straipsnyje naudoti mokslinės literatūros analizės ir sintezės, dokumentų analizės, atvejo analizės, anketinės apklausos, loginės abstrakcijos, palyginimo ir kiti metodai. Šio straipsnio įžvalgos ir rezultatai prisidėjo prie VMS kaip reiškinių gilesnio pažinimo Lietuvoje, o praktiniu požiūriu ir kiti Lietuvos rajonai galėtų atrasti, įsivertinti ir pritaikyti jiems būdingus VMS organizavimo principus, identifikuoti suinteresuotuosius ir jų funkcijas.

Raktiniai žodžiai: suinteresuotieji, suinteresuotųjų funkcijos, vietos maisto sistema, Lietuva

Highlights:

- The LFS is a phenomenon whose functioning depends on the participation of various stakeholders and short food supply chains.
- There is a gap between the motivations and competencies of local authorities that are interested in creating and organizing an LFS.
- Public-private partnerships can make an important contribution to the development of the LFS and the role of stakeholders in the development of LFS is crucial.

1. Introduction

The country's economy depends on the share of the local producers in the country's food market and the active participation, balance of supply and demand of economic entities. Some, especially small producers of agricultural and food products, have no connection with the consumers of their products, and the farming system itself is at high risk (Bertolozzi-Caredio et al., 2021), because small farmers produce raw materials, low value-added products. The cultivation of monocultures (improper crop rotation, orientation towards the export of raw materials), undeveloped short food supply chains, the globalisation and other causes create "desertification of the food market (by analogy with

the definition of soil desertification)", where there is a shortage of local, fresh, high biological value food products in Lithuania. The desertification of the market has been caused by the concentration of public procurement on the lowest priced products, rather than good quality, healthy-friendly products, which are fed to children in Lithuanian kindergartens, schools and hospitals.

The growing country's food industry has increased food availability and product lead times while increasing the concentration of production, processing and marketing capital in major European cities, including Lithuania. At the same time, the awareness and risk perception of many consumers has increased (Deller et al., 2017; Bertolozzi-Caredio et al., 2021). Consumers began to oppose the dominant, global food supply chain model, and farmers began to adopt a short food supply chain strategy. However, a very small proportion of food products reach consumers directly, with or without a minimum number of intermediaries. Due to the small scale and relatively high logistics costs, local food producers cannot compete in long food supply chains, and so far, majority of the consumers are more dependent on imported products with long food miles (Guthman, 2008; Enthoven and Van den Broeck, 2021). This results in a small or insufficient number of buyers looking for local products, which are often handmade, of higher biological value, seasonal but of varying quality, and of a narrow range. This becomes a challenge for farmers and local producers as it is more difficult for them to sell their products. To address these challenges, researchers (Barling et al., 2002; Martinez et al. 2010; Kneafsey et al., 2013 etc.) recommend strengthening the local economy through collaboration and cooperation between producers and consumers and other stakeholders (Ingram et al., 2010; European Union, 2020), developing alternative food supply chains and LFS (Guthman, 2008; Garcia-Gonzalez and Eakin, 2019). Researchers (Vitterso et al., 2019) identify public sector organizations that provide meals for preschool and school children as one of the most important buyers of local products. The organization of LFS is highly dependent on cooperation between the public, private and non-governmental sectors, horizontal partnerships, stakeholder knowledge and expertise, and a favorable legal and political environment. The development and organization of the local food system does not happen by itself. The system is developed, organized and participated by stakeholders. The skills and motivation of stakeholders to participate in the organization of the system are very important for the efficient operation of the system. As there is many stakeholders (Atkočiūnienė et al., 2018; Garcia-Gonzalez and Eakin, 2019), it is important to identify their roles and functions, to provide targeted activities organized to achieve the desired result, seasonal local foods.

The local food system has been widely discussed in various contexts. It is important because it defines the principles for ensuring the stability of the Food system through its internal balance and coherence with the external environment. Considering the main goal set for Lithuanian agriculture and food industry – "to provide the society with quality food and raw materials for the production of high value-added products" (Nutarimas dėl..., p. 59), as well as the obligations of national level institutions to promote new forms of cooperation and consultation, in particular 'the promotion of regional or local food systems based on the principle of shorter food chains' (Nutarimas dėl..., p. 59), it is important to identify the role and functions of stakeholders in development of local food systems.

Despite the strong interest in the development of local food systems, there is still a lack of structured knowledge, and it is not entirely clear how stakeholders can influence, contribute to the design and organization of the local food system. Accordingly, *the aim of the research* – to identify stakeholders and their role in local food system development. *Research methods used in the article* include analysis and synthesis of scientific literature, document analysis, case study, survey (applying questionnaire), logical abstract, comparison method.

The aim to present the results of research in this field to an international audience is not only a desire to reveal the research carried out by Lithuanian researchers, but it is also a challenge, as the topic of LFS in Lithuanian social science discourse is poorly analyzed and justified. Therefore, this study was important both theoretically and practically, as it allowed to reveal which stakeholders are important at the local level in Lithuania in the analysis of LFS issues. Moreover, the results expanded the knowledge about the development and organization of LFS in Lithuania, in addition, provided the pilot districts with data on who are the most important LFS actors in those districts.

The structure of the article is detailed as follows: *firstly*, the concept of local food systems is analysed and the role and functions of stakeholders in LFS are described according to theoretical aspects; *secondly*, research methodology is presented; *thirdly*, the results of empirical research are detailed, and conclusions provided.

2. Theoretical Background

2.1 Disclosing the concept of local food systems

The scientific literature provides a critique of the existing ambiguity between the concepts that make up the term local food system itself, highlighting the inconsistency between scientific approaches. The definition of a *local food system* varies widely (Table 1), so it can be assumed that the definition of an LFS in each case depends on the purpose of the system and the context in which the activities are organized.

Tab 1. Local food systems conceptualization. Source: own elaboration

Author	Concept	Stakeholders
Hinrichs (2000)	LFS is established in certain geographical areas, aims to be economically viable for farmers and consumers, as it applies ecological production and distribution practices, strengthens social justice and democracy for all members of the community. LFS is based on the direct agricultural market, which is based on obvious links and communication between producers and consumers.	<i>Farmers, producers, consumers, all members of the community</i>
Feagan, Morris, Krug (2004)	LFS is a sustainable, small-scale, high-morality, natural, democratic structured organizational system in a given geographical area – an alternative to global (continental, national) and uneven food systems.	<i>Developers of a structured organizational system in a particular geographical area</i>
AEA Technology (2005)	Food (including organic) produced in sustainable production, processing and marketing subsystem whose physical and economic activities are controlled locally or in the region in which it is developed provides economic, environmental and social benefits to the health of the people in that area.	<i>Producers, processors and traders of food (including organic), consumers</i>
Martinez et al. (2010)	LFS is a geographically localized rather than a national and / or international method of food production and distribution. Food is grown close to consumers' homes, distributed over a much shorter period of time and distance than usual in the global industrial food system. LFS is about sustainable agriculture. LFS is very important for small farms that are committed to developing exchanges, social and economic relations together.	<i>Developers of sustainable agriculture, small farms</i>
Municipal strategies... (2012)	LFS is a cyclical continuous system where farming activities take place in a residential area, including production, processing, distribution, availability, consumption, resource recovery and waste recovery.	<i>Developers of farming activities (production, processing, distribution, availability, consumption, recovery of resources and recovery of waste)</i>
Baltušytė, Zabelienė (2013)	The food system is made up of the environment, the people, the institutions and the processes by which agricultural products are produced, processed and presented to consumers. Every element of the food system affects the final availability and accessibility of products – the ability of consumers to choose appropriate and safe food and a healthy diet.	<i>People, employees of institutions, consumers</i>
Author	Concept	Stakeholders

Kneafsey et al. (2013)	A food system in which food is produced, processed and sold within a radius of 20 to 100 km. LFS is a group of interconnected processes that connect manufacturers to consumers and the public. LFS is a collaborative network that integrates the sustainable production, processing, distribution, consumption and waste management of agricultural products and food to enhance environmental, economic and social health in a given area.	<i>Food (including organic) produced in sustainable production, processing and marketing</i>
European Commission (2013)	LFS is the production, processing, sale and consumption of food in a relatively small geographical area	<i>Local food producers, processors, sellers, consumers</i>
Low et al. (2015)	Local and regional food systems are a network of all agricultural producers, farmers and fishermen in a given area, together with consumers, whose members are involved in the production, processing, distribution and sale of food.	<i>A specific network of all agricultural producers, farmers, fishermen and consumers</i>
Community, Local, and Regional Food Systems (2016)	Local and regional food systems are complex and interconnected networks that involve the sustainable production, processing, distribution, consumption and management of food in order to achieve social, economic and ecological change for the benefit of all local population.	<i>Food production, processing, distribution, consumption and waste management networks</i>
Berlina et al. (2017)	LFS is a complex social process in which innovation and marketing, systems management and the creation of social spaces of community are important, and not just farmers' products, knowledge and experience.	<i>Innovation creators, marketing, systems management specialists and creators of social community spaces</i>
Todorovic et al. (2018)	The organization of the LFS is based on two main principles: the production, processing, sale and consumption of food take place in a relatively small geographical area; the number of intermediaries in the chain is minimal.	<i>Developers of short food supply chains; merchants (brokers)</i>
Atkočiūnienė, Kiaušienė, Vazonienė, Čiūtas (2018)	Networking is organized locally, according to the principles of social partnership, in which the whole system operates in a specific geographical administrative unit, including agriculture, food production, processing, sales, development and maintenance of access to consumption, consumption itself and rational use of by-products and bio-waste.	<i>Local community, social partnership groups, farmers, food producers and processors and trade infrastructure developers, consumers, by-products and bio-waste managers</i>
Vitterso et al. (2019)	The organization of the LFS takes place in the same geographical region or area, regardless of the number of intermediaries involved. The food is distributed and sold at a short distance from the place of production.	<i>Consumer cooperatives, solidarity groups. "Box" scheme developers</i>
Enthoven and Van den Broeck (2021)	LFS may generally be related to three domains of proximity: geographical proximity (e.g., physical locality, distance between food production and consumption), relational proximity (e.g., close relationship between actors within the food system) and proximity in values (e.g., place of origin, traceability, freshness, quality).	<i>Producers, consumers</i>

LFS, which can be perceived as a mixed value creation organization, can be described as the fourth sector of society (Sabeti, 2009; Rask et al., 2018). These are organizations set up and run together (in partnership) by local government, business and civil society. Many legal forms of these organizations can be found in foreign countries (Berlina et al., 2017; Rask et al., 2018; Raftowicz et al., 2020), but still in the beginning stage in Lithuanian case. The main legal forms of organizations in the fourth sector of society can be

mentioned (Sabeti, 2009; Rask et al., 2018): civic/municipal organisations; common good corporations; community development corporations; community wealth organisations; cross-sectoral partnerships; ethical social institutions; faith-based enterprises; non-profit enterprises; sustainable enterprises.

The definitions of local food systems vary according to specific geographical boundaries or distances, the systems are based on the general objectives of farming, catering and food production and consumption, and bio-waste management. LFS is a complex phenomenon that can be defined in the context of the local economy as a system of support and security for the rural and urban population. LFS is a blended value organization that can operate according to a new concept in which public sector, non-profit organizations, businesses and investments are valued on the basis of their ability to strengthening the viability of local farms, better access to fresh, healthy food and market opening for start-up farmers, to create overall financial, social and environmental value in the production, processing, supply and consumption of local food products and the rational management of food waste.

2.2 Stakeholders participation and peculiarities of organisation of local food system

The role of stakeholders in LFS is multiple. Following rural development documents and place-based approach, usually these participants are named like stakeholders, local actors, key players. They include individuals and various local institutional structures (Gupta et al., 2018; Doernberg et al., 2019). Various authors recognize that not one person is responsible for positive changes in LFS, but mutual cooperation is the factor of success. These local (e.g., municipal) actors, following Barling, Lang and Caraher (2002), aim to improve local food security, health of local people and their social integration, strengthen local economies and preserve the environment where national policies have partially failed. Various literature emphasizes that different natural and legal persons are participants in the LFS (Table 2) but they play different roles.

Tab 2. Stakeholders participating in the local food system. Source: made by authors according Peemoeller, 2011

<i>Agricultural products producers</i>	Farmers and households, agro-processing and food businesses, including business communities and multifunctional centers.
<i>Food consumers</i>	Households, cafes, restaurants, as well as customers of publicly funded catering establishments.
<i>Agricultural service providers</i>	Providers of services to farmers and households, garden workers, natural resources, soil and water storage services, non-profit agricultural service companies.
<i>Local government and municipal institutions</i>	Lawmakers, district mayor, elders, district council members, spatial planning and environmental departments, tourism department, public health department, public procurement department.
<i>Community groups</i>	Rural communities and their associations, food bank, religious organizations, agricultural advisory service staff and chambers of agriculture consultants, informal eater organizations (vegans, omnivores, vegetarians, etc.).
<i>Health communities</i>	Hospitals, health professionals, public health offices, healthy communities.
<i>Educational communities</i>	Kindergartens, schools, colleges, high schools.
<i>Local business</i>	Credit unions, cafes, food processing companies, grocery stores.
<i>The media</i>	Television, radio stations, newspapers, social networks.

According to the authors of the article, the interests of LFS stakeholders are multiple and differ:

- *the interest of farmers* to sell what they grow at the lowest possible cost;
- *the interest of producers* to ensure a constant and timely supply of quality goods to their customers at the best possible price;
- *the consumer's interest* in being able to choose from the widest possible range of goods, to have guarantees for the purchase of essential food products, as well as good taste characteristics of the purchased food, attractive appearance, low price;
- *the interest of the communities* is to protect the environment, to meet consumption needs in order to achieve the best possible quality of life and foster a healthy lifestyle, as well as to develop the loyalty of community members to local producers and traders;
- *local government and municipal institutions* are interested in the vitality of jobs, quality of life, growth of the local economy.

A rational LFS can help reconcile the conflicting interests of the participants in the system and at the same time mobilize the local rural and urban community. Moreover, separate scholars paid attention to multiple aspects of stakeholders' role in LFS. Bertolozzi-Caredio et al. (2021) revealed stakeholder perspectives to improve risk management in European farming systems. The authors emphasized that various stakeholders could contribute to risk management in LFS, but the level of duties/responsibilities differs. Though from literature studies, it is clear that these local actors have an important role in creating LFS, however, there is not much material about who should organize or initiate LFS. According to this, multi-actors' roles in LFS become quite complicated adopting to different territorial units. This suggests that LFS is not an activity of separate individuals, but mostly is organized and implemented using a multi actors' or multi-stakeholders' approach (Garcia-Gonzalez and Eakin, 2019).

Those who are engaged in the local food system play a particular role and implement specific functions. This enables participants to know their own duties and responsibilities for the whole society going from very local to the national level, including different social groups and places. This idea reflects the social dimension of the sustainable development concept where attention is given to various social groups, especially those who experience social risks. As literature reveals (Guthman, 2008; Garcia-Gonzalez and Eakin, 2019), there is a general consensus in different countries that stakeholders who participate in LFS understand their activity – to promote and popularize local food and to strengthen local farmers and partnerships' role in local food markets. Different authors emphasized the importance of mapping out stakeholder roles and perspectives in LFS with special attention in enhancing and strengthening their participation, as well as highlighting potential areas where conflicts can appear (Smith and Stirling, 2010; Garcia-Gonzalez and Eakin, 2019). This enables us to explore gaps, assets, and opportunities in the LFS. Scholars emphasize the most seen functions of LFS stakeholders:

- provides a benchmark against which can be measured the impacts that food policy councils have over time (Campbell, 2004; Gupta et al., 2018; Garcia-Gonzalez and Eakin, 2019);
- helps to ensure dialogue and cooperation between those who develop and know about food and consume products, increase the likelihood of successful consumption (Ingram et al., 2010; European Union, 2020);
- leadership and sharing of good practice examples;
- the interests and perspectives of individual stakeholders can help identify individuals and/or organizations that play key roles in the organization (Garcia-Gonzalez and Eakin, 2019);
- active and mobilizing stakeholder engagement in the transition from intensive food systems to more sustainable usage of food (European Commission, 2020).
- transforming systemic activities from a traditional linear ("produce-process-consume-waste") model to a circular 3R ("reduce-reuse-recycle") food system model (European Union, 2020; SAPEA, 2020) etc.

Various research results suggest that efforts to improve LFS depend on the compatibility of different actors' ideas of what the system is, what it includes, and what it does not (Garcia-Gonzalez and Eakin,

2019). Concluding it can be remarked that there exist the diversity of roles and perspectives of separate stakeholders in LFS. As some documents propose there should be a clear understanding and agreement whether a local or regional stakeholder as a regulator, an implementer, a partner and/or a facilitator (European Union, 2020; European Commission, 2020; SAPEA, 2020):

- *the regulator's role* focuses on *legality and diligence* and therefore on setting the right conditions to obtain results;
- the successive step of government as an *implementer* moves *the emphasis to the actual achievement of public management results* while still ensuring legality and diligence;
- the governing process is populated by parties outside the government.

As stated in SAPEA (2020) report, such an approach discloses the importance of 'institutional lead' and the 'networking' in LFS. Following the implementer role, governance remains at the institutional level (some departments), associative structures and alliances, public entities. According to the networking approach, the power and governance can be open to other stakeholders (e.g., business community, the education and research community, associations and/or civil society).

Furthermore, scholars emphasize the role of stakeholders is crucial despite whether local food systems are created in rural, peri-urban or urban areas (Donkers, 2013; Szalók et al., 2019). LFS functioning is based on food policy governance structures where both vertical and horizontal cooperation is important (European Union, 2020).

Enthoven and Van den Broeck (2021) analysed the role of stakeholders in LFS, and they stated that governments and civil society organisations actively participate in promoting local food systems in the last decade. They emphasized that the mentioned stakeholders act toward more inclusive, resilient and sustainable LFS, which is closely related to consumers' safe access to healthy and nutritious food, improved remuneration of farmers, preservation of natural resources and climate change mitigation (UN General Assembly, 2015). Furthermore, LFS are organised and supported in various ways, with different types of selling, interaction ways, different levels of commitment between producers and buyers (consumers). As Enthoven and Van den Broeck (2021) noted, LFS may lead to farmers' sense of recognition in twofold ways: the ability to find out where and how a product was made, and consumers may show bigger interest in production practices and constraints when purchasing local food. Following the analysed literature, it can be concluded that multi-stakeholder participation and dialogue across all communities and stakeholders is fundamental for successful functioning of LFS. All the participating parts can play an important role and share particular responsibility.

In developing LFS, it is important to organize activities in such a way that they motivate farmers to produce products that meet consumer needs and motivate consumers (individuals, business organisations and government) to buy and consume local products. The main motives can be seen in the changing concept of food security, which is closely linked to the concept of sustainable development. Berti and Mulligan (2016) presented an innovative organizational strategy, "*regional and local food centers*", aimed at reconstructing the traditional agri-food system, bringing together small producers and consumers, individuals and families, as well as large buyers (Berti, Mulligan, 2016), which are mostly public sector bodies.

According to the authors, the development of LFS based on short food supply chains should network stakeholders, work together to define and pursue integrated nutrition and food strategic goals, which must consider certain consumer preferences at the local level:

- the ways in which food is produced and distributed are sustainable, chosen with respect for and to protect the earth's natural processes;
- food production and consumption are organized and managed in a way that is socially just, impartial, moral and ethical. Food must be produced and obtained without degrading human dignity and in a way that is friendly to nature;
- food must be nutritionally adequate for human needs (e.g., vegans, vegetarians), with access to food and personalized food (e.g., food for people with sugar debits);

- preference must be given to seasonal and locally grown food;
- responses to personalized nutrition market trends (e.g., new products to meet the needs of older people – products that have the nutrients, vitamins they need, or are easy to chew).

The principles and methods of organizing the LFS are not clearly and unambiguously defined in the literature, they are agreed upon in each case. General and specific organizational principles can be applied when organizing LFS. Supply chain organization is based on the principles of complexity, systematic, regulatory, specialization, stability and creativity (Rakickas, 2010), the organization of the short food supply chain must be linked to sustainability, waste-free production, direct communication and co-creation. Table 3 compares the organizational and organizational of short food supply chains principles and the organizational principles of LFS identified during the study.

Tab 3. Comparison of the principles of organization, organization of short food supply chains, organization of local food system (composed by authors following AEA Technology, 2005; Rakickas, 2010; Sarulienė, Vilkas, 2010; Skulskis, Girgždienė, 2016).

Principles of organization	Principles for the organization of short food supply chains	Principles of organization of the local food system
<ul style="list-style-type: none"> • Complexity • Systematization • Regulation • Specialization • Stability • Creativity 	<ul style="list-style-type: none"> • All consumers have access to safe, healthy products, accurate food information • Enable viable livelihoods to be made from sustainable land management, both through the market and through payments for public benefits • Geographical proximity • Social organization and quick response • Closer to the user • Closer to the producer • Fellowship, equal opportunities • Respect and operate within the biological limits of natural resources (especially soil, water and biodiversity) and minimizing resource inputs. 	<ul style="list-style-type: none"> • Transparency and value co-creation • Fairtrade • Environmental friendliness • Food taste, nutrition • Activities are based on common goals and competitiveness • Satisfying consumer needs and responding quickly to changes in consumer needs • Geographical proximity • Partnership and cooperation • Support the viability and diversity of rural and urban economies and communities

The development of LFS and the application of appropriate principles, the active involvement of stakeholders would contribute to a sustainable solution to the social, ecological and economic problems of the country's regions, enable farmers to create short supply chains of bio-valuable products and bring innovative farmers to a network of common interest. However, the question arises as to *what the scope of the LFS should be and at what administrative level it should be developed*. The aim of the study was to find out what the scope of LFS service could be, in which geographical area LFS could function successfully and LFS participants could carry out their activities in a targeted manner. Researchers raise these issues from a variety of perspectives: reducing environmental pollution, CO₂ emissions in the long and short food supply chain, optimizing logistics processes, and more (Bosona and Gebresenbet, 2011; Community, Local, and... 2016; Bertolozzi-Caredio et al., 2021). Coley et al. (2009) provided a critical comparison of the concept of food miles between a large-scale vegetable distribution system and a local supply system when a customer travels to a local farm store. Research has shown that a large-scale system is better at reducing carbon emissions only if the customer travels (back and forth) more than 6.7 km in the local system to purchase vegetables. Bosona and Gebresenbet (2011) found that 90 km in Sweden has been studied in the local food supply chain and with a stronger focus on product logistics transport is considered acceptable, and the majority of the 14 supply clusters of local food producers could be integrated into logistics centers. This has a positive impact on the market, makes the logistics system more efficient, improves environmental issues and increases confidence in food quality (Bosona, Gebresenbet, 2011). The European Commission's report to the European Parliament and the Council on the need for a labeling scheme for local farming and direct sales (Report..., 2013) defines the short food supply chain as 7.4 km

from the sale of goods by a farmer to a reduced number of intermediaries. This is the distance it takes to travel and drive to purchase products, is the limit when carbon emissions are lower than in the traditional food supply chain. All mentioned above refers to the understanding that even stakeholders participating in local food system is / can be determinate by the distance (food miles) which is very important in LFS. Accordingly, the authors of the article in the next parts present the research methodology and empirical research results concerning the topic.

3. Research Methodology

Organizing and implementing the research, it was considered the local food system to be a network of sustainable links between agricultural production and food production, processing, distribution, consumption and waste management in order to enhance environmental, economic and social health in a given area. This empirical research was intended to disclose how different stakeholders contribute to organizing and supporting local food systems in pilot districts. For consistency in the implementation of the empirical research, the following logical scheme was used (Fig. 1).

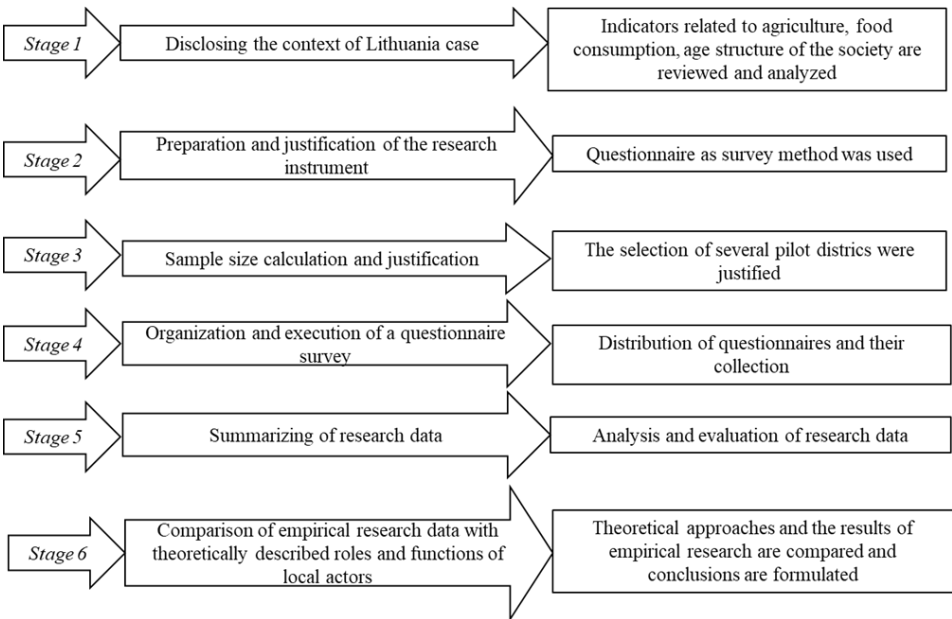


Fig 1. Logical scheme of empirical research. Source: made by authors

Research methods and instruments

The data used for the research were both primary and secondary. As given in logical scheme of empirical research, *firstly*, in the results part, the authors represent the context of Lithuania using secondary data, where the aim was to explore the agriculture as an important economic activity using particular indicators and to link it with local food. *Secondly*, the survey research method was used for the empirical study. Based on scientific literature analysis, the empirical research instrument was created in the form of a questionnaire and applied to the pilot districts (selected cases which described further in text). The questionnaire was designed as a combination of 28 questions, where 9 question groups were detailed. Some questions were selected for this article which closely reflects the research aim. Such questions include: the distance (service radius) at which local food can be transported to the final consumer to the maximum (Q12); the necessity to create a local food system in the district (Q13); identification of the role of key actors/stakeholders initiating and organizing the local food system (Q14); personal contribution of respondents in creating the LFS (Q15); the role of public catering organisations purchasing the local food (Q16 and Q17); local authorities' contribution to the development and maintenance of the local food system (Q18).

Most of the questions in the questionnaire were semi-closed (12 questions), allowing the respondent to record his / her own opinion, some questions were closed (13 questions in total) and 3 open-ended questions. At the end of the questionnaire, respondents were asked to indicate their contacts if they were interested in this research topic and would like to continue to obtain information or cooperate with the research.

Research sample

In order to determine the sample size for the empirical research (Table 4), the following factors were considered: the number of inhabitants in the pilot districts, the strategic directions and priorities of the district development include actions organizing short food supply chains and LFS. Accordingly, several cases were chosen – Radviliškis district, Jurbarkas district, Pakruojis district, Molėtai district. *The main criterion for their selection was that their local development strategies have a priority to develop short food supply chains.* There are relatively many small and medium-sized farms in these districts (except Pakruojis district). According to the different population structures in the respective district, it was assessed which district should be surveyed the most and were the lowest.

Tab 4. Justification of the population, sample size and response rate. Source: own elaboration

Pilot districts	The resident population at the beginning of the year (2017)	Share of the resident population (structure) in the pilot districts [%]	Minimum sample according to confidence level 95%	Returned questionnaires	Response rate (percentage of returned questionnaires in relation to sent questionnaires)
Radviliškis	37,112	36	137	97	71
Jurbarkas	26,800	26	99	59	60
Pakruojis	20,311	20	75	81	109
Molėtai	18,407	18	67	103	153
Total	102,630	100	378	340	x

540 questionnaires were distributed in total (and returned back 340 or 63%), i.e., more than the estimated minimum sample size, but the responses showed that fewer returns came from larger pilot area questionnaires than from smaller areas. This reversibility of the questionnaires may have been influenced by the following factors: some of the questionnaires were damaged and therefore not returned; the survey is conducted in the summer when the rural population is very busy. All the returned questionnaires were completed according to the sample of the population per district. Specialists from the Agricultural Divisions and the Chamber of Agriculture of the pilot district administrations, representatives of the Family Farmers' Union and the Local action groups helped to distribute the questionnaire.

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Empirical research has been guided by basic ethical principles (Bryman, 2012): voluntary participation; providing comprehensive information on the study; non-harm to respondents; privacy of respondents. The principles of voluntary participation and comprehensive information are ensured by acquainting respondents and experts with the objectives of the study, their role in this study, the developed empirical research tool, and asking them whether they agree to participate in the study. The experts' privacy and non-harm principles are guaranteed without giving their names, addresses and other personal information at work.

In order to know the pilot areas that participated in the study, it is important to know their location in the country (Fig. 2).



Fig 2. Pilot districts in the map of Lithuania.

Source: Savivaldybiu konturai.png, https://lietuvai.lt/wiki/Vaizdas:Savivaldybiu_konturai.png

The analyzed pilot districts represent different counties, have their own specific socioeconomic characteristics, vary in size according to population (Table 5).

Tab 5. Selected socio-economic characteristics of pilot districts*. Source: own elaboration

Pilot districts Characteristics	Jurbarkas	Radviliškis	Molėtai	Pakruojis
County	Municipality in Tauragė County	Municipality in Šiauliai County	Municipality in Utena county	Municipality in Šiauliai county
Area	1,507 km ²	1,635 km ²	1,368 km ²	1,316 km ²
Geographic location	Located in the southwestern part of Lithuania	The district is located in north-central Lithuania	The municipality is in the east of Lithuania	Situated in the north of Lithuania
Population (data for 2021)	24,235	34,576	16,876	18,215
Population density	22 persons/km ²	28 persons/km ²	13 persons/km ²	20 persons/km ²
Number of elderships	12	12	11	8
Number of schools	17	21	17	20

Note: information about pilot districts was obtained from municipalities internet links.

The research was carried out in Spring 2018. The data was analyzed using IBM SPSS Statistics Version 20. The limitations of the research were related to the distribution of questionnaires, that respondents from different districts have different perceptions of LFS and experience in organizing them.

4. Research Findings

4.1 The context of Lithuania case

Agriculture is an important economic activity in rural areas. According to Statistics Lithuania (2021), in 2020 employment in agriculture, forestry and fishing in Lithuania accounted for 5.7% of the total employed population (9.1% in 2015). The EU-27 average in 2019 was 4.4%. The number of farms in Lithuania has decreased by 12.1% between 2016 and 2020 and by 42.6% since 2007. The number of farmers and their family members decreased by 12.5% between 2016 and 2020. In Lithuania, the decline in the number of farms is due to several factors (LAEI, 2020): 1) increased risks in the agricultural sector (the sector is not characterized by financial performance and is vulnerable to climate change); 2) some older farmers have left the production of marketable agricultural products; 3) some farmers have refused to declare areas due to the stringent requirements of good agro-environmental condition. The number of farm holders and their family members decreased by 12.5% between 2016 and 2020. *It can be assumed that, compared to other activities, agriculture is riskier and more affected by climate change. In addition, small farmers are less profitable, which reduces the interest of the population in engaging in these activities. Therefore, the government needs to focus on improving the attractiveness of farming, and LFS can help to do this.*

Ensuring inclusive development of the area is relevant in Lithuania. Lithuanian municipalities (especially rural ones in Local Administrative Units) are unable to manage the phenomena of poverty and social exclusion, and the importance of transport, agriculture and manufacturing industries in the economy threatens environmental sustainability. Despite recent progress, inequality and poverty remain among the highest in the EU (European Commission report, 2018); no effective measures have been taken to reduce income inequality). At-risk-of-poverty rate in 2017 was the largest since Lithuania's accession to the European Union and amounted to 22.9% (European Commission report, 2019). The risk of poverty or social exclusion (28.3%) was one of the highest in the EU (21.7%) (European Commission report, 2020).

In Lithuania, the population has been declining due to negative natural change and high emigration. At the beginning of 2021, the country was home to 422,400 (15.1% of the country's permanent population) children (aged 0–14), 1,816,300 (65%) people aged 15–64 and 557,000 (19.9%) elderly people (aged 65 and older). Between 2016 and 2021, the population declined by 3.2%. The largest population declines are in the 15–19 and 20–24 age groups (21.5% and 22.6% respectively). However, the number of older people in Lithuania has been increasing (Fig. 3).

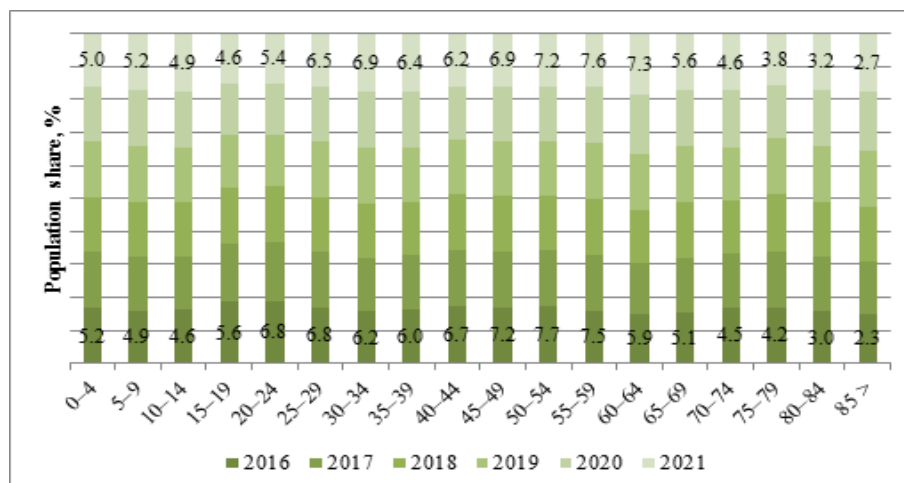


Fig 3. Population age structure, percent (Statistics Lithuania, 2021). Source: authors' elaboration

In particular, the number of people aged 60–64 has increased by 19.0% in the period under review. The share of people aged 60–64 in the total population increased from 5.9% in 2016 to 7.3% at the beginning of 2021 (i.e., by 1.4% p.p.), while the share of people aged 65–69 increased by 0.5% p.p.

(Fig. 2). The share of the elderly in the country's total resident population increased from 19.0% at the beginning of 2016 to 19.9% at the beginning of 2021. A sufficiently high proportion of elderly people warn of the potential for additional burdens on the state, and more services need to be made available to care for them. Šurkienė et al. (2012) consider demographic change and population aging to be one of the most pressing issues, as the increase in the number of older people poses new challenges for the functioning of social institutions. In this case, the organisation of a local food system (LFS) would not only contribute to public-private partnerships but also build social capital. Moreover, an aging population is conducive to the development of SFSC and the stability of markets.

The trends in per capita food consumption show that in 2020, compared to 2016, there was a slight increase in the consumption of vegetables (3.0%) and a significant increase in the consumption of fruit and berries (28.8%) (Table 6). *One of the factors contributing to the growth in consumption is Lithuania's participation in the Fruit and Vegetable Promotion Programme. In addition, more and more Lithuanians are interested in healthy eating and prioritise fresh produce bought from farmers.*

Tab 6. Per capita food consumption [% change]. Source: Statistics Lithuania (2021). Official Statistics Portal, Database (authors' elaboration)

Main agricultural products	2016*	2017*	2018*	2019*	2020*	Change in 2020 compared to 2016
Grain	0.82	-2.44	-9.17	1.83	-7.2	-16.3
Vegetables	1.02	-2.02	1.03	3.06	1.0	3.0
Potatoes	0.00	-8.51	1.16	-3.45	-3.6	-13.8
Fruits and berries	1.27	0.00	21.25	5.15	1.0	28.8
Meat and meat products	-2.27	10.47	4.21	-1.01	6.1	20.9
Meat and meat products without offal	-2.38	9.76	4.44	-2.13	5.4	18.3
Milk	1.90	2.18	0.00	-10.37	10.9	1.6
Eggs, pcs	0.00	4.02	22.32	-8.77	-2.7	12.9

* Annual increase or decrease in food consumption compared to the previous year.

However, when looking at trends in agricultural commodity production and per capita food consumption, it should be noted that, despite growing demand, consumer demand for locally produced fruit and berries is not being met, with 3.4% less fruit and berries produced in 2020 compared to 2016 (Table 7). Table 6 shows trends in production of the main agricultural products per capita.

Tab 7. Production of the main agricultural products per capita (% change). Source: Statistics Lithuania (2021). Official Statistics Portal, Database (authors' elaboration)

Main agricultural products	2016	2017	2018	2019	2020	Change in 2020 compared to 2016
Grain	-10.6	1.8	-23.5	26.2	25.8	23.6
Cereals	-14.5	0.5	-20.4	30.5	25.6	31.2
Vegetables	10.8	-15.9	10.1	11.8	-4.7	-1.2
Potatoes	-10.2	-31.7	26.2	14.2	-10.7	-12.2
Fruits and berries	-6.5	24.1	8.3	-53.8	55.6	-3.4
Meat (carcass weight)	-4.3	9.0	1.0	-1.0	2.1	11.2
Milk (actual fat content)	-5.2	-2.1	1.1	-1.1	-3.8	-5.8
Eggs, pcs	1.5	-6.2	23.3	-3.5	2.6	14.5

In the year 2018 compared to 2017, the share of cereals decreased the most, while in the year 2019 compared to 2018, the share of fruit and berries decreased the most. However, in 2020 compared to 2019, the share of fruit and berries increased by 55.6%. The share of cereals increased both in 2019 (30.5%) and 2020 (25.6%). According to LAEI (2020), in Lithuania, gross agricultural output is strongly influenced by the volume of agricultural purchases, the prices of agricultural products and the material resources needed to produce them, the search for other business opportunities, and the low availability of support for small- and medium-sized family farms to expand their farms. Adverse weather conditions have contributed to the trends. On the other hand, the low bargaining power of small farmers to sell their products on the market is one of the reasons. There is a small proportion of farmers participating in the local food system and short food supply chains, farmers are not willing to cooperate, do not pool their resources and therefore find it difficult to compete in the market with large farmers or supermarkets. Agricultural production makes it possible to meet some of the needs of the domestic market (Table 8).

Tab 8. Production of the main agricultural products and food consumption, per capita, in 2016 and 2020 [kg]. Source: Statistics Lithuania (2021). Official Statistics Portal, Database (authors' elaboration)

Main agricultural products	2016				2020			
	Production per capita, kg	Consumption per capita, kg	The Gap	Surplus (+)/ Shortfall (-), %	Production per capita, kg	Consumption per capita, kg	The Gap	Surplus (+) / Shortfall (-), %
Grain	2007	123	1884	1531.7	2481	103	2378	2308.7
Vegetables	82	99	-17	-17.2	81	102	-21	-20.6
Potatoes	123	94	29	30.9	108	81	27	33.3
Fruits and berries	29	80	-51	-63.8	28	103	-75	-72.8
Meat	89	86	3	3.5	99	104	-5	-4.8
Milk	567	321	246	76.6	534	326	208	63.8
Eggs, pcs	275	224	51	22.8	315	253	62	24.5

Production of cereals, potatoes, milk and milk products is significantly higher than the domestic market needs. Meanwhile, fruit and berries and vegetables are underproduced. Pork is the most popular type of meat. According to the LAEI (2020), pork is the most consumed meat in Lithuania (50 kg per capita per year), but Lithuanian farmers currently produce only half of the required amount. The main reasons are high environmental requirements, outdated farms and swine fever. In 2019, Lithuania imported agricultural and food products for 4,154,600 EUR, which is 7.1% more than in 2018 and 15.9% more than in 2015. In 2019, agri-food products accounted for 13.1% of Lithuania's total imports (LAEI, 2020). In 2019, Lithuania imported agricultural and food products from 119 countries. According to LAEI (2020), imports from EU countries accounted for the largest share of agri-food imports between 2015 and 2019, ranging from 82.9% to 84.3%. The largest imports came from Poland (16.3% of the total import value), Latvia (12.1%) and the Netherlands (10.0%), Germany (7.9%), Sweden (6.6%). *Thus, Lithuania has a long way to go to meet "The Farm to Table" challenge. It is important to strengthen consumer attitudes towards healthy eating, as well as to promote the sourcing of local agri-food products by public sector bodies and institutions, especially during the high season. Potential consumers include kindergartens, schools, hospitals, nursing homes, etc., and the role of stakeholders in the development of LFS is very important in this context: local market sales can be increased, SFSCs can be developed and local food systems can be created.* Consensus among local organizations on the promotion and purchase of local food would reinforce the view that local food can be clearly beneficial to the local population, both socially and economically.

4.2 Results of the survey

The results of the empirical research are presented firstly describing the pilot districts (cases), then the authors reveal the results of survey. As these data not widely presented even at national level, so the authors of the article noted that there is a lot of international research on this topic, therefore, some Lithuanian data can be compared with the findings of other foreign countries. The data considering the characteristics of the respondents are presented in Table 9.

Tab 9. Socio – demographic characteristics of respondents. Source: own elaboration

Characteristics	Share of respondents in Total sample, %	Share of respondents in pilot districts, %			
		Jurbarkas	Radviliškis	Molėtai	Pakruojis
By gender					
Men	26.5	27.1	32.6	25.5	21.0
Women	73.5	72.9	67.4	74.5	79.0
By age					
Up to 25 years	3.1	3.4	6.2	2.0	2.5
26–35 years	17.3	32.2	23.7	8.8	17.3
36–50 years	29.1	27.1	24.7	28.4	35.8
51–65 years	42.4	32.2	33.0	52.0	42.0
66 + years	8.0	5.1	12.4	8.8	2.5
By education					
Primary	2.2	3.4	4.1	1.0	
Secondary	10.2	3.4	11.3	7.8	16.0
Special secondary	17.3	13.6	24.7	16.7	13.6
Professional colleges	22.6	15.3	25.8	25.5	19.8
Higher	47.7	64.4	34.0	49.0	50.6
By place of residence					
Town	38.1	64.4	43.3	25.5	27.2
Small town	32.2	15.3	34.0	26.5	48.1
Village	27.5	20.3	22.7	39.2	23.4
Steading	2.2	*	*	8.8	1.2

The above given data enable to state that: a) *by gender*, the majority of respondents in the study were women; it can be assumed that they are more active in family life when planning the purchase and consumption of food; b) *by age*, the majority of respondents were aged 51–65, the least up to 25 years, which accordingly indicates the consumption priorities of those age groups; c) *according to education*, in all pilot areas, more than half of all respondents had higher or tertiary education, which also affects the results of the survey, and determines the income received by the respondents; d) *by place of residence*, respondents represented the largest share (more than 50% in all pilot areas) of towns and cities; from Jurbarkas and Radviliškis districts, there were no survey participants from single farms, therefore it can be assumed that the inhabitants of these areas are more consumers and customers of local food system products, but not their producers.

To find out how LFS development benefits the area, respondents were asked “*Why do you think it is necessary to create a local food system in the district?*” (Fig. 4). Among the most important benefits that can be created with the help of LFS was that LFS creates conditions for the production and consumption of healthier food, it supports the local economy, small farms.

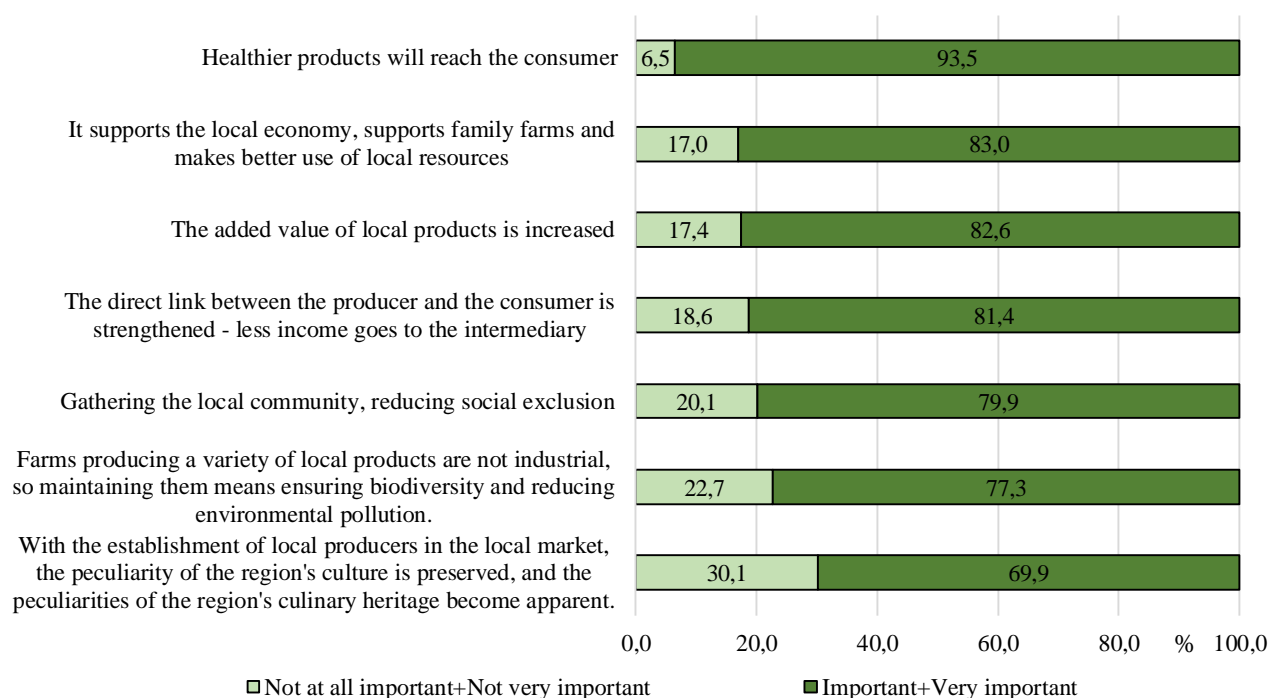


Fig 4. Respondents' opinion why it is necessary to create LFS in the area (percent). Source: own elaboration

It was found that the lowest evaluations were given to the statement which explored that the establishment of local producers preserves the uniqueness of the country's culture and the peculiarities of the country's culinary heritage. It can be assumed, following respondents' opinions, that one of the reasons of such an assessment is related to the underestimation of the already mentioned traditions of cultivating food, although it is the traditional food that creates the preconditions for a healthier lifestyle.

Another question related to LFS was "How far do you think local food can be transported to the final consumer?" (Fig. 5). This was important to identify because it reveals the notion about local food. Also, it reflects the stakeholders who belong to a particular area.

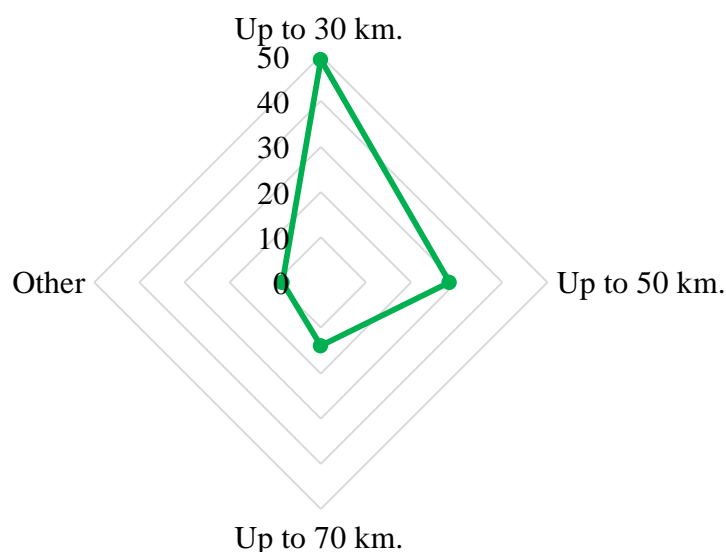


Fig 5. Distribution of respondents' opinion on the maximum distance (service radius) that local food can be transported to the final consumer [%]. Source: own elaboration

Assessing the maximum distance that local food can be transported to the final consumer, even 49% of respondents (just 30% of respondents in Jurbarkas district) said that the distance should be up to 30 km, almost a third of respondents believe that up to 50 km and only 14% said that the distance would be up to 70 km. This opinion of the respondents suggests that LFS should not be developed in large areas where there is a need to travel long distances – so it should even be the municipal level territory or neighboring municipalities. However, the most essential is time, distance and quantity of products transported and the variety of products is optimal and does not increase product prices or create barriers to the purchase of fresh food. In addition, the distance indicated in these areas is important due to the relatively close interaction between urban and rural populations in buying and selling local food.

All stakeholders involved in various links in the system have been identified as important for the functioning of the LFS. Furthermore, they contribute in their own way to strengthening the local economy. Respondents in the pilot districts were asked “Who should you think are the key actors/stakeholders in the local food system and what is their role. who should initiate and organize the local food system”? The research data disclosed that stakeholders need to be motivated and have the competencies (e.g., knowledge, skills, qualifications, etc.) to be full participants in the food system (Fig. 6), also should be able to create interactions between stakeholders in the food supply chain to achieve a synergy effect.

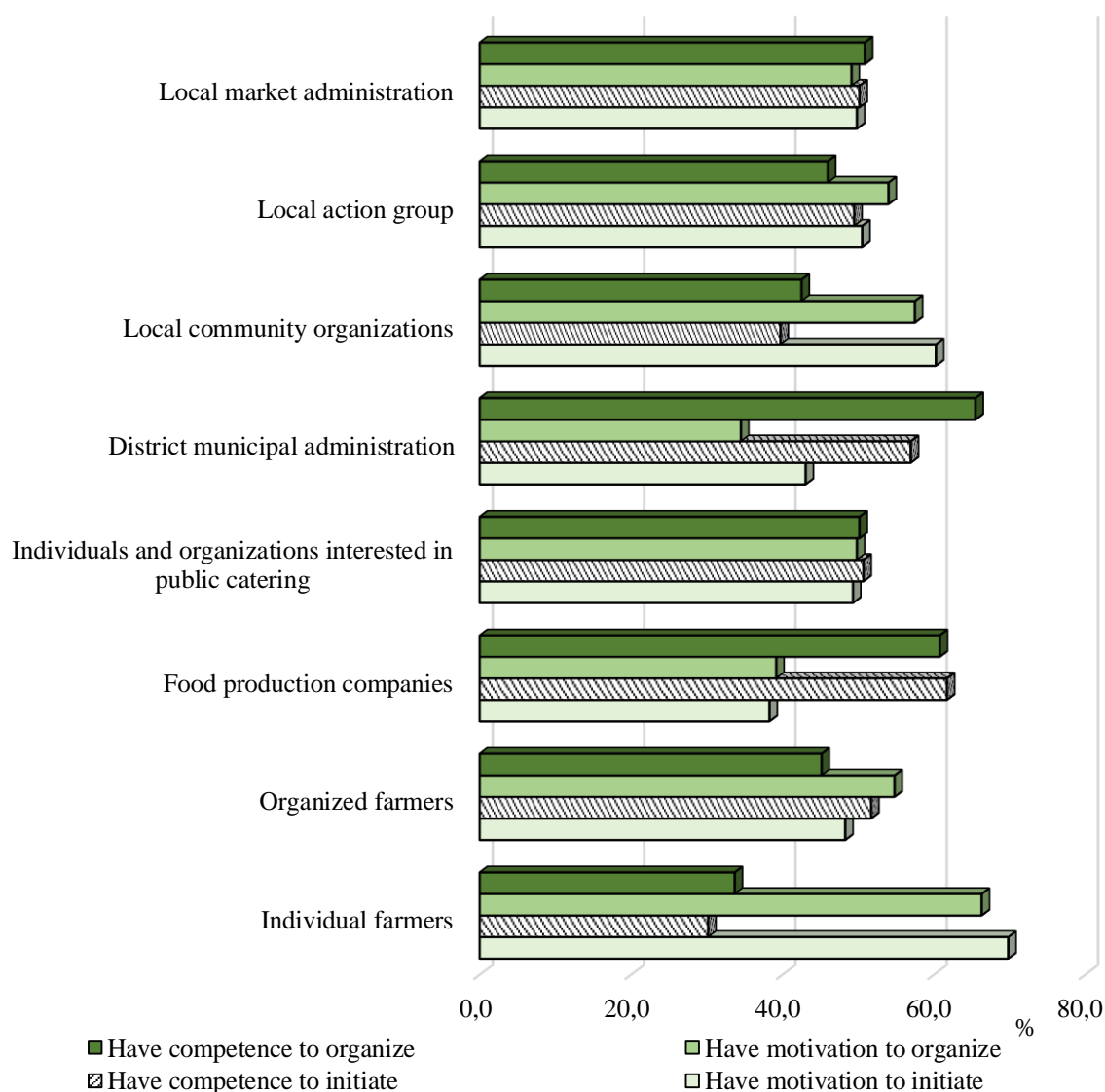


Fig 6. The role of key actors / stakeholders initiating and organising the local food system (percentage). Source: own elaboration

In expressing their opinion on the main LFS stakeholders, respondents stated that individual farmers, local community organizations and local action groups *should be the most motivated to initiate LFS*. The initiative of the farmers themselves is also very important, as they should be interested in selling their products in various forms and at the same time contribute to the creation of various benefits (social, economic, environmental) for themselves, the consumer and the place of residence. According to the respondents, the district municipality administration and food production companies *have the least motivation to initiate LFS*. However, when assessing the competencies, it was identified the district municipality administration as having the greatest competence to initiate LFS. Such a view also reflects examples of good practice in other countries (Martinez et al., 2010; European Union, 2020) where local authorities play an important role in promoting the participation of farmers in SFSC by facilitating and enabling them to play an active role in the food system. Respondents indicated that individual farmers, local community organizations and organized farmers should also be the most motivated to organize LFS. According to the mentioned above, the respondents expressed the position that LFS should be organized on a bottom-up principle. This implies that local farmers should be interested in participating in the SFSC, interact with other key stakeholders and work together to organize an LFS. All stakeholders should benefit – starting from consumers to the municipal administration.

According to the respondents, the district municipality administration and food production companies have the most competencies in organizing the local food system. The role and contribution of these stakeholders could be different, but farmers could benefit from it, especially those who do not have experience in selling food and have more diverse forms of farming and marketing or lack other specific knowledge.

It is worth noting that the evaluations obtained during both the initiation and the organization of the LFS are very similar. For example, both market administration and catering stakeholders/organizations were assessed in almost the same way, indicating that they are both motivated and competent to be active participants in LFS. It is obvious that LFS is still a new phenomenon in Lithuania, very little is known about it, so far only the first steps are being taken. Therefore, the distribution of duties/responsibilities in developing and maintaining LFS is not always fully understood.

Respondents were asked “How can you personally contribute to the development of a local food system in your area / district?”. The aim of this open-ended question was to determine the role that each person, a potential LFS stakeholder, can play in the functioning of an LFS. After summarizing the answers received from the respondents (N=67 or 20% from total sample), several local stakeholders in food system development groups were singled out according to their potential functions in LFS (Fig. 7).

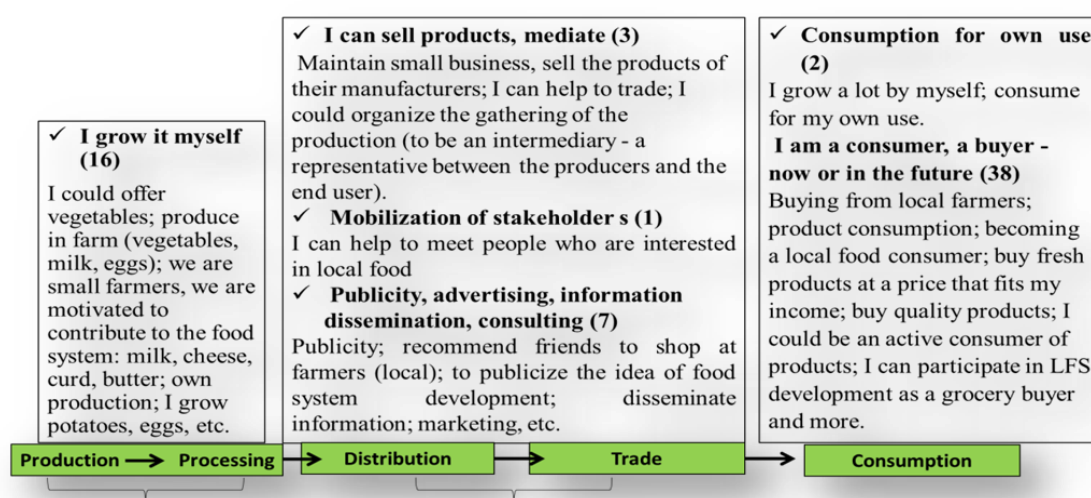


Fig 7. Functions of local stakeholders in food system development. Source: own elaboration

From the respondents' statements, it was found that the contribution of the respondents themselves (as potential stakeholders) to the LFS is possible in several forms:

- the first group could be named “I grow it myself” – where individuals grow produce and process products (e.g., vegetables. milk. cheese. etc.);
- the second group brings together people who could and would like to participate in the distribution and trade of local food production (can help sell products. promote them. etc.);
- the third group is represented by individuals who are already or would like to be consumers of local products.

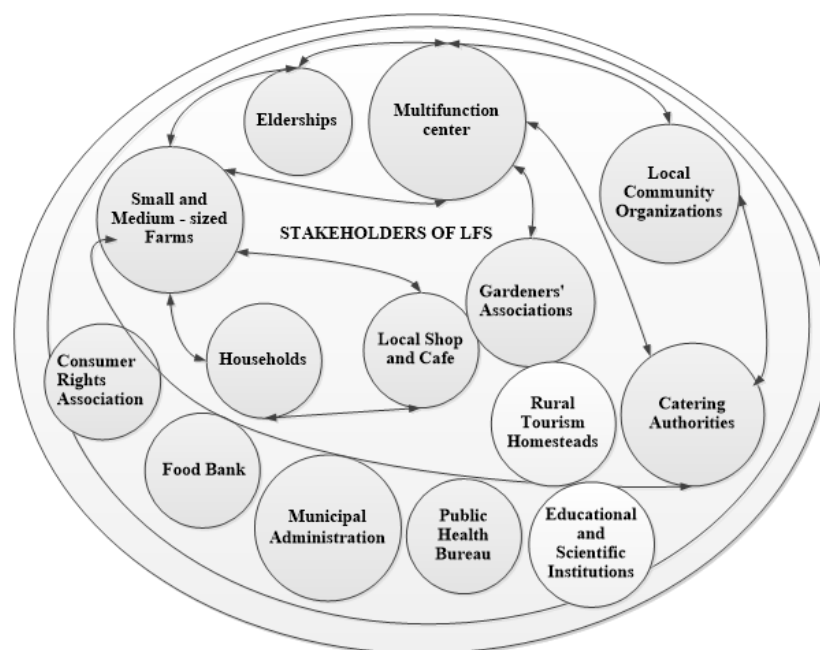


Fig 8. Map of local food system development stakeholders in Lithuania. Source: own elaboration

The latter statements reveal that the participants see themselves as participants in intermediate LFS stages and expressed how they could contribute to the functioning of LFS and realize how useful or important LFS is for themselves and those around them. This shows that LFS is understood directly and elementarily, i.e., as the production, purchase or sale of food, the publicity or promotion of local food. At the same time, it can be assumed that there is a need for strengthening and motivating measures from external, which would help local people to become more active participants in various LFS chains. It can be pointed that local authorities, science and training, community and professional organizations are becoming important actors, which could play the role of educating and consulting the population and farmers and creating and strengthening interactions between stakeholders (Fig. 8).

A significant number of stakeholders have been identified, who are engaged in a variety of activities relevant to the organization of the LFS. For example, food production, processing, consumer education and promotion, reduction of food waste, social food support activities in Lithuanian municipalities. However, some stakeholders are not interconnected and have little or no co-operation. Collaborating stakeholders are grouped together and stakeholders unrelated to interrelationships and activities are depicted separately, not connected by arrows.

The survey helped to identify an average of 14 institutions at the municipal level that could make a significant contribution to the organization of LFS. It can be pointed out that local authorities, science and training, community and professional organizations are becoming important actors, which could play the role of educating and consulting the population and farmers and creating and strengthening interactions between stakeholders. The research identified the functions of stakeholders in the organization of LFS (at the municipal level), i.e., targeted activities organized to implement the desired result (Table 10).

Tab 10. Hypothetical local food system development stakeholder functions in Lithuania. Source: own elaboration

Stakeholders	Functions
Small and medium-sized farms	<p>Initiate and participate in the development of food and nutrition strategies in municipalities.</p> <p>Ongoing consultation and communication with consumers.</p> <p>Participation in various programs (local, regional, national and international) that promote the dynamism of local food markets and change consumer behavior, such as zero food miles, sustainable consumption.</p> <p>Maintaining the range and supply of local food in the market.</p> <p>Production and placing on the market of novel foods.</p> <p>Application of various short supply chain organization strategies (e.g., B2C; B2B; B2G).</p> <p>Promoting, developing and implementing a variety of LFS models and organizational methods for organizational innovation, such as social farming, community-supported agriculture.</p>
Local community organizations	<p>Promotion of seasonal, local, biologically valuable foods, such as food maps, seasonal food calendars, fairs, dissemination of knowledge about healthy food.</p> <p>Initiating the development and implementation of LFS development strategies (e.g., food and nutrition).</p> <p>To develop alternative movements and networks of agricultural and food producers and eaters.</p> <p>Encourage farmers' groups, cooperatives, associations to share resources and engage in collective marketing, such as community kitchens, marketplaces, sales of local products in craft, tourism and business centers.</p> <p>To fully support the farms developing SFSC, to help organize the advertising and sales of local products, to initiate the feeding of children with organic or national quality products in kindergartens and schools.</p> <p>Apply a variety of LFS models and organizational methods, create and implement innovations such as social farms, community-based agriculture</p> <p>Initiate and participate in various local, regional, national programs, such as zero food miles, that promote the dynamism of local food markets and change consumer behavior.</p> <p>Constantly communicate and educate consumers.</p> <p>Implement the Participatory Market Chain Approach.</p>
Households, gardeners' associations	<p>Sharing and selling your grown and surplus produce.</p> <p>Provision of agro – services and processing services of small vegetables, berries and fruits.</p> <p>Development of collective gardening and horticulture.</p> <p>Preservation of old local plant varieties, consumer education.</p>
Local shop, cafe	<p>Use of local products in the preparation and presentation of food in the cafes.</p> <p>Promotion and advertising of local products, consumer education.</p> <p>Purchasing and loyalty to local farmers' products.</p> <p>Supporting a wide range of local products.</p>
Catering institutions (e.g., municipal administration)	<p>Procurement and loyalty to local farmers' products.</p> <p>Promotion of local products and full support in the development and implementation of LFS development strategies (e.g., food and nutrition).</p> <p>Use of public financial resources to buy local products, maintain the viability of jobs, develop the local economy.</p> <p>Organization of catering for children with organic or national quality products in kindergartens and schools.</p> <p>Initiating and participating in the development of various local and regional programs, such as zero food miles, that promote the dynamism of local food markets and change consumer behavior.</p>
Multifunction center	<p>Provision of agro – services, processing of small vegetables, berries and fruits to farmers.</p> <p>Provision of services for the sale of local products.</p>

Stakeholders	Functions
Eldership	<p>Development of infrastructure for short food supply chains: installation of links to farms, publication of maps of local products.</p> <p>Organization of local product fairs and presentations.</p> <p>Promoting cooperation between farmers, households, horticultural associations and other local authorities.</p>
Public health office	<p>Implementation of public health programs, inter-institutional action plans, public health measures provided for in municipal strategic documents.</p> <p>Coordination of child and youth, public health and youth-friendly health services.</p> <p>Compulsory health education.</p>
Food bank	<p>Transfer of collected food aid to non-profit organizations caring for various socially vulnerable groups.</p> <p>Provision of regular support for short – life foods.</p> <p>Catering in charity canteens.</p> <p>Invitations to donate food to the needy.</p> <p>Fighting food waste – collects unsold but still fit and safe food for human consumption.</p> <p>Food production and distribution.</p>
Consumer rights association	<p>Creating an environment where consumers' choices are conscious; their rights are respected and their responsibilities are fulfilled.</p> <p>Implementation of consumer education projects, development of educational publications and films, innovative audiovisual means, organization of competitions, events, campaigns, active participation in social networks.</p> <p>Conducting research on consumer and business opinion, sociological, mystery shopping, legal analysis, media and advertising monitoring.</p> <p>Submission of legislative proposals.</p> <p>Development of models for cooperation between municipal institutions and NGOs in the implementation of consumer education.</p>
Institution of education and science	<p>Conducting consumer and business opinion, sociological, legal analysis and other surveys.</p> <p>Provision of advice.</p> <p>Implementation of Participatory Market Chain Approach, expert assistance.</p>

Involvement of educational and research institutions in the development of LFS is still very limited. With the development of LFS, there is a need for specific results for educators and researchers – new technological solutions, marketing and organizational innovations, education and counseling projects. These solutions are often communicated or implemented by researchers together with interested growers and product processors, sometimes with the help of professional consultants.

The analysis of scientific literature revealed that the public sector is an important stakeholder in the organization of LFS, as there are a number of public organizations that can benefit from local producers (e.g., hospitals, nursing homes, kindergartens. etc.). Therefore, the participants of the research were asked “*Would you agree that the organizations organizing public catering in the district (municipal administration. organizations providing educational, social and medical services) would primarily buy food from local farmers?*”. The absolute majority (more than 90%) of the respondents agreed that the organizations organizing public catering in each pilot district (municipal administration. organizations providing educational, social and medical services) would buy food primarily from local farmers.

As the supplementary question was asked “What proportion of catering organizations (municipal administration, organizations providing education, social and medical services) do you think should buy food from local (district) and national farmers?” (Table 11).

Tab 11. Respondents' opinion on the share of food products that catering organizations should buy from local (district) and national farmers [%]. Source: own elaboration

The share of food products	Districts							
	Jurbarkas		Radviliškis		Molėtai		Pakruojis	
	Local farmers	Farmers of the country	Local farmers	Farmers of the country	Local farmers	Farmers of the country	Local farmers	Farmers of the country
Until 10%	0.0	6.8	1.1	3.2	4.9	4.9	1.2	8.6
11–20%	1.7	0.0	2.2	8.6	5.9	10.8	4.9	4.9
21–30%	13.6	15.3	8.6	23.7	13.7	13.7	12.3	13.6
31–40%	16.9	20.3	8.6	17.2	12.7	14.7	8.6	12.3
41 – 50%	22.0	32.2	28.0	32.3	19.6	22.5	24.7	33.3
51% and more	45.8	25.4	51.6	15.1	43.1	33.3	48.1	27.2

As we can see in the table, in all pilot areas, more than 51% of respondents stated that public catering organizations should buy food from local (district) farmers. Only in Molėtai distr. more than 50% of respondents (and less in other districts) preferred farmers of the country food. without highlighting the importance of local food. Respondents are clearly aware of the importance and benefits of local food for the health and wellbeing of the population. but the purchase and consumption of this food in these organizations depends on many legal aspects. including local producers' ability to supply local food organizations.

The role of local government in developing and maintaining LFS is important for both local people and farmers. as it creates preconditions or constraints for the development of economic activities and the acquisition of local products. According to the respondents, local government could create favorable conditions and social infrastructure (Fig. 9).

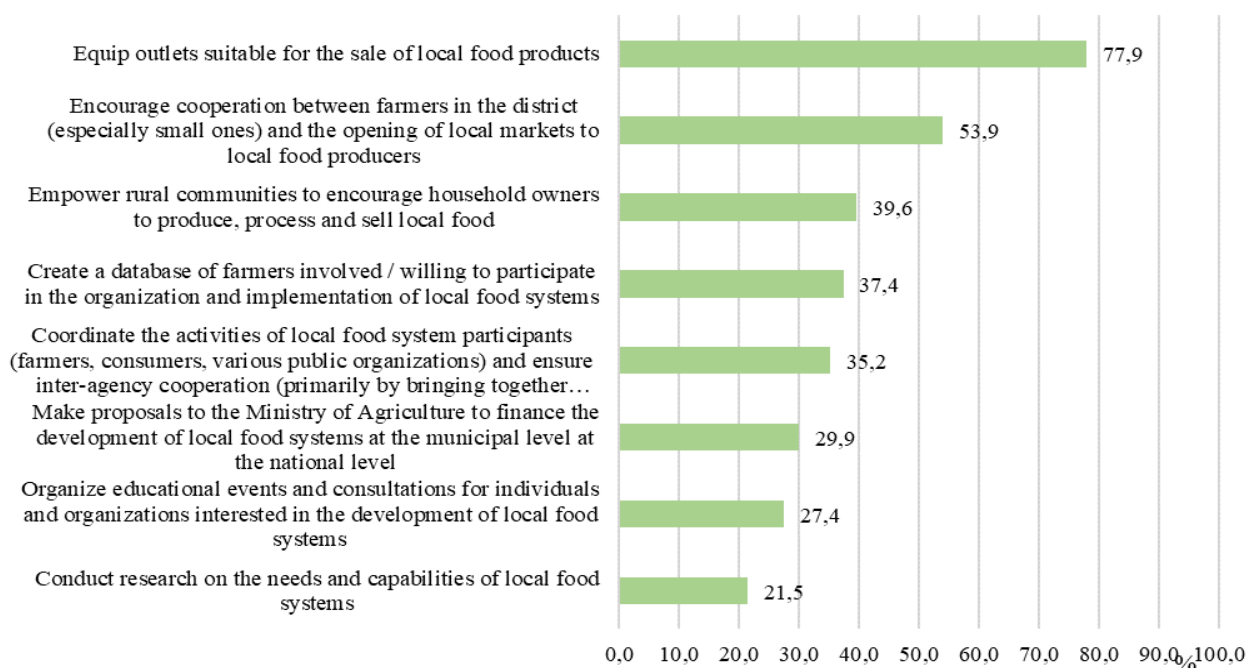


Fig 9. Distribution of respondents' answers to the question "How do you think local government could contribute to the development and maintenance of the local food system?" [%]. Source: own elaboration

According to the respondents, setting up outlets suitable for the sale of local food products would be one of the most important tasks that should be addressed by local authorities. More than half of the respondents believe that local authorities should encourage farmers in the district, especially small ones, to cooperate and open local markets to local food producers. It is interesting to note that even 37% of respondents believe that local authorities should be interested in setting up a database of local farmers

who are willing and able to participate in the LFS. Lack of information about farmers who are willing and able to participate in LFS. the benefits of LFS operation for the local economy and the opportunities are among the most important factors that also contribute to the limited awareness of the importance of LFS for both the area and society as a whole. On the other hand, almost 30% of respondents stated that local government could/should be responsible for making proposals to national authorities (e.g., The Ministry of Agriculture of the Republic of Lithuania) on how to improve and strengthen the local economy through the support of LFS.

However, it must be emphasized that local authorities, in the opinion of the respondents, should not be the main regulator of the local food system but only contribute in accordance with their traditional functions, considering the needs of the district residents and local farmers, act as an intermediary to encourage farmers and provide local people with a marketplace for local food.

The results of the empirical research revealed the possibility to consider LFS as a tool for the development and strengthening of the local economy. The obtained data allowed us to define the assumptions of LFS development, possibilities to identify how different stakeholders perceive personal contribution (or capabilities) support the local food system in the local level.

5. Conclusions and discussion

The organizational functions and concept of the local food system are not established. LFS includes organized, targeted, networked agricultural food production, processing and marketing activities, the development and maintenance of access to consumption, the consumption itself and the rational use of by-products and bio-waste. Stakeholders perform their main traditional functions in the area but the functions that would contribute to the organization of the LFS are not yet understood by local authorities (Table 10). Therefore, the problem of organizing the local food system in Lithuania is not comprehensively solved.

LFS producers and consumers develop and keep in direct contact with each other, allowing consumers to learn more about the characteristics and benefits of the food they consume. This interrelation should become more seen at the organizational level as well.

LFS formed in the administrative units of the country at various levels would help to solve the problems of regional development, ensure more sustainable development of rural areas and increase the resilience of rural and urban communities in the event of geopolitical or other crises (Bertolozzi-Caredio et al., 2021). Social partnership and adherence to the principles of LFS can help stakeholders to meet the needs of consumers for health-friendly products. LFS based on the principles of sustainable development (Raftowicz, Kalisiak-Medelska & Struś, 2020) would also strengthen the integration links between rural and urban communities.

Preparation and implementation of nutrition and food strategy in the municipality level. The strategy of a given geographical unit should cover all stages of the farm-to-table food chain and bring together as many stakeholders as possible to build a food system and local markets that are favorable to human health and the environment. However, one of the questions that researchers (Coley et al., 2009; Bosona and Gebresenbet. 2011; Community. Local, and... 2016; Bertolozzi-Caredio et al., 2021) are still unequivocally answering is the territorial coverage or service radius of LFS. According to the respondents to the survey, local products should be transported no more than 30 km to the final consumer. Studies and practical experience by other authors show that up to 90 km (Bosona and Gebresenbet. 2011). However, the environmental dimension is not always considered when determining the LFS service radius, as if a customer travels more than 7.4 km or 6.7 km (Report.... 2013) back and forth to purchase organic vegetables, its carbon emissions are likely to be higher than those of refrigeration, packaging, carbon emissions from transportation in the local food system.

Vertical cooperation between stakeholders from different sectors is essential for the development of LFS and local development partners need to mobilize their resources to address local food security issues in a common and systematic way. According to literature studies (Ingram et al., 2010; Rask et al., 2018;

Gupta et al., 2018) and following the survey results, implementing such a partnership is not easy for the following reasons:

- 1) solves very complex issues of LFS creation and development, which require a lot of time and motivation to discuss collective knowledge;
- 2) each partner carries out its activities according to its own rules, so partnerships with other organizations and a cross-sectoral approach pose a regulatory challenge that is particularly acute in the face of new and completely uncertain operational circumstances (e.g., changing the current socio-economic system, creating alternative to the global food system – the local food system);
- 3) the partnership helps to bring together groups of people and local organizations for a common goal but in the beginning, the stakeholders are not only different in culture. but also have different interests and different strategies;
- 4) stakeholders of the LFS hope that the food market and the current legal and policy environment will address the issue of local food supply. Lack of stakeholders understanding that coordination is needed and that the market needs to be constrained because of resource and environmental constraints.

The stakeholders identified in the study do not aim to create and organize a local food system. Lithuania faces challenges in developing short food supply chains – on the one hand, there is a narrow range of local products and a sparse network of outlets, on the other hand – low demand. The low bargaining power of small-scale farmers in the market, the small scale, relatively high logistics costs and other reasons lead to only a small number of farmers adopting a short food supply chain strategy. Most consumers are more likely to focus on imported, long miles food products, in the market is dominated by highly processed, mass-market products. However, growing consumer awareness, interest in healthy eating, preference for fresh produce purchased from farmers, the number of potential consumers of local food in kindergartens, schools, hospitals, nursing homes. etc., suggest that in the still under-utilised local market, an increasing proportion of food products will reach consumers directly, with minimal or no intermediaries.

When developing LFS, it is recommended to encourage operators to use at least three business models: business to consumer (B2C), business to business (B2B) and business to government (B2G). LFS development can be reinforced not by one but by several channels; it can bring more benefit to separate social groups or for individual use (Municipal... 2012; European Union. 2020). To develop LFS as an independent organization of the fourth sector of society, representatives of the main sectors of society (local government, business and civil society) would have the opportunity to agree on a joint network organization, which would organically coordinate the main activities of the sectors that created them by bringing together the knowledge of scientists and consultants to address a specific local food supply problem feature.

LFS can be considered a hybrid cooperation model that aims to shorten the food supply chain. Following some authors (Donkers, 2013; Rask et al., 2018; Gupta et al., 2018) and what was explored by the survey it is clear that the creation of LFS organizations can be seen as a social innovation that allows for the conclusion of a territorial social contract with the main actors of the territory, in order to concentrate the resources of each partner to address the key challenges and ensure the sustainability of the results achieved. An active role is needed in the education and research community, as all issues need to be addressed in an integrated way in the development and organization of LFS, as it is important to help identify stakeholder roles and harmonize functions.

A 'key player' is a farmer, a producer of local products and a developer of a short food supply chain who develops organic farming, crop and livestock production and produces the products needed to meet market needs. Farms that jointly implement innovations and absorb the possibilities of production and sale of high biological value products strengthen not only the integration of joint economic activities. Joint activities strengthen mutual trust and form new horizontal and vertical links for information dissemination. The convergence of farms towards common goals and sustainable activities leads to the development of cooperation rules and standards, such as the introduction of a system for

the production and quality assurance of bio-valuable products and at the same time forms the basis for long-term cooperation.

In order to bring a new perspective to this discussion, we argue that the role of initiator and organizer of LFS can be played by local authorities, which create infrastructure for the local production, processing, distribution and consumption of local products, organize meals in pre-school and school education institutions, hospitals and national defense institutions. Applying the business to the government (B2G) model would significantly expand the market for local products and strengthen the local economy. Farmers' role as key players is possible when they feel strong in LFS and their local products are recognized not only by society but various organizations as well. Such insights were observed in some previous research by Deller et al. (2017), Berti and Mulligan (2016).

As the next research, steps suggested by the authors are related to both scientific and practical studies. From a practical point, it is necessary to assess separate districts situation related to LFS creation and development, especially focusing on stakeholders' engagement promotion. It is observed that suburbs of cities and towns are attractive places to sell the local food products, but accessibility of such products can be limited; so from scientific point – integration and joining tools of different SFSC in LFS, the role of stakeholders is still a new issue which needs to be disclosed.

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