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Barriers to participate in short food supply chains: preliminary results from the survey among farmers in Poland and the Czech Republic

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Abstract

In the light of natural resource management challenges, the links between short food supply chains and sustainable development cannot be overlooked. Short food supply chains support the economic (e.g. income, product range offered, new jobs in rural areas), social (e.g. heritage, mutual trust between consumer and producer, local quality of life, especially for disadvantaged or peripheral people) and environmental (greenhouse gas emissions, biodiversity) aspects of sustainability. Shortening food supply chains is a strategic objective of the European Union. Against this backdrop, we interrogate challenges in the functioning of short food supply chains using the results from 152 interviews with farmers already participating in SFSCs in Poland and in the Czech Republic. Descriptive statistics were used to analyse the responses. The results suggest that some of the farmers from Poland and Czech Republic do not see any barriers to participate in the short food supply chains. The rest of the farms regardless of the countryindicated the same constraints and problems related to their participation in the SFSCs. Responses differed only in frequency between Polish and Czech farms. These were time-consuming, the need to employ additional staff, the need to be available to customers at all times, and the need to find and keep customers themselves. To the least extent, farmers from both countries complained about the bureaucracy and formal requirements for participating in SFSC, the lack of infrastructure and the low financial resources and profitability of sales through SFSC. In addition, farmers from Poland were almost four times more likely than the Czech ones to emphasize the problem of participation in SFSCs was the seasonality of income.

***Key words*:** short food supply chains, farms, participation, barriers, socio-demographic characteristics

INTRODUCTION

The current food system in Europe consists mostly of long food supply chains (Veraart Research Group 2019; Augère-Granier 2016). The short food supply chain (SFSC) is an emerging supply chain practice that facilitates a more direct connection between farmers and consumers by eliminating intermediaries from complex supply chains and is developing parallel to conventional long food chains (Jarzebowski et al., 2020).

In the light of natural resource management challenges, the links between short food supply chains and sustainable farm development cannot be overlooked. There is growing evidence (Marsden et al., 2000; Renting, et al., 2003; Malak-Rawlikowska, 2019; Kiss et al. 2019; Jarzębowski et al. 2020) that short food supply chains support the economic (e.g. income, product range offered, new jobs in rural areas), social (e.g.

heritage, mutual trust between consumer and producer, local quality of life, especially for disadvantaged or peripheral people) and environmental (greenhouse gas emissions, biodiversity) aspects of sustainability.

Despite growing literature evidence on short food supply chains, the understanding of the factors that hinder the emergence and functioning of SFSCs remains fragmented. Against this backdrop, the purpose of the study was to identify what barriers of participation in short food supply chains farmers point out using preliminary results of 152 interviews with farmers in Poland and the Czech Republic.

General Background of Short Food Supply Chains in Poland and the Czech Republic

In the early 1990's of the 20th century, the state retail networks of stores disintegrated in Poland and the Czech Republic and the retail sectors in both countries started their transformation. Important milestones were the entry of foreign capital at the beginning of the millennia, and its control over the retail market by inducing a fundamental change in shopping behaviour and consumer preferences (Kunc et al., 2022). Food systems in Poland and in the Czech Republic became organized mostly around long food supply chains, similar to other countries in the European Union. Nonetheless, short food supply chains have also emerged as a practice to strengthen the position of farmers in the food system.

Although there are many different types of short food supply chains, direct sales seem to be the most popular model in Poland. In 2010, there were more than 205,000 individual agricultural holdings with an area of 1 ha of utilized agriculture area (UAA) and more, which sold more than 50% of their production through direct sales. This represented approximately 13.8% of all individual farms in Poland. Direct sales were mainly used by small farms (1-5 ha) and 68% of all farms engaged in this type of activity. On the other hand, farms with 5 to 25 ha of UAA had the largest share (60.4%) of total direct sales (Gołębiewski and Bareja-Wawryszuk, 2016).

Currently, around 75% of consumers buy food in supermarkets in the Czech Republic, of which most are retail chains of multinational companies. As an alternative to this mainstream form of food retail markets, short food chains began to develop in the Czech Republic in the last two decades (SZIF, 2022). There is still a deficit of studies analysing the expansion of short food supply chains in the Czech Republic. In one of the first studies on short food supply chains in this country, Zagata (2012) provided an overview of the occurrence of short food supply chains and pointed to the increasing role of consumers in the emerging transition process of agri-food regimes. The direct sale is a popular type of short food supply chain in the Czech Republic. Nonetheless, other types of short supply chains have also developed in the last three decades, such as farmer markets, box schemes/home deliveries, community-supported agriculture or community gardens (Zagata, 2012; Konečný et al. 2016; Miškolci 2017).

Challenges and limitations of SFSC in the light of European research

Jarzebowski et al. (2020) studied more than 100 cases of good practice in 15 European countries and concluded that possible barriers to the succesfull development of SFSCs (regarding the creation of SFSCs, product development in SFSCs, and access to the market of SFSCs) are mostly of an economic nature.

Sebök et al. (2022) interviewed 18 SFSCs from 9 European countries to identify the success factors and bottlenecks of each SFSC. The study identified limited marketing skills, a lack of understanding of the importance of differentiating products and services from conventional chains, and a lack of skills in identifying and implementing common objectives as typical bottlenecks that reduce the success of SFSCs to leading to new, upgraded value propositions with increased value added for consumers.

Chang et al. (2022) conducted eight focus groups with consumers in rural and urban areas of Germany, Spain, Hungary, and Greece to identify the barriers to consumers' purchasing from SFSCs. They found that participants had less confidence in the hygiene and food safety standards of SFSCs in comparison to longer food chains and that consumers would purchase local food if they could, with more ease, access a variety of local foods in one place.

Aouinait et al. (2022a) conducted interviews with expert stakeholders in 7 European countries to study consumer attitudes, values, and preferences to SFSCs. They found that consumers would like to shop for local food the way they shop at the supermarket (having various products, accessibility, and availability). The relative lack of convenience and high prices associated with SFSC products were considered the major barriers to purchasing from SFSCs.

Živkovič et al. (2022) studied the challenges experienced by SFSCs to meet the necessary regulatory requirements in 9 European countries, using 10 multi-actor workshops. Their research indicated that current EU and national regulation (mostly insufficient policy support to SFSCs, high level of bureaucracy, and unfavorable subsidy policy) is an obstacle to the development of SFSCs.

Aouinait et al. (2022b) conducted two focus group sessions with stakeholders from the agricultural sector and SFSCs to identify the motivations and barriers that stakeholders face regarding participation in short SFSCs. As hindering factors, weak communication and marketing capacity of producers, lack of efficiency and cooperation between peers were identified. As the main threats faced by SFSC actors, fierce competition from conventional distribution channels, using greenwashing, excess labeling, price issues, and unsuitable standards were identified.

MATERIAL AND METHODS

The paper uses primary data collected in Poland and in the Czech Republic in 2023 (data available at https://doi.org/10.18150/URUUKB). We used semi-structured interviews to understand farmers' experiences and perceptions when participating in short food supply chains as a mechanism for distributing their products. We focused on the typical challenges that farmers experience in selling through SFSCs and found this approach to be well-suited for identifying and analysing the typical challenges that could be otherwise missed if responses were limited to multiple-choice questions. Farmers were allowed to identify more than one challenge. The sample consisted of 152 farmers in total (94 farmers from Poland and 58 farmers from the Czech Republic) who were already participating in SFSCs. Collected data is part of a larger study within an international grant. The presented research results are the first stage of a comparative analysis and do not cover the entire surveyed sample of Czech farmers. This research sample is relatively small compared to the population of farmers participating in the SFSC in Poland and the Czech Republic. We have to underline that those results obtained and the conclusions have limitations due to the small sample of respondents. Table 1 presents the initial descriptive characteristics of the sample population (gender, age, number of household members, education, farming experience, production specialization, and share of sales via SFSCs).

Table 1. Descriptive characteristics of the sample population from Poland and from the Czech Republic

	Total	**Poland**	**Czech Republic**
Number of farmers	152	94	58
Gender (%)			
Female	29.6	38.3	15.5
Male	70.4	61.7	84.5
Age (year)			
Mean	46.1	47.5	43.8
Median	45.5	46.0	44.5
Range (min-max)	22-70	25-70	22-64
Household Members (number)			
Mean	3.8	3.8	3.9
Median	4.0	4.0	4.0
Range (min-max)	1-14	1-8	1-14
Education – selected levels of education (% of all farmers)			
Complete secondary school	84.9	76.6	98.3
University (Bc. or higher education)	38.2	37.2	43.1
Farming experience (years)			
Mean	20.7	22.5	17.8
Median	20.0	37.2	15.0
Range (min-max)	1-50	1-50	2-40

Specialization (%)			
Crop	13.8	8.5	22.4
Orchards	13.2	18.1	5.2
Mixed	30.3	34.0	24.1
Wine	9.2	3.2	19.0
Milk	5.9	5.3	6.9
Animal (excl- milk)	12.5	14.9	8.6
Horticulture	7.9	9.6	5.2
Other	7.2	6.4	8.6
Share of sale via SFSC (%)			
Mean	63.9	62.1	66.8
Median	73.5	66.1	95.0

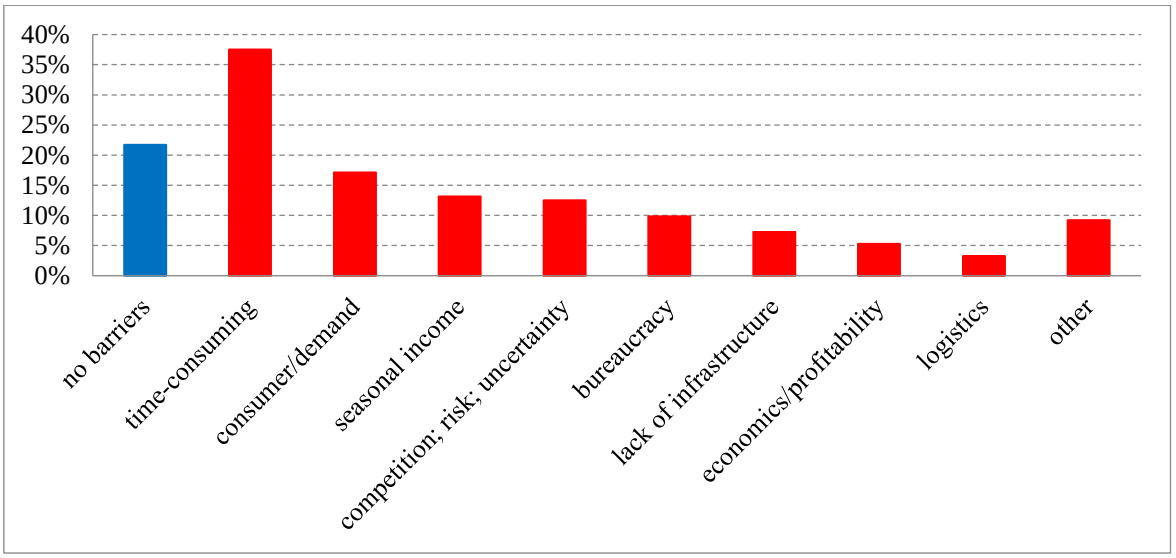
Source: Authors' construct

Respondents' responses were aggregated according to main challenges related to higher time requirements, consumer/demand, seasonal income, competition, bureaucracy, technical infrastructure, economics and profitability, logistics and other.

To infere more general conclusions, we applied the chi-square test to assess the difference of perceptions of typical challenges between the Polisch and Czech farmers. Empirical frequencies of responses of Polish and Czech farmers were compared with each other and statistically tested to see if they differed. The traditional approach is to test the difference between the empirical and theoretical frequency of occurrence of the observed phenomena. When $\chi^2 = 0$, the observed and theoretical frequencies are exactly the same. The larger the value of χ^2, the greater the discrepancy between the empirical and theoretical frequencies in individual classes. To assess the statistical significance of the difference between the compared frequencies, we compare the calculated χ^2 with the tabular critical value $\chi^2 1\text{-}\alpha$ (v). For the selected level of significance α=5% and degree of freedom v=1 corresponds to $\chi^2 0.95\ (1) = 3.84$. If $\chi^2 < \chi^2 0.95(1)$ then the differences in frequencies in individual classes are not statistically significant.

RESULTS AND DISCUSSION

Respondents that are already participating in existing short food supply chains were asked what challenges they had experienced in selling their products through SFSCs. Interestingly, 21.7% of respondents in the sample indicated that they had not perceived any challenges in the participating in SFSCs. This can be explained by existing variations in the performance of business models as well as variation in the distribution of risk aversion among farmers can play a role.



Graph. 1. Limitations in participating in short food supply chains in Poland and the Czech Republic
Source: Authors' construct

As major challenge, 37.8% of respondents identified that participating in SFSC is time-consuming. Farmers sell raw commodities as well as further process their production to achieve higher added value and to exploit the market opportunities in food market segments. Such an aproach also allows the farmer to gain a price maker position, or to influence the price of products to a greater degree when compared to the mainstream (i.e. long) agri-food value chains. On the other hand, such a strategy means a considerable increase in the necessary contribution of working time of the farmer. Especially small scale farmers have to (besides their own labour inputs into the agricultural production process), manage processing technologies and processes, including the sales and marketing activities.

Specifically, respondents mentioned the need for additional workers to successfully participate in the SFSCs. On the one hand, this is an encouraging message in terms of meeting the objectives of Common Agriculture Policy of the European Union to support multifunctional model of the European agrarian sectors. A certain possibility would be the involvement of farmer's family members, but it has become common phenomenon that some family members (e.g. children) no longer want to engage in activities on the farm. The second alternative is the use of external labour (with a particualar set of skills and competencies). However, its use is conditional, based on its availability in rural areas. Another challenge may be the success of the farmer's business model and thus the ability to cover costs of aditional labour inputs (small volumes of production and sales appear as a disadvantage in this scenario). In general, these results support the adoption of SMART technologies as a way of increasing the productivity of labour inputs and the horizontal coordination among farmers. Respondents in both countries complain that in the case of direct sale from the farm, it is necessary to be "constantly available to customers", as customers arrive at different times of the day. This means disruption of the farmer's work schedule.

Respondents perceive the demand side of the market itself as another group of challenges (17.1%). Respondents identified the ability to find and retain customers as a significant challenge, pointing to an existing problem of skills and competencies, especially in the area of product design, marketing, brand building, and customer communication, Respondents also mentioned that the level of purchasing power in their region can be another specific type of challenge in establishing or successfully managing SFSCs. This appears to be a challenge especially relevant in rural areas far from larger cities.

As another challenge, 13.2% of respondents indicated the seasonality of income (mainly during the summer). The seasonal character of production leads to the fact that farmers do not sell continuously, but according to existing opportunities and to a narrow circle of customers (depending on their production capacities). Nonetheless, the ability to supply customers with sufficient quantities, at regular intervals, and products of constant quality is a very important parameter (especially for customers of shops, public places or school canteens).

The various forms of competition and uncertainty was identified by 12.5% of the respondents as possible challenge. The retail network in Poland and in the Czech Republic is dominated by large (often multinational) retail chains. These multinational retail chains offer easy and immediate access to a wide variety of food products and services to customers. This is in line with Aouinait et al. (2022) concluding that consumers would like to shop for local food the way they shop at the super-market. Also, the purchasing behavior of consumers is consistently influenced by the intensive advertising campaigns by these large retailing companies. The lack of ability differentiating products and services from the conventional chains corresponds to the results of Sebök et al. (2022). Interestingly, respondents not only mentioned competition from large retail companies, but there were also references to increasing competition among existing SFSCs. This dynamic corresponds to models based on Organizational ecology (Carroll and Swaminathan, 1992). These models predict that as the number of SFSCs increases, there is a positive feedback loop as their legitimacy increases (however, it increases degressively with population density). A second force acting on the long-term evolution of firms is intensifying competition, particularly when firms depend on the same pool of limited resources. This suggests that competition between SFSCs will gradually increase as SFSCs develop in Poland and in the Czech Republic.

Bureaucracy and formal requirements are generally the subject of criticism from farmers throughout the European Union. Surprisingly, bureaucracy and formal requirements were mentioned in connection with SFSCs by only 9.9% of respondents.

Despite the fact that the develpment of infrastructure is supported within the framework of the Rural Development Plan, some respondents (7.2%) perceived the lack of infrastructure (warehouses, sales points, etc.) as challenges in participating in short food supply chains,

As challenges, some respondents (5.3%) identified economic reasons, in the sense of: 1) insufficient financial resources for necessary investments, as well as 2) low profitability of selling their products through SFSCs. The low profitability is perceived by farmers in general (e.g. low margins), but also in relation to distribution and sales opportunities through mainstream/long food chains. Respondents also see logistics (3.3%) as a challenge in participating in short food supply chains.

In the last category (Other), respondents mentioned various reasons such as e.g. lack of state support, lack of particular skills or too small scale of production.

The chi-square test suggests more general ($p < 0.05$) nature of these challenges in participating in SFSCs regardless of whether they were identified by Polish or Czech farmers. The only exception was the aspect of seasonality of revenues/incomes that is perceived as a challenge by Polish farmers more intensively than by farmers from the Czech Republic. The test also indicates some differences between the observed and theoretical frequencies in case of (non) existence of barriers at all, and time-consumption of participating in SFSCs. This means the specific nature and context of these two problems in each country need further research.

Table 2. A χ^2 analysis of the discrepancies in perceptions regarding challenges in functioning SFSCs between Polish and Czech farmers

	Total	Poland	Czech Rep.	χ^2 ; $p < 0.05$
		%		$\chi^2 0.95\ (1) = 3.84$
no barriers	21.7	26.6	13.8	3.46
time-consuming	37.8	33.0	44.8	2.15
consumer/demand	17.1	19.1	13.8	0.73
seasonal revenue/income	13.2	18.1	5.2	5.23
competition; risk; uncertainty	12.5	11.7	13.8	0.14
bureaucracy, formal requirements	9.9	10.6	8.6	0.16
lack of physical infrastructure	7.2	8.5	5.2	0.60
economics/profitability	5.3	4.3	6.9	0.50
logistics	3.3	3.2	3.4	0.01

Source: Authors' construct

CONCLUSION

Based on the research, we may conclude that the surveyed farms from Poland and the Czech Republic participating in the SFSC indicate the same barriers and problems related to their participation in the SFSC. Primarily, this is a time-consuming activity. Farmers participating in SFSC have to deal with both production and processing and distribution of their products, and they notice the need for additional staff. At the same time, the challenge for the surveyed farms is that consumers expect them to be "constantly available to customers", which is likely to 'disrupt' the production function. At the same time, the surveyed farmers from both Poland and the Czech Republic believed that the challenge for them is the need to fulfil marketing functions related to the ability to find and keep customers. Farmers from both countries complained the least about the bureaucracy and formal requirements for participating in SFSC, the lack of infrastructure such as warehouses, outlets and the low financial resources and profitability of sales through SFSC. The one statistically significant difference came from the fact that surveyed farmers from Poland, more often than farmers from the Czech Republic, considered the limitation in the SFSC model to be the seasonality of income/revenue. Thus, the survey allowed a preliminary identification of the barriers and limitations faced by Polish and Czech farmers participating in SFSC. However, the study has a pilot character, indicating some trends, but their

confirmation and making general conclusions requires further research. This will allow to identify needed changes to the SFSC model to make it more attractive to farmers. In the longer term, these changes could result in an important in the EU, shortening of agricultural supply chains.

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