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The Diversity of Organic Box Schemes in Europe—An Exploratory Study in Four Countries

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Abstract: Box schemes provide an opportunity to scale up local organic food systems by aggregating products from multiple producers and efficiently delivering them to consumers. However, there is limited knowledge about the overall organic box scheme landscape and how it develops. This article explores organic box schemes in four European countries and thus contributes by comparing box schemes of different sizes in different geographical and organisational contexts. Survey results from 44 box schemes were used to analyse box schemes in relation to size and growth, organisation, communication with customers, delivery modes, distances travelled by produce and boxes, and values adhered to. Although the surveyed box schemes differed in size and organisation, similarities between box schemes were found in many aspects. For example, most surveyed box schemes had grown considerably since their start, and wished to grow further, and they all rated certain values as important. A tendency for larger box schemes to offer more imported produce, to have operated for a longer time, and to use social media for advertising more often was found. Despite the heterogeneity of the box schemes in the survey, we conclude that box schemes are a useful category to explore in the sustainability transition of food systems.

Keywords: organic box schemes; local food systems; community supported agriculture (CSA); food hubs; survey

1. Introduction

Local organic food systems have grown in popularity and profusion over the last few years, their rationale often being the need to transform our food system from a non-sustainable one into a sustainable one [1]. While local organic food systems challenge the mainstream conventional food system, they are themselves challenged "to survive and scale up, without compromising the foundational motivating principles of sustainable local food" [2] (p. 526). A successful scaling up would imply that local food initiatives "come together with a sufficient consumer base in a manner that encourages closer relationships and shared responsibility" [3] (p. 117) and that the unsustainabilities of the current food system are challenged and transformed into a more sustainable trajectory. Apart from providing more sustainable food, local food systems may also contribute to food justice by offering healthy food for local communities [4], especially when they allow for democratic participation in food systems and set up new relationships that avoid social inequity [5].

Local food value chains are a lot about cutting out the middlemen and creating a direct exchange between food producers and consumers [3,6,7]. However, this also means impairments to the potential of scaling up and out—only if sustainable systems are scaled up can they challenge the dominant regime [8]. In any case, the effects of scaling up local food systems need to be understood so that barriers,

benefits for actors, and adaptations required become clear [3] (p. 116). This is important, as scaling up bears the danger of conventionalisation and assimilation into the dominant neoliberal food system [9].

Box schemes represent a type of locally oriented distribution system that sometimes involves a middleman and sometimes does not. Box schemes bring produce in boxes to the doors of consumers or pick-up spots and range from community supported agriculture (CSA) farms to enterprises serving thousands of consumers [10,11]. A specificity of box schemes is that they provide an opportunity to scale up direct marketing strategies by aggregating products from multiple producers and efficiently delivering them to a large number of consumers [3,12,13].

Box schemes started evolving rapidly during the mid-1990s [14]. There has been a strong development in the USA, the UK, Italy and France [10,15], while they are less present in new European Union (EU) member states [16]. Only a few studies exist that take an overall view of box schemes in Europe, their development, and growth [14,16]; most other studies are small scale comparisons or case studies [13,17–19]. For example, in a report about short food supply chains in Europe, Kneafsey et al. [16] remarked that there were not so many examples of comparative approaches across geographical contexts, partly due to the difficulties in collecting comparable data on micro enterprises and initiatives across Europe [16] (p. 14). Ilbery and Maye [20] noted that research was lacking about the nodes in local food systems, while the producer and consumer dimensions have been fairly well covered. This article contributes by filling in some of these knowledge gaps and by discussing box schemes as an analytical category.

The aim of this paper is to clarify and discuss what box schemes are and whether this is a useful category in the study of alternative/local food systems. Our second aim is to explore a larger sample of organic box schemes in different European countries. By doing this, we intend to create a rich picture to accompany previous in-depth case studies and to explore differences and similarities in a systematic way. We do this by investigating 44 organic box schemes in Europe, describing the organic box schemes' growth, their organisational set-up, how they communicate to create direct exchange [3], and what values they adhere to.

2. What Do We Know about Organic Box Schemes? A Review of the Literature

2.1. Defining Box Schemes

There is not one definition of box schemes. In general terms, they are often described as a weekly box with (seasonal, organic, local, quality) produce ordered from a farm or intermediary, delivered to the customer's home or to a collection point [10,11]. Box schemes are also described as a form of short agri-food supply chains [21] that aim to redefine relations and shorten distances to consumers, ultimately renegotiating the power balance in the food system [22,23].

There are farm-based box schemes and non-farm-based box schemes. There are box schemes organised as community supported agriculture (CSA), food hubs, or as profit seeking companies as well as everything in between.

CSA "provides members with periodic shares of local foods for a fixed fee" [24] (p. 1). Typically, consumers buy a share of the harvest in advance and may also participate in activities on the farm [25]. CSAs are different in terms of level of member/consumer engagement, delivery methods, national contexts, and degree of seasonality [17,26,27].

In France, a special case of box schemes is the *Association pour le maintien de l'agriculture paysanne* (AMAP). The idea of an AMAP is to "organise long-term contracts between producers and consumers around the supply of food products on the basis of geographical proximity" [28] (p. 310). Unlike other CSAs, AMAPs are often started by a group of consumers, that then make contact with a farmer [28]. In Belgium, the equivalent is called GASAP (*Groupe d'achat solidaires de l'agriculture paysanne*).

In some of the academic literature, box schemes and CSAs are not differentiated, in other cases, they are. While Bos and Owen [23] suggest that CSA is part of civic oriented food systems, and box schemes are more business oriented, Cicia, Cembalo, and Del Giudice [29] describe box schemes as

simplified versions of CSAs. Kneafsey et al. [16] describe box schemes both as sales in proximity (CSA and farm direct deliveries) and sales at a distance (delivery schemes and/or Internet sales).

One way to pin-point what box schemes are is to call them food subscription schemes [14]. They have in common a regularity of packing, distribution, and purchase; the variety of products is (largely) selected by the packer; and consumers have limited choice [14] (p. 86). Food subscription schemes can be distinguished from food delivery schemes, which can be performed by any food retailer, and which are based on free choice for the consumer [14]. However, this distinction is not always straight forward.

The concept "food hub" is also used to describe box schemes. Food hubs are intermediary organisations—networks, businesses or strategic alliances—that manage the "aggregation, distribution and marketing" for dispersed producers and processors [8] (p. 21). While Berti and Mulligan [8] describe food hubs as profit-driven businesses, Blay-Palmer et al. [2] defined them as "community-based organisations and individuals that work together to build increasingly socially just, economically robust, and ecologically sound food systems that connect farmers with consumers as directly as possible" [2] (p. 524). In other words, food hubs enable aggregation of supplies from many (small) farms to cater for either larger food chain organisations such as supermarkets [30] or for forward distribution to end-consumers of box schemes.

Thus, "box scheme" is a family of types of schemes not easily captured by one defining characteristic. Some box schemes have a retail approach, with a wholesaler acting as co-ordinator and distributor. At the other end of the spectrum are community-supported schemes, where as well as a subscription, the members may provide labour. However, the problem of defining what box schemes are should not prevent us from exploring them further. Rather, it may help to develop typologies for further investigation.

2.2. Development and History

Different types of box schemes started evolving rapidly during the mid-1990s [14]. There has been a strong development in the USA, the UK, Italy, and in France [10,15], while they are less present in new EU member states [16]. For example, Brown, Dury, and Holdsworth [10] reported over 500 box schemes in the UK, serving more than 60,000 consumers [10] (p. 183) and Schermer [15] stated that there were 1600 CSA-like groups in France, reaching about 200,000 consumers. Haldy [14] noted that the largest organic food subscription schemes in Europe were based in the UK, Denmark, and in the Netherlands, at that time serving more than 10,000 customers each [14] (p. 17).

2.3. Consumer and Farmer Benefit

Research about why consumers choose to buy from a CSA, a box scheme, or the like states a diversity of reasons: when supplies of organic produce were scarce in supermarkets, an important reason to buy from a box scheme was the availability of organic produce as such, along with a mistrust towards conventional retail, a desire for a relationship with the farm, and local sourcing of food [14]. Additional motivations for consumers include supporting small businesses [22], eating more healthily, reducing environmental impact, home delivery [31], and convenient ordering online [7,11]. Brown, Dury, and Holdsworth [10] found national differences: while the English found less food miles to be the most motivating factor, the French considered high quality food to be most important [10] (p. 183). Thus, buying from a CSA or another type of box scheme offers more than the food itself to most consumers [25].

Buying from a box scheme can influence eating habits and attitudes towards food [32]. For example, in the study by Freedman and King [31], over 90% of consumers said that they had increased consumption of organic food and over 80% said that they had tried new fruits and vegetables [31] (p. 135). These consumers are comparatively affluent and well educated [10]. There are also barriers for consumers to buy more via box schemes, the most mentioned being price and inconvenience [10]. Inconvenience can be the lack of variety of produce, a desire for out-of-season products not available

in the box, or the need to pick up the box at the farm or elsewhere [31]. Consumer satisfaction seems to increase with time, if consumers visit the farms that supply the box, and if they support alternative agricultural practices [26].

Box schemes offer farmers a possibility to by-pass the mass distribution system [33] and capture a market premium on a small volume [10]. Other benefits for producers include, especially in the form of CSA: sharing part of the production risk with consumers, internalising the benefits of distribution, more jobs at the farm, and the incentive to work with other farmers [29] (p. 81). Thus, there is a potential for renewed ties between farmers and consumers as well as between farmers [34]. While this potential is not always realised, it is more likely to happen in a CSA/box system than in a context such as a supermarket [35].

2.4. Environmental and Social Implications of Organic Box Schemes

The research about box schemes and environmental impacts that exist mainly deals with the distribution and packaging mode specific to box schemes. The environmental impacts of a box scheme decrease with non-dedicated car travel [36]. Home delivery of the box generally results in lower carbon emissions [37]. Coley and colleagues [37] found that a car round-trip longer than 7.4 km to buy organic vegetables produced higher carbon emissions than from a system of "cold storage, packing, transport to a regional hub and final transport to customers' doorstep used by large-scale box schemes" [37] (p. 154). Lughofer [38] compared greenhouse gas emissions from four different organic vegetables sold in mainstream supermarkets via boxes with home delivery and on farmers' markets in Vienna. He found that if the consumer went shopping by car, the home delivery option emitted the least CO_2-equivalents and the supermarket option the most. If shopping was done on foot or bike, the home delivery, and supermarket options were almost identical while the farmers' market option was the best. He also found that car travels to and from a farm shop were more wasteful than any other option.

Less food is lost in short chains where there can be a higher acceptance of less-than-perfect crops [33] (p. 1926). However, the benefits of reduced distance and fewer intermediaries create higher distribution costs and less efficient logistics [19,39].

Social benefits include creating regional jobs [8], contributing to the local economy [30], and "increased proximity and understanding between different actors in the food system" [32] (p. 233). Trust is an important factor in this process, although trust is more often a precursor to the development of local food systems, rather than an outcome [40]. Trivette [40] mentions three ways in which trust is built: through establishment of reliable, positive relationships between actors; through expression of good will between these actors; and through a recognition of the importance of the work other actors do [40] (pp. 529–530). Thus, obtaining trust needs commitment [40] from both consumers and from producers/providers of box schemes. A drawback of box schemes seems to be their vulnerability to competition from other types of food delivery services [13]. Schermer [15] cautions that CSA-like initiatives need to remind organic direct marketing organisations of their core values to avoid neoliberal appropriation [15] (p. 130). Another challenge is the self-exploitation of farmers in these systems. For example, Galt [41] showed for a sample of CSAs that since other values are so important, income is less prioritised and thus "farmers undervalue their own work in monetary terms" [41] (pp. 360–361). Thus, at the same time, as farmers enjoy being part of an alternative system, they may engage in self-exploitation [41].

2.5. Use of Online Tools for Shopping and Direct Exchange

The development of box schemes go hand in hand with information technology: the Internet, web pages, and social media [7,23]. Box schemes typically use online tools to interact with customers and to show what they have to offer [13,22]. Since it is the social relationship—as much as it is the spatial relationship—that facilitate trust [40], online tools such as webpages, social media, and emails can be used to "extend the notion of material reconnection" into virtual reconnection or direct exchange [23] (p. 9). While virtual contact does not substitute the direct exchange that occurs in

face-to-face interaction, it can complement it and help to develop the transformative potentials of alternative food networks [23].

For consumers, ordering online is a convenient advantage [7,11]. Online shopping saves time both through home delivery and by being possible to do when it is most convenient for the consumer [7]. Wills and Arundel [7] found that online consumers in a box scheme setting are more likely than offline consumers to be young, highly educated, live with other adults, and look for cost minimisation and compliance with certification schemes [7] (p. 708). The latter can be partly explained by the inability for the consumer to inspect produce before buying them [42].

For box schemes, online tools are used as a low cost and efficient method of promotion, a "shop front", communication, generate new customers, and connect to consumers [23]. Indeed, it is one of the prerequisites for box schemes to being able to scale up [13].

2.6. Scalability Issues

Box schemes, CSAs, or organic food subscription schemes exist in different forms and sizes. Some box schemes are large and some, especially CSAs, tend to be smaller [26]. Food system transformation can only be brought about if sustainable local organic organisations are able to develop and spread (i.e., scale up and scale out), without compromising the guiding principles of sustainability [1,2]. Aggestam, Fleiss, and Posch [43] argue that box schemes are an example of scaling up without "reducing the level of intangible values" [43] (p. 71). These values include the relationship and trust established with the farmers [35]. Scaling out can be practical arrangements where box scheme farms with different soil and climatic conditions cooperate to offer a broader range of produce [19]. According to Haldy [14], who investigated different sizes of organic food subscription schemes, big box schemes grow by exploiting market opportunities within a region or country by having a retailing approach, and by being more volatile than smaller schemes [14] (pp. 62, 96). Haldy [14] lists a number of success factors for large schemes: entering the market at an early stage, planning to grow beyond the region, presenting themselves as alternatives to supermarkets, giving a lot of attention to public relations and networking, and coping well organisationally with the growth process [14] (p. 97). He also points out that larger box schemes have a retailing approach and that smaller ones tend to be farm-based. Haldy [14] further remarks that the most successful organic subscription schemes have "either never been farms, or production is not their core business anymore" [14] (p. 18). Rather, they can be described as food hubs, acting as a type of middlemen or intermediaries with greater distributional capacities than individual farms, but still keeping the links in the overall supply chain low [19,35]. Thus, when a higher level of organisation, logistics, and structures is needed, food hubs can be helpful in scaling up local organic food ventures [8,11]. In this case, scale is achieved by collective action and not through the increased size of individual farms [8] (p. 13).

However, there are a number of challenges attached to scaling issues. First, the connection between local sustainable development and a large box scheme is weaker than in the case of a CSA where farms and consumers are typically located in the same area [29]. Second, and linked to the first, a large box scheme obviously has a more complex task creating this connection due to the large number of suppliers, geographic distances, and nodes along the supply chain, "all of which make interactions between consumers and farmers less personalised or place-based" [13] (p. 131). Third, not all box schemes are the same, and thus different box schemes give different priorities to organic production, local sourcing or social justice [10]. Exclusively local sourcing often implies that produce cannot be offered during the entire year, and so customers may drop out. Especially larger box schemes may address the problem of seasonality by offering imported products [13]. By doing so, they ensure that customers continue with their subscription and place the scheme as a viable alternative to supermarkets, to which consumers would otherwise be pushed toward. At the same time, smaller box schemes, and especially CSAs, may not be suitable to scaling up, or do not aim at scaling up at all, since they are individual farms, and thus cannot provide food for very a large number of consumers [39].

There is not much literature about the actual size of box schemes (i.e., number of boxes or number of subscribers) in relation to work organisation, communication, delivery modes, etc. While Haldy [14] clustered all subscription schemes with <2000 boxes/week as one size category, other studies have looked closer at smaller schemes and found some differences. For example, Nost [17] investigated three CSAs of different sizes (60, 180, and 500 shares, respectively). The smallest CSA aimed to only sell what the farm produced, and the owners packed the produce themselves. The CSA with 180 shares sold produce from one partner farm, and the largest scheme used produce from a number of farms in their area. The 180 shares farm used volunteer labour and paid staff to make up for the labour demand, but did not pack boxes. The 500 shares farm used volunteers and waged staff as well as family members, and also packed the boxes. The communication and education of shareholders was a larger task in this farm when compared to the others, and the larger farm also communicated more via newsletters than face-to-face. An aim for the largest farm in Nost's [17] study was to make each box equivalent, even if produce was sourced from different farms. The smaller farms in the sample "tended to operate on a spatial extent more specific to their own farms and within a scope where the relation between grower and eater was less mediated by auction managers or aggregators" [17] (p. 158). Lang [26] noted that 250 shares "is huge by CSA standards" (p. 67) and also included CSAs with 90, 20, 18, and 14 shares, respectively, in his particular study. In conclusion, there seems to be differences in how box schemes work, depending on how large they are. From the available literature, it is not possible to make clear-cut size group clusters, but there are hints that size may play a role in organisation, modes of communication, sourcing of produce, etc.

Thus, while some information is known about organic box schemes, it is not entirely easy to grasp what box schemes are and what they are not. There have been different developments in different countries, different definitions and rationales for box schemes, and they can scale (or not) in different ways. At the same time, they do try to communicate with their consumers, and they do aim to find ways to contribute to the sustainability transformation of the food system [1]. Since larger overviews are lacking and we mainly depend on case studies for the knowledge we have, this article contributes by exploring "box scheme" as an analytical category and by investigating the diversity of box schemes based on a larger sample of box schemes in different countries. We explore how boxes are delivered, how far produce travels, how important different communication channels are, and what values the box schemes adhere to. We also want to learn about the box schemes' past and desired future growth.

3. Methods

Fully, or partly, organic box schemes in Austria, the UK, Belgium, and Croatia were searched for on the Internet, contacted via email, and invited to participate in an online survey. Of the 228 contacted box schemes, 44 responded (response rate: 19%) (Table 1). The online survey was performed using LimeSurvey, and the questions were translated by native speakers. The online survey was conducted in spring 2016.

Table 1. Sampling strategy and response rates of the countries in the study.

Country	Sampling Based on	No. of Box Schemes Contacted	No. of Responses (Response Rate)
Austria	Online lists of Umweltberatung [44] and Bio Austria [45]	43	15 (35%)
UK	Internet search, online list at vegbox-recipes.co.uk [46]	147	18 (12%)
Belgium	Internet search, list of members of GASAP [47]	21	5 (24%)
Croatia	Internet search	17	6 (35%)
Sum		228	44 (19%)

3.1. Sampling

The four selected countries cover a variety of geographical ranges as well as different development stages of the organic market within Europe. The box schemes in the respective countries were sampled using the keywords *box scheme*, *vegetable box*, *vegetable basket*, *delivery box*, translated to the respective

languages as well as other terms that were appropriate in the context of the specific country or region, for example, "*green basket*" ("*Zelena košara*" in Croatian). In most countries (except Croatia), we found online lists of box scheme providers and used these lists to contact box schemes (Table 1).

The main selection criterion for box schemes to be included in the survey was that they offered organic products. When using the term "organic" here, we mainly refer to products from certified organic agriculture. Additionally, we also asked respondents if they offered non-certified organic products (i.e., claiming to follow organic production methods without certification).

As a consequence of our methodological approach, only box schemes that either had an Internet presence themselves, or that could be found in online lists of box schemes were included in the study. Additionally, only box schemes displaying an email contact were considered in the survey, as the invitation to the survey was via email. Another consequence is that only box schemes that called themselves "box scheme" (or used any other related term we applied in our Internet search) were captured in the study.

In Austria, the online lists used for sampling [44,45] contained all box schemes operating in Austria at the time of the study. With a response rate of 35%, the situation of box schemes in Austria was well captured in this study. On the other hand, the lists only partly covered CSAs in Austria, as CSAs are considered as something different in the Austrian context (i.e., systems where consumers pre-pay the food share for a longer period of time or for the entire season, in comparison to box schemes that usually work without pre-pay). For the UK, it is not possible to say if the online list used for sampling [46] was complete, however it was extensive and covered a wide diversity of box schemes. It seems plausible that some were missed since the number of schemes reported by Brown, Dury, and Holdsworth [10] was 500, which they in turn obtained from the Soil Association organic market report for 2007. Sampling in the UK was restricted to England, Scotland, and Wales. In Belgium, the focus was mainly on GASAPs (*Groupe d'Achat Solidaire de l'Agriculture Paysanne*), and contacts were found on the GASAP website [47]. As the number of GASAPs was relatively small and were limited to the Brussels region, an additional Internet search provided more contacts of box schemes that were not part of the GASAP system. Furthermore, sampling in Belgium was restricted to Wallonia, due to language reasons. In Croatia, box schemes are still a very new phenomenon—local organic products are largely marketed in farmers' markets or in farm shops [48]—but no comprehensive list or directory of Croatian box schemes was available. Altogether, considerable effort was invested to establish a complete and extensive sample base in each country, and all box schemes found were invited to the survey. However, the responses to the survey were not necessarily representative.

Master students were involved in the data collection in the context of a university lecture. Originally, student teams covered box schemes in 11 countries worldwide, and 78 box schemes answered the online survey [48]. For this article, we analysed the cases from the four countries with the most survey responses and highest response rates. Additionally, we selected these countries to cover a variety of geographical ranges and different development stages of the organic market.

3.2. Online Survey

The survey was divided into six groups of questions, covering the following topics: general information on the box scheme, size and growth, products in the boxes, ordering and delivery, advertising and communication, and values (see survey form in Supplementary Materials).

Altogether, the survey contained 35 questions, most of them closed questions with pre-defined answer categories such as yes/no, multiple choice questions, 5-point Likert scales [49], or asking for quantitative entries (e.g., years of operation, number of employees, etc). Three questions were open questions allowing for qualitative answers (i.e., asking respondents why or why not they wanted to increase their sales in the future, how customers and farmers were able to meet personally, if applicable), and the final question of the survey asked for additional comments or feedback. Qualitative answers that were not in English were translated into English by the authors. In all cases, the survey was sent to the official and available email address of each identified box scheme. However, we did not ask about

who filled in the survey and thus there may be differences in answers depending on whether the person was an employee, manager, or customer (as would be possible in the case of some CSAs or GASAPs).

3.3. Data Collection and Analysis

The 228 box schemes that were found during the online research were invited to participate in the survey by clicking on a link. After the first invitation, several reminders were sent out to the box schemes to increase the response rate. There are at least two issues that influenced the response to the survey: first, the survey was long and thus challenging to fill in for producers and box scheme managers; and second, the order of questions was not optimal, as the interviewees were asked in the beginning to state the name and address of the box scheme. The fact that a number of box schemes opened the survey and then closed it again is an indication that this entry question probably kept potential interviewees from answering the survey. After achieving an acceptable response rate for an exploratory study, survey data were analysed with the software programs *Excel* and *SPSS Statistics* using descriptive and statistical analysis (frequencies, contingency tables, and Spearman correlations with size categories). Regarding significance levels, we defined $p < 0.01$ as highly significant and $p < 0.05$ as significant.

The investigated box schemes were grouped in three size categories during our analysis. These categories were defined by the number of boxes sold in 2015, which was the reference year in the survey. Box schemes were defined as small when they sold <50 boxes per week; medium sized when they sold between 51 and 500 boxes per week; and large when they sold >500 boxes per week. This categorisation is a result in itself and is based on the sizes of the box schemes answering the survey. The size categories might be different if the sample were different (e.g., larger box schemes in the sample, see Section 2.6). We are aware that these groups do not represent a universal definition of size groups for box schemes, but we found this distinction useful for analysing our specific sample, and correlations based on size groups illustrated interesting differences and tendencies. At the same time, we are cautious about these results since the number of cases per size group was small. Additionally, the number of cases varied between size groups (i.e., the sample contained 11 small, 25 medium, and eight large box schemes), which affects and probably distorts the correlations. Since this is an exploratory study, we will focus on showing tendencies that point at issues for further research with a larger and more balanced sample.

3.4. Wording and Concepts

When the term "consumers" is used in the text, we refer to consumers in a general context. If we explicitly refer to concrete customers of box schemes (i.e., people buying the boxes), we use the term "customer". When using the term "supplier", we refer to any type of supplier (i.e., farmers, processors and traders delivering products to the box scheme). If referring to agricultural producers, we use the term "farmers".

4. Results

We first present a descriptive analysis of the investigated box schemes, and point to some differences between countries. We then explore whether the size of the box schemes influenced key issues such as delivery distance, mode of communication with customers, and values they found important.

4.1. Organisation, Size, and Growth of the Box Schemes

The 44 box schemes had existed between two and 26 years and delivered between four and 7500 boxes per week in 2015. In their first years, the surveyed box schemes delivered between two and 900 boxes. The mean number of employees was 11 employees (zero to 120) (Table 2).

Table 2. General information on the investigated box schemes (n = 44).

	Years of Operation	No. Employees	Boxes/Week First Year	Boxes/Week 2015
Arit. mean	11.1	10.6	68.2	567.2
Median	10.5	4.5	30.0	95.5
Max	26	120	900	7500
Min	2	0	2	4

More than half of the box schemes (57%; f = 25) were medium sized (i.e., sold 51 to 500 boxes per week), 11 box schemes (25%) were small (i.e., sold <50 boxes per week), and eight box schemes (18%) were large (i.e., sold >500 boxes per week).

Regarding the organisational type, nine of the surveyed box schemes were organised as a farm, 17 as a company, five as a farm and company, seven as CSAs, and six indicated other organisational types (e.g., cooperative, social non-profit association, social enterprise, partnership) (Figure 1). In the case a box scheme was organised as a farm and company, it may have started as a farm selling boxes as a form of direct marketing. As the box scheme business grew, a company was established (linked to the farm, but organised as a separate business).

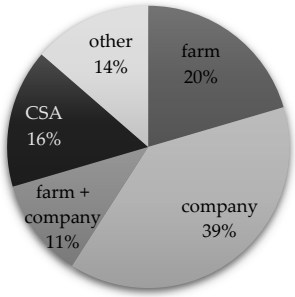

Figure 1. Organisational types of investigated box schemes (n = 44; organisational types were pre-defined).

Size and growth rates were very diverse in the sampled box schemes. On average, box schemes had grown 16% per year and had multiplied their sales by the factor of 8.3, since the start of the box scheme (Table 3). In four cases, box schemes had experienced a decline in sales (i.e., sold less boxes in 2015 than in their starting year). Three of these four box schemes were comparably very small (i.e., sold less than 20 boxes/week), and one of these box schemes mentioned that it would stop its business and instead focus on marketing via the farm shop. The fourth box scheme was medium sized and wanted to increase volumes to be more viable.

Table 3. Box sales and growth rates (n = 44).

	No. of Weekly Boxes in First Year	No. of Weekly Boxes 2015	Growth Rate in Weekly Boxes per Year [1]	Multipli-Cation [2]	Growth Rate Total [3]	Average Growth Rate over Time [4]
Arith. mean	68.2	567.2	39.2	8.3	729%	16%
median	30.0	95.5	8.2	3.4	240%	11%
max	900	7500	411.1	83.3	8233%	88%
min	2	4	−1.3	0.5	−50%	−11%

[1] Growth rate in weekly boxes per year = (weekly boxes 2015—weekly boxes first year)/years of operation; [2] Multiplication = weekly boxes 2015/weekly boxes first year; [3] Growth rate total = (weekly boxes 2015—weekly boxes first year)/weekly boxes first year; [4] Average growth rate over time = (weekly boxes 2015/weekly boxes first year)$^{(1/\text{years of operation})}$ − 1.

Regarding future growth, 84% of the box schemes indicated that they wanted to continue to grow (i.e., sell more boxes in the future (Table 4)). Respondents often mentioned economic reasons (e.g., increasing cost recovery and profitability) and referred to high fixed costs:

"Personnel costs are planned for 1000 boxes per week, and now we are at 700." (AT_13)

"Greater turnover would decrease fixed labour costs." (UK_04)

Other reasons for wanting to grow were to reach more consumers and expand direct marketing:

"(. . .) we want to offer many people excellent organic food." (AT_03)

"We would like to increase the number of boxes sold because we believe that the best sale is directly to the consumer, without other intermediaries." (HR_03)

Apart from reaching more consumers, support for local farmers and creating jobs were also rationales behind wanting to grow:

"To offer more support and business to the local farmers we work with, create more jobs and enable more people to eat great food." (UK_15)

Making good use of available capacities/resources was a central reason for wanting or not wanting to grow:

"To reach 150 baskets, number which offers on our scale the best adequacy between our surface and capacity of production and the demand of households in short circuit." (BE_02)

"We can increase to about 60 full shares at which point we will be running at full capacity for the land we have. Which we are now close to." (UK_10)

On the other hand, seven of the surveyed box schemes (16%) stated that they did not want to increase their sales, most often because they had reached a sufficient size, or had already reached the maximum use of capacity. In one case, the respondent indicated they were stopping the box scheme as it was not profitable (Table 4). Box schemes that had already reached the maximum use of capacity (regarding production, transportation facilities or workload) did not aim at increasing sales:

"We have no plans to increase the amount of land we are working and we believe we are growing as much as we can on the land so there is no scope to increase the number of boxes sold." (UK_18)

"We are happy with the level of business we do. We feel it is important to do what we do well, and not to spread ourselves too thin." (UK_16)

Table 4. Reasons for wanting or not wanting to increase the number of boxes sold (reasons are clustered qualitative answers from 39 respondents; five respondents did not state a reason; multiple answers possible).

Reason for Wanting to Grow (f = 37)	f	Reason for not Wanting to Grow (f = 7)	f
reach better or optimum use of capacity	8	sufficient size/scale	4
reach more consumers	4	reached maximum use of capacity	2
expand direct marketing	4	will quit box scheme (was not profitable)	1
increase cost recovery	3		
hire additional employee(s)	3		
increase profitability	3		
increase production	3		
other reasons	9		

4.2. Product Range, Production Mode, and Provenance of Products Offered in the Boxes

All box scheme offered vegetables in their boxes, most box schemes (84%) also offered fruits, half of them (50%) offered bread or other cereal products. Products that were less frequently offered were

tea and coffee (25%), cleaning supplies (25%), alcoholic drinks (23%), cosmetics (16%), and fish (14%). None of the investigated box schemes offered clothes (Figure 2).

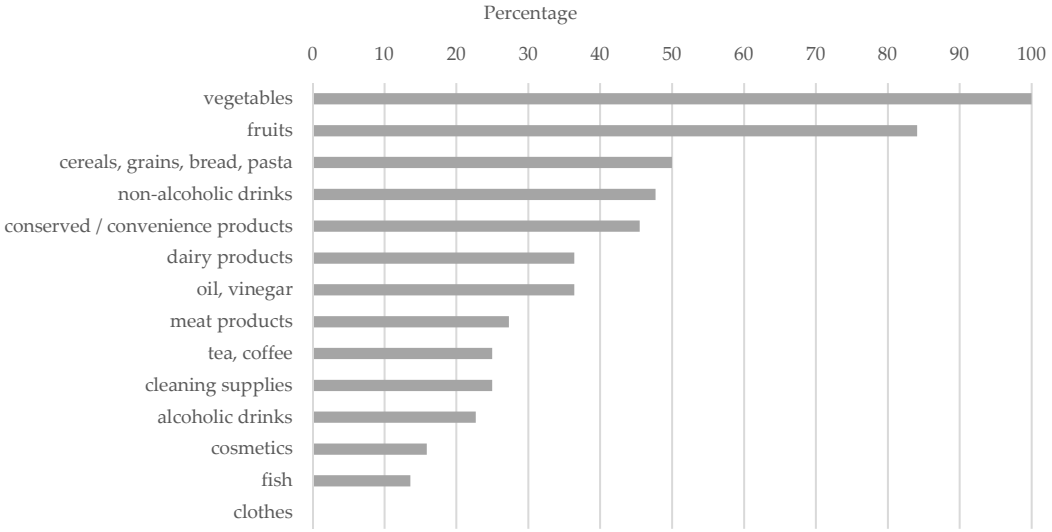

Figure 2. Products offered by the box schemes (n = 44; 15 product categories were pre-defined, multiple answers possible).

Regarding their product range, the box schemes on average offered 5.4 product categories (median = 3.5), with a maximum of 14 (out of 15) product categories, and a minimum of one product category. Six box schemes (13.6%) only offered one product category in their boxes (in all cases only vegetables). Half of the box schemes (50.0%) offered a maximum of three product categories, and eight box schemes (18.2%) offered at least ten product categories in their boxes.

Asked about the mode of production, respondents indicated that 90% of the products offered in the investigated box schemes were certified organic products; and 64% of the box schemes offered only certified organic products. When also considering non-certified organic products and products from conversion to organic production, 96% of the offered products were (certified and non-certified) organic, and 84% of the investigated box schemes offered only (certified and non-certified) organic products (Table 5). The high percentage of organic products is also due to the fact that offering organic products was a sampling criterion (see Methods Section).

Table 5. Production mode of products offered in the investigated box schemes (n = 44; categories of production mode were pre-defined).

	Arit. Mean	**Count 100% Cases**	**% 100% Cases**
% of certified organic products	90.2	28	63.6
% of non-certified organic products	5.8	1	2.3
% of conventional products	3.7	0	0.0
% of other products (e.g., in conversion)	0.3	0	0.0
% of organic products in total (=certified + non-certified + in conversion)	96.1	37	84.1

Provenance of products: All surveyed box schemes offered local products. Asked for the maximum distance to define a product as "local", respondents indicated distances from 10 to 400 kilometres (arit. mean: 109 km, median: 80 km). More precisely, 72% of the respondents defined local as a distance of maximum 100 km (n = 39; five respondents did not answer this question).

In the survey, the box schemes were asked to indicate where the products they sold in the boxes came from. Calculating the mean over all box schemes (n = 44), 41% of the products came from their own farm, and 76% were products from within a 100-km distance (i.e., within a distance that most of

the respondents had defined as being "local"). Seven box schemes (16%) only offered products from the own farm in their boxes. Eleven box schemes (25%) did not sell products from their own farm (and supposedly did not have their own farm); 34% of the box schemes indicated that they did not sell products from more than a 100-km distance; and 55% did not sell products from more than a 500-km distance (Table 6).

Table 6. Provenance of products sold in the boxes (n = 44; provenance categories were pre-defined).

	Arit. Mean	Count 100% Cases	% 100% Cases	Count 0% Cases	% 0% Cases
% own production (from own farm)	40.9	7	15.9	11	25.0
% within 20 km (excluding own production)	15.5	1	2.3	13	29.5
% 20 to 100 km	19.7	1	2.3	12	27.3
% 100 to 500 km	14.6	0	0	15	34.1
% more than 500 km	9.4	0	0	24	54.5

Two thirds of the surveyed box schemes (66%) stated that they sold imported products. All of these came from trading companies or wholesalers. In addition, seven imported directly from farms, and one imported from a cooperative (n = 29; multiple answers possible). Compared to the provenance of products in the boxes, there was a discrepancy in the survey results: 55% of the respondents stated that they did not sell products from further than 500 km away (Table 6), but only 44% stated that they did not sell imported products. This may be due to the fact that some box schemes might be situated close to borders, or that respondents when asked for the provenance of produce in the boxes mainly thought of vegetables, and only when explicitly asking for imports thought of products such as bananas or coffee.

Asked for the number of suppliers providing produce to their box schemes, the investigated box schemes (n = 41; three respondents did not answer the question or provided invalid data) on average had 8.5 farmers, 3.1 processors (e.g. bakeries, dairies), and 1.9 traders or trading companies supplying the box scheme. Seven box schemes (17%) stated not having any suppliers to the box scheme.

Regarding delivery frequencies, the majority of the box schemes (93%) delivered their boxes weekly. Of the remaining three box schemes, two box schemes only delivered every second week, and one box scheme at variable intervals. Additionally, most box schemes offered the possibility of variable delivery intervals. The investigated box schemes indicated that 77% of their customers ordered regularly each week.

Asked for how their customers received the boxes, the prevalent delivery mode was home delivery (75%), followed by picking up at pick-up spots (48%), and pick up at the farm (34%) (n = 44, multiple answers possible). Half of the box schemes (50%) offered only one option for point of delivery.

Regarding delivery distances from the main distribution centre to the customers, respondents indicated highly variable distance ranges. Overall, average delivery distance was 29 km, and maximum delivery distance was 74 km (arithmetic means). These distances were highly variable, ranging from zero up to 600 km (Table 7), a fact that can partly be explained by the presence of an outlier in the sample (i.e., a small box scheme (five boxes/week in 2015) indicating a 300 km average delivery distance and 600 km maximum delivery distance).

Table 7. Delivery distances to customers of the investigated box schemes (n = 40; four answers missing).

	Average Delivery Distance in km	Maximum Delivery Distance in km
Arit. mean	29.3	73.9
Median	15.0	30.0
Std. Deviation	51.2	109.1
Min	0.0	2.0
Max	300.0	600.0

4.3. Communication and Values

The investigated box schemes were asked how customers ordered the boxes (Table 8). Overall, 45% of the orders were placed via webshop/Internet, 36% via email, 11% via telephone, and 8% of the orders were done were done face-to-face. The majority of the box schemes offered several possibilities for ordering. Only three box schemes exclusively used webshop/Internet for orders, four box schemes exclusively used email, and one box scheme exclusively used face-to-face ordering.

Table 8. Different channels used for ordering the boxes (n = 44; pre-defined answer categories, multiple answers possible).

	Arit. Mean	Count 100%	% 100%	Count 0%	% 0%
webshop/Internet	45.2%	3	6.8	14	31.8
email	36.3%	4	9.1	5	11.4
telephone	10.9%	0	0.0	11	25.0
face-to-face	7.6%	1	2.3	21	47.7

For advertising, most investigated box schemes used Internet (84%), personal contact with consumers (75%), flyers (61%), and social media (59%). Other channels or media were less frequently used for advertising (e.g., newspapers (32%), radio (5%) or TV (5%) (n = 44, multiple answers possible)).

For communication with customers, 96% of the box schemes used email, 55% used printed leaflets added to the boxes, and 52% used telephone (Figure 3). Six box schemes (14%) mentioned other channels, and four of those six specified using online information (such as a website) or social media (e.g., Facebook) for communication with customers. Social media and websites were no pre-defined answer categories in this question, so it remains unclear if respondents would have mentioned them more frequently if this had been the case.

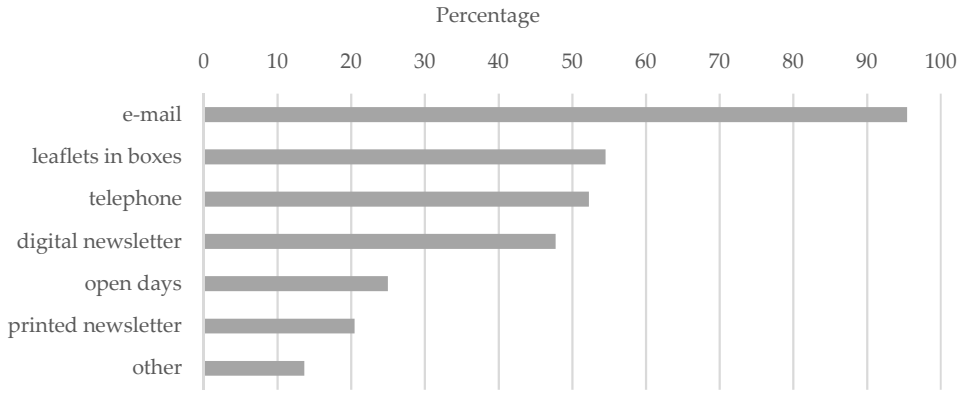

Figure 3. Channels of communication used with consumers (n = 44; answer categories were pre-defined, multiple answers possible).

Asked which information they provided to their customers about the products in the boxes, most box schemes offered various details such as the name of producer (68%), origin (66%), description of products (64%), and recipes (61%) (n = 44, multiple answers possible).

For communication with suppliers of the box schemes (i.e., farmers, processors, or traders), the box schemes mainly used email (86%), and 84% communicated personally with their suppliers. Organised meetings (e.g., at the company) were less frequent (18%) (n = 44, multiple answers possible).

We also asked respondents, if customers and farmers of the box scheme had the opportunity to meet in person, and 33 box schemes (75%) affirmed. Most respondents mentioned the possibility of meeting on occasional events such as open farm days, farm festivals, seedling fairs or days at the field ("weed dating"), at the pick-up spot, at farm shops or farmers' markets, or they mentioned that customers could visit the farms on their own initiative (Table 9).

Table 9. Frequency of different types of meetings between customers and farmers of investigated box schemes (clustered qualitative answers from 33 respondents, multiple answers possible. Eleven respondents indicated that there were no possibilities for meetings between customers and farmers.).

How Customers and Farmers Meet	f	%
at events (occasional)	12	36.4
at pick-up (regularly)	8	24.2
customers can visit farm (not organised)	7	21.2
at farm shop/farmers market	7	21.2
in organised meetings	4	12.1
not specified	2	6.1
during delivery	1	3.0

Asked about the importance of 16 pre-defined values, box scheme representatives rated quality production as the most important value (arithmetic mean of 4.75 on a 5-point Likert scale) (Table 10).

Table 10. Importance of 16 pre-defined values for investigated box schemes (n = 44; rating on 5-point Likert scale: 5 = very important, 4 = important, 3 = moderately important, 2 = considered but not very important, 1 = not important).

Pre-defined Values	Arit. Mean	Rated "Very Important" (f)	Rated "Very Important" (%)
quality production	4.75	34	77.3
organic production	4.70	36	81.8
sustainability	4.70	32	72.7
supporting small-scale farms	4.57	29	65.9
local production	4.55	29	65.9
transparency	4.36	22	50.0
fair wages	4.32	22	50.0
reducing transport	4.30	21	47.7
personal interaction farmers & consumers	4.27	23	52.3
reducing CO_2-emissions	4.20	20	45.5
transfer of knowledge	4.07	18	40.9
profitability	3.95	15	34.1
community building	3.75	10	22.7
supporting social projects	3.73	11	25.0
traditional agriculture	3.61	12	27.3
artisan production	3.52	8	18.2

All pre-defined values were highly ranked by the respondents (i.e., reached high arithmetic means), but we can observe that some values were given the highest rating (i.e., rated 5, considered as being "very important") by the majority of the respondents. These values were organic production (82% of the respondents rated as being "very important"), quality production (77%), sustainability (73%), supporting small-scale farms (66%), and local production (66%). From the respondents' answers, we can assume that these values are of high importance throughout the sample (Table 10).

4.4. Differences in Box Schemes Characteristics Between Countries

Characteristics of the investigated box schemes differed between countries: UK box schemes on average had existed for 14 years, Austrian for about 11 years, and in Croatia and Belgium since around 6.5 years. The number of employees was highest in Austria. The largest box schemes in the sample were situated in Austria and the UK. In all four countries, the investigated box schemes had grown considerably. Highest growth rates were observed in Austria (Table 11).

Table 11. Characteristics of the investigated box schemes differentiated for country (n = 44; values based on arithmetic means).

Country	No. Cases	Years of Operation	No. Employees	Boxes/Week First Year	Boxes/Week 2015	Growth Rate (Multiplication *)
United Kingdom	18	14.3	7.2	90.8	438.4	4.8
Austria	15	10.7	19.3	75.0	1078.3	14.4
Croatia	6	6.5	6.3	14.5	69.8	4.8
Belgium	5	6.4	1.6	30.8	94.6	3.1

* Multiplication = weekly boxes 2015/weekly boxes first year.

These differences in characteristics between countries can also be explained by analysing the size categories in every country: While Belgium and Croatia did not have any large box schemes in the sample and half or more than half of the box schemes were small, in Austria and the UK, medium and large box schemes prevailed (Figure 4).

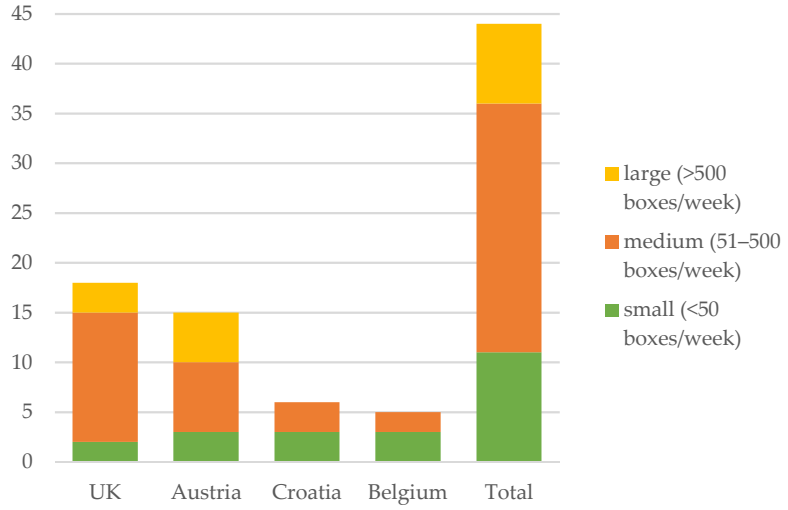

Figure 4. Frequency of size categories differentiated for country (n = 44).

Organisational types also varied between countries. While Austria had the highest percentage of box schemes organised as companies, in Belgium, CSA box schemes prevailed. Most box schemes in Croatia were farms, and in the UK, organisational types were quite evenly distributed (Figure 5).

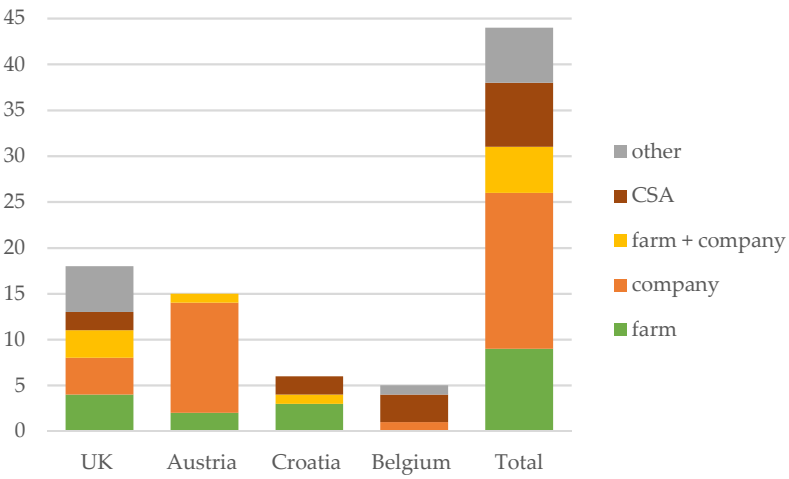

Figure 5. Frequency of organisational types differentiated per country (n = 44).

4.5. Tendencies Related to Size (Categories) of the Investigated Box Schemes

Size category was significantly correlated to number of employees (r = 0.665 **; p = 0.000), and to years of operation (r = 0.401 **; p = 0.007): larger box schemes on average had more employees and had been in operation for more years than small box schemes (Table 12).

Table 12. Correlation of size category and number of employees and years of operation of the investigated box schemes (n = 44).

	No. Employees			Years of Operation
	Arith. Mean	Max	Min	Arit. Mean
Small (<50 boxes/week) (n = 11)	1.5	5	0	5.7
Medium (51–500 boxes/week) (n = 25)	5.8	20	0	12.8
Large (>500 boxes/week) (n = 8)	38.0	120	5	13.1

Small box schemes were significantly more often organised as CSA (r = 0.436 **; p = 0.003). There was no significant correlation between size category and organisational type "farm" or "company" (Table 13).

Table 13. Correlation of size category and organisational type of investigated box schemes (n = 44).

Size Category		Organisational Type					Total
		Farm	Company	Farm + Company	CSA	Other	
small (<50 boxes/week); (n = 11)	Count	3	3	0	5	0	11
	% within row	27.3 %	27.3%	0.0 %	45.5%	0.0 %	100 %
medium (51–500 boxes/week); (n = 25)	Count	4	9	4	2	6	25
	% within row	16.0%	36.0%	16.0 %	8.0 %	24.0%	100 %
large (>500 boxes/week); (n = 8)	Count	2	5	1	0	0	8
	% within row	25.0 %	62.5 %	12.5 %	0.0 %	0.0 %	100 %
Total	Count	9	17	5	7	6	44
	% within row	20.5 %	38.6 %	11.4 %	15.9 %	13.6 %	100 %

Size category was not significantly correlated to the wish to grow further, although all investigated large box schemes expressed that they wanted to increase the number of boxes sold.

There was no significant correlation between size categories and product range (i.e., number of product categories offered to customers). The correlation between size category and the selling of imported products was slightly below the significance level (r = 0.292; p = 0.054), in other words, 46% of the small box schemes, but 88% of the large box schemes offered imported products in their boxes. There was a tendency that different organisational types offered more or less imported products (i.e., 88.2% of box schemes organised as companies sold imported products, but only 14.3% of the CSA box schemes did).

There was no significant correlation between size categories and the definition of local products, defined by the respondents as maximum distance in km, although larger box schemes mentioned higher distances than smaller ones (Table 14).

Table 14. Definition of local products as maximum distance (in kilometres) related to size categories (n = 39; five respondents did not give a definition).

	Arit. Mean	Median	Max	Min
small (<50 boxes/week) (n = 10)	88.5	63	250	20
medium (51-500 boxes/week) (n = 21)	114.0	70	400	20
large (>500 boxes/week) (n = 8)	121.3	100	300	10

Note: Question to respondents was: "Please specify the maximum distance from your location that you consider as "local/regional" in km."

On the other hand, there was a correlation between size category and the provenance of the products in the boxes: large box schemes had a significantly higher proportion of produce coming from a distance higher than 500 km (r = 0.313 *; p = 0.039) (Table 15).

Table 15. Correlation between size category and provenance of products (n = 44).

	% from Own Farm	% from within 20 km	% from 20 to 100 km	% from 100 to 500 km	% from more than 500 km
small (<50 boxes/week) (n = 11)	41.5	18.2	20.9	12.3	7.1
medium (51-500 boxes/week) (n = 25)	44.3	15.0	18.8	15.7	6.2
large (>500 boxes/week) (n = 8)	29.2	13.1	20.9	14.4	22.4

Analysing the provenance of products regarding the organisational type of the box schemes, companies on average had a low percentage of their own produce, and a higher percentage of produce coming from further than 100 km and also further than 500 km away, in comparison with other organisational types (Figure 6).

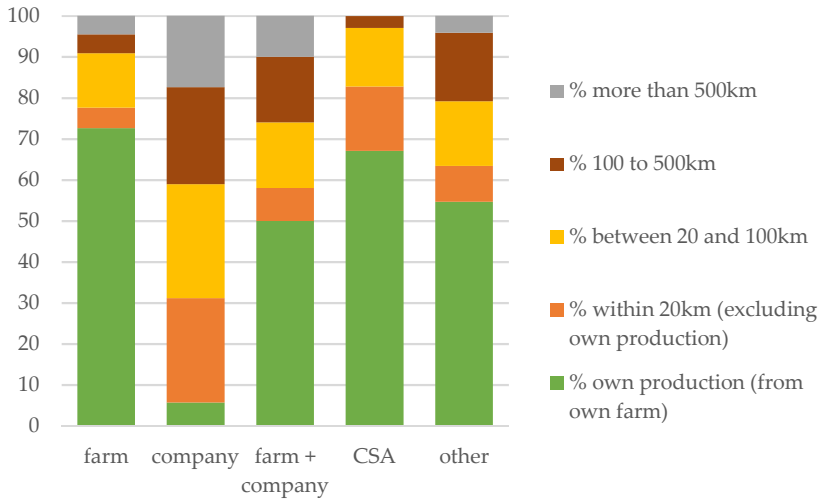

Figure 6. Provenance of products of different organisational types of box schemes (n = 44; values are arithmetic means for each organisational type).

There was no significant correlation between size category and delivery distances to customers regarding both average and maximum delivery distances.

A significant correlation was found between size category and the number of suppliers the box schemes purchased from: larger box schemes had significantly more supplying farmers (r = 0.391 *; p = 0.012) that delivered produce to them than small box schemes. Regarding the number of processors and number of traders supplying the box schemes, there were no significant correlations to the size category.

There were no significant correlations between size category and how the customers received the boxes, neither for home delivery, nor for pick-up (at the farm or at pick-up spots). On the other hand, there were tendencies regarding organisational types: box schemes that were organised as companies more often offered home delivery (i.e., 94% of the companies offered home delivery, but only 14% of the CSA box schemes did). All CSA box schemes in our sample (100%) offered pick-up, but only 47% of the companies did.

Concerning media used for advertising, larger and medium sized box schemes more often used social media than smaller ones (i.e., 60% of medium sized and 88% of large box schemes used social media for advertising, but only 36% of the small box schemes (r = −0.337 *; p = 0.025)).

Regarding communication with customers, larger box schemes used digital newsletters more often (r = −0.307 *; p = 0.042). Large box schemes also used leaflets more often (75%) than small box

schemes (27%). Additionally, larger box schemes significantly used open days for communication with consumers (r = −0.306 *; $p = 0.043$) more often: 32% of medium sized and 38% of large box schemes used open days for customer communication, but none (0%) of the small box schemes did. Concerning communication with farmers supplying the box scheme, there were no significant correlations in the way (i.e., channel) of communication and size categories.

There was no significant correlation between size category and the opportunity for face-to-face meetings between customers and farmers, although it seemed to be more usual for smaller box schemes (82%) than for large box schemes (63%) in our sample.

Additionally, we found no significant correlations between size category and the kind of information that was provided to consumers about the products in the boxes, although large box schemes in our sample seemed to provide more information (especially the name of the producer, origin, description of products, and recipes) to their customers (Table 16).

Table 16. Correlation between size categories and different information provided to customers (n = 44).

	Size Category					
	Small (<50 boxes/week) (n = 11)		Medium (51–500 boxes/week) (n = 25)		Large (>500 boxes/week) (n = 8)	
	f	%	f	%	f	%
name of producer	9	81.8%	13	52.0%	8	100.0%
origin (region/country)	7	63.6%	15	60.0%	7	87.5%
portraits of producers/processors	4	36.4%	6	24.0%	4	50.0%
description of products	8	72.7%	12	48.0%	8	100.0%
recipes	6	54.5%	14	56.0%	6	75.0%

Regarding the importance of different pre-defined values, we found a significant correlation between size categories and the value of quality production (r = −0.313 *; $p = 0.038$): small box schemes rated its importance as 4.91, large box schemes as 4.38 (mean values, 5-point Likert scale). For the 15 other values, there were no significant correlations with size groups.

5. Discussion

The box schemes in our survey had been operating for an average of 11 years. This shows that this is a fairly new phenomenon, and therefore important to study. Size and organisational type was an important factor for some of the features of the box schemes in the study. In other respects, box schemes were similar. For example, the majority of the box schemes in the sample viewed 100 km or less as being "local", and most of the produce offered in the boxes originated from their own farm or from within 100 km. In addition, the distance boxes travelled to be delivered was not further when the box scheme was categorised as large. However, the large schemes offered more imported products, consequently transported products from larger distances, and also had a higher number of farmers delivering to them. This may be a challenge in terms of what customers of box schemes expect them to deliver—more than the produce itself. For example, the UK box scheme consumers subscribed to boxes in order to reduce food miles and to have access to local foods [10]. On the other hand, Cicia, Cembalo, and Del Giudice [29] found that to achieve maximum customer satisfaction, the box scheme should offer "considerable flexibility in the choice of organic products, optimisation of product features (flavour and storability), perfect precision or correspondence between what is ordered and what is delivered" [29] (p. 89), which is more connected to quality and convenience issues than food miles.

Home delivery was offered by the majority of the box schemes, and box schemes organised as companies used it more often than other types. Thus, the box schemes in our sample offered convenient deliveries for consumers [31]. This is important since the main barriers to buy from a box scheme has been shown to be price and inconvenience, where part of the inconvenience concerned the need to pick up the box at the farm or elsewhere [10]. Since home delivery is a more complex task than farm pick-up or pick-up spots, this may also show a higher level of professionalisation. As Coley, Howard,

and Winter [37] found, home delivery is also environmentally more sound than extra trips (by car) to pick-up spots or farm shops. Thus, all other features being equal, home delivery is preferable to other delivery modes, especially if food shopping is done using a car [38].

5.1. Growth, Direct Exchange, Communication, and Values

Except for a few cases, organic box schemes grew and had grown in all countries and size groups in our study. The exceptions were very small schemes where a drop of one or two consumers implied a large decrease percentwise. As in the case of Haldy's [14] study, the large box schemes in our study seemed to have a retailing approach. They also wished to grow further, which may show that they are prepared organisationally for this. In this case, they may act as food hubs (i.e., focusing on redistribution of produce rather than farming themselves [8,14]). The box schemes selling less than 50 boxes per week were more often organised as CSAs. With a different business logic—being farm-based, selling what the farm produced—these box schemes may have experienced limits to growth in a manner that larger schemes did not.

It was more usual for small box schemes in our sample to have face-to-face interaction between customers and farmer(s). At the same time, they organised open (farm) days less often than large or mid-sized box schemes did. Since more small schemes were CSAs—mainly selling the produce off the farm—the need for open days may have been redundant due to the more frequent contact between farmers and customers. The (potential for) direct exchange/face-to-face interaction lies at the heart of what local food systems are often said to be about. Thus, the physical connectedness between consumers and producers is important [7]. However, as Mount [3] emphasised, direct exchange is not an end in itself. It is what happens during the direct exchange that is crucial. We cannot say anything about the quality of the interaction in this study, however, only about the occasions at which customers meet farmers. These occasions were mainly at the pick-up spot or at events such as open farm days. As has been shown in other studies, in some cases, nothing happens when consumers and farmers meet, but there is a potential for exchange that is valuable [6,35]. The provision of information can be an outcome of direct exchange, but it could also be the case that information can be provided without face-to-face interaction, mediated by social media [7].

The large and mid-sized schemes used social media for advertising more often than the smaller ones. Large schemes also used digital newsletters more often. One explanation for this could be that these additional channels were not necessary for small schemes that met their customers face-to-face. In other words, the larger schemes may compensate lack of personal connection with social media and newsletters. However, we did not ask about interaction via social media explicitly in relation to communication with consumers, so we cannot draw a strong conclusion about the use of social media in this respect. Still, from the survey, it is clear that most of the box schemes in the study used the Internet in some way: for advertising, ordering, communication, and offering information about the boxes and/or communicating with their supplying farmers. The sample method may have biased this result, however, since box schemes in the study were all contacted via email. Still, we think it is possible to agree with other authors that have argued that the development of box schemes go hand in hand with information technology [7,23].

Schemes largely shared the pre-defined values and ranked all of them relatively high. The values that were ranked highest among all size groups were organic production, quality production, sustainability, supporting small-scale farms, and local production, with quality production rated significantly higher by small box schemes. The reason for this could be that all box schemes in the sample including those that were defined as large, see themselves as alternatives, guided by other principles than in the mainstream food system. The pre-defined values may seem unproblematic and could miss illustrating the need for trade-offs necessary for box scheme operators. Thus, more exploration of how box schemes "reconcile diverse goals and values" [3] (p. 115) is needed.

In conclusion, while there are different forms of organic box schemes in terms of size and organisation, and while some features differ between these groups, they also share similarities. We will now discuss whether "organic box scheme" is a useful category, despite their diversity.

5.2. Organic Box Schemes as an Analytical Category

How should we define organic box schemes in order to distinguish them from other delivery schemes (e.g., supermarkets' home deliveries)? Can there be one definition or description that captures the diversity of organic box schemes that exist? We doubt this. Haldy [14] suggested a distinction between delivery schemes and subscription schemes—where box schemes would be the subscription scheme—defined by the inability of the consumer to decide on the content of the box. This feature has also been pointed out by other authors as a defining feature of box schemes in general, and AMAPs/CSAs in particular [42]. However, some schemes might offer the possibility of choosing produce and add-on products to boxes for the consumers' convenience [19,29]. As in our sample, box schemes can be farm-based or non-farm-based, and consequently sell products only from one farm or also sell imported products and have a number of suppliers. Box schemes can represent short food chains without intermediaries with face-to-face interaction between consumers and producers, and they can be food supply chains with at least one intermediary and thus sell at a distance [16]. Box schemes can be civic oriented systems or more profit oriented, with differences in business logic, organisation, and types of interactions between consumers and producers [23]. Box schemes do not even have to be delivery schemes, since some practice pick-up at the farm [17].

Thus, a broad definition is needed to capture the diversity of organic box schemes. They are all somehow subscription schemes (e.g., a weekly box of organic produce). They are also a type of short food chain that honours values such as quality production, local production, and sustainability, even if different schemes may operationalise this in diverse ways. By by-passing mainstream market channels such as conventional retailers, organic box schemes can be argued to aim for an alternative system with new relations between consumers and producers [1,22,23]. Since organic box schemes are so diverse, they have more than one feature to define them. For example, one scheme can be described as a CSA, as direct marketing, a local food system, a short food supply system, as a civic food system, etc. Thus, it is necessary to add information about the box scheme to be able to use it as an analytical category, as suggested in the same vein as Holloway et al. [50]. In their matrix of analytical fields to describe alternative food projects, the supply chain is but one of the categories included [50] (p. 8). Site of production, arena for exchange, and type of consumer–producer interaction are other categories [50] useful to distinguish different box schemes. Since box schemes have so many differences, they can play different roles in the quest for sustainable food systems: the business-oriented schemes show that it is possible to scale up alternative systems, be convenient, and still offer something different than the mainstream system [43]. The smaller schemes offer high quality produce and high-quality producer–consumer relationships. Thus, they fulfil different needs for different consumers while aiming for a sustainability transition of the food system.

When summarizing our findings, we can suggest a foundation of a typology of smaller and larger box schemes, and some characteristics that describe their differences and commonalities. This can be used for further investigation and verification. Besides organisation and origin of products, producer–consumer interaction is a central characteristic: consumers either actively participate in the food system by picking up the produce at the farm/box scheme and by interacting face-to-face, or they delegate delivery and communication to the box scheme. Apart from central differences, box schemes share a number of commonalities (Table 17).

Table 17. Differences and commonalities of smaller and larger organic box schemes.

	Organisation	Origin Products	Producer–Consumer-Interaction
Smaller box schemes	• CSA • few employees	• own farm produce	• face-to-face • pick-up ⇒ *"participation"*
Larger box schemes	• company • more employees • more years of operation	• more imported products and products from further away • more supplying farmers	• home delivery • more use of social media, digital newsletters, open farm days ⇒ *"delegation"*
Commonalities	• regularity/weekly box • alternative to mainstream food system • selling local products • tendency to grow • use of internet • values considered important: organic and quality production, sustainability, supporting small-scale farms, local production		

At the same time, organic box schemes—as diverse as they are—coexist with other alternative systems that are not easily distinguished from each other or from box schemes, for that matter. For example, consumer cooperatives and AMAPs/GASAPs share some characteristics [28]. There are also newly emerging social media groups of consumers that come together with local farmers, order via Facebook, and meet up at a pick-up spot to do the transaction. In Sweden and Finland, they are called a "reko-ring" and are more or less self-organised [51]. In other settings, they may be directed by a company that takes a share of the sales [52]. Such systems are very close to what some box schemes are about and thus there are gradients and hybrids between different types of alternative food systems.

Despite these ambiguities, we think that "organic box scheme" is a useful analytical category when analysing local organic food systems since this may say something about different possibilities to scale up organic food systems and different options for organising food delivery and interaction between consumers and producers. This said, it is important to specify what type of box scheme is analysed since the diversity is so large. It may also be that a box scheme has other features more important for the understanding of local organic food systems, rendering the delivery mode and the fact that produce comes in a box less important.

6. Conclusions

The contribution of this study is the comparative approach on organic box schemes and the discussion about box schemes as an analytical category. Organic box schemes are an alternative to mainstream food provisioning and can help to scale up local organic food systems, but it is important to be careful when we use the concept since "organic box scheme" does not say enough about what is meant. This study aimed to explore the diversity of organic box schemes in Europe, and did so with a survey to a number of box schemes in the UK, Austria, Belgium, and Croatia. As this is an exploratory study, we do not claim to present a complete analysis on box schemes in the respective countries. Still, our results constitute a broad basis to formulate new research questions and move one step further in the analysis of box schemes, how to categorise them, and their contribution to the sustainability transition of the food system. To expand the understanding of organic box schemes, further studies should investigate larger and more balanced samples to secure statistically relevant results. There seems to be great diversity among initiatives that can be defined as organic box schemes, and this heterogeneity is largely something good, since each scheme can find its own optimal size and set-up according to the available market, aspirations, and context. The Internet is important and will continue to be so since it offers a possibility to start up and organise advertising, ordering,

and communication. As an analytical entity, organic box schemes may be valuable when including additional information for clarity, but at the end of the day, it does not make a large difference to farmers and consumers in alternative food systems as to what their initiatives are called—they represent alternatives to the mainstream and should be dynamic and in development not be locked into rigid categories. The fact that we may have problems defining them is a healthy sign: food actors continue to desire and work for more sustainable food systems and invent new systems along the way.

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References

1. von Oelreich, J.; Milestad, R. Sustainability Transformations in the Balance: Exploring Swedish Initiatives Challenging the Corporate Food Regime. *Eur. Plan. Stud.* **2017**, *25*, 1129–1146. [CrossRef]
2. Blay-Palmer, A.; Landman, K.; Knezevic, I.; Hayhurst, R. Constructing Resilient, Transformative Communities through Sustainable "Food Hubs". *Local Environ.* **2013**, *18*, 521–528. [CrossRef]
3. Mount, P. Growing Local Food: Scale and Local Food Systems Governance. *Agric. Hum. Values* **2012**, *29*, 107–121. [CrossRef]
4. Meenar, M.R.; Hoover, B.M. Community Food Security Via Urban Agriculture: Understanding People, Place, Economy, and Accessibility from a Food Justice Perspective. *J. Agric. Food Syst. Community Dev.* **2012**, *3*, 143–160. [CrossRef]
5. Lutz, J.; Schachinger, J. Do Local Food Networks Foster Socio-Ecological Transitions Towards Food Sovereignty? Learning from Real Place Experiences. *Sustainability* **2013**, *5*, 4778–4796. [CrossRef]
6. Milestad, R.; Westberg, L.; Geber, U.; Björklund, J. Enhancing Adaptive Capacity in Food Systems: Learning at Farmers' Markets in Sweden. *Ecol. Soc.* **2010**, *15*, 29. [CrossRef]
7. Wills, B.; Arundel, A. Internet-Enabled Access to Alternative Food Networks: A Comparison of Online and Offline Food Shoppers and Their Differing Interpretations of Quality. *Agric. Hum. Values* **2017**, *34*, 701–712. [CrossRef]
8. Berti, G.; Mulligan, C. Competitiveness of Small Farms and Innovative Food Supply Chains: The Role of Food Hubs in Creating Sustainable Regional and Local Food Systems. *Sustainability* **2016**, *8*, 616. [CrossRef]
9. Laforge, J.M.; Anderson, C.R.; McLachlan, S.M. Governments, Grassroots, and the Struggle for Local Food Systems: Containing, Coopting, Contesting and Collaborating. *Agric. Hum. Values* **2017**, *34*, 663–681. [CrossRef]
10. Brown, E.; Dury, S.; Holdsworth, M. Motivations of Consumers That Use Local, Organic Fruit and Vegetable Box Schemes in Central England and Southern France. *Appetite* **2009**, *53*, 183–188. [CrossRef]
11. Thom, A.; Conradie, B. Urban Agriculture's Enterprise Potential: Exploring Vegetable Box Schemes in Cape Town. *Agrekon* **2013**, *52*, 64–86. [CrossRef]
12. Holt, G. Local Foods and Local Markets: Strategies to Grow the Local Sector in the UK. *Anthropol. Food* **2005**, *4*. [CrossRef]

13. Ostrom, M.; Kjeldsen, C.; Kummer, S.; Milestad, R.; Schermer, M. What's Going into the Box? An Inquiry into the Social and Ecological Embeddedness of Large-Scale EU and US Box Schemes. *Int. J. Sociol. Agric. Food* **2017**, *24*, 113–134.
14. Haldy, H.-M. Organic Food Subscription Schemes in Germany, Denmark, the Netherlands and the United Kingdom. Definitions and Patterns of Development in an International Context. Master's Thesis, Aston Business School, Birmingham, UK, 2004.
15. Schermer, M. From "Food from Nowhere" to "Food from Here": Changing Producer–Consumer Relations in Austria. *Agric. Hum. Values* **2014**, *32*, 121–132. [CrossRef]
16. Kneafsey, M.; Venn, L.; Schmutz, U.; Balázs, B.; Trenchard, L.; Eyden-Wood, T.; Bos, E.; Sutton, G.; Blackett, M. *Short Food Supply Chains and Local Food Systems in the Eu. A State of Play of Their Socio-Economic Characteristics*; European Commission: Luxembourg, 2013.
17. Nost, E. Scaling-up Local Foods: Commodity Practice in Community Supported Agriculture (CSA). *J. Rural Stud.* **2014**, *34*, 152–160. [CrossRef]
18. Migliore, G.; Caracciolo, F.; Lombardi, A.; Schifani, G.; Cembalo, L. Farmers' Participation in Civic Agriculture: The Effect of Social Embeddedness. *Cult. Agric. Food Environ.* **2014**, *36*, 105–117. [CrossRef]
19. Milestad, R.; Kummer, S.; Hirner, P. Does Scale Matter? Investigating the Growth of a Local Organic Box Scheme in Austria. *J. Rural Stud.* **2017**, *54*, 304–313. [CrossRef]
20. Ilbery, B.; Maye, D. Retailing Local Food in the Scottish-English Borders: A Supply Chain Perspective. *Geoforum* **2006**, *37*, 352–367. [CrossRef]
21. Volpentesta, A.P.; Ammirato, S.; Della Gala, M. Classifying Short Agrifood Supply Chains under a Knowledge and Social Learning Perspective. *Rural Soc.* **2013**, *22*, 217–229. [CrossRef]
22. Smaje, C. Kings and Commoners: Agroecology Meets Consumer Culture. *J. Consum. Cult.* **2013**, *14*, 365–383. [CrossRef]
23. Bos, E.; Owen, L. Virtual Reconnection: The Online Spaces of Alternative Food Networks in England. *J. Rural Stud.* **2016**, *45*, 1–14. [CrossRef]
24. Zepeda, L.; Reznickova, A.; Russell, W.S. Csa Membership and Psychological Needs Fulfillment: An Application of Self-Determination Theory. *Agric. Hum. Values* **2013**, *30*, 605–614. [CrossRef]
25. Hvitsand, C. Community Supported Agriculture (CSA) as a Transformational Act—Distinct Values and Multiple Motivations among Farmers and Consumers. *Agroecol. Sustain. Food Syst.* **2016**, *40*, 333–351. [CrossRef]
26. Lang, K.B. Expanding Our Understanding of Community Supported Agriculture (CSA): An Examination of Member Satisfaction. *J. Sustain. Agric.* **2005**, *26*, 61–79. [CrossRef]
27. Lagane, J. Introduction to the Symposium: Towards Cross-Cultural Views on Community Supported Agriculture. *Agric. Hum. Values* **2015**, *32*, 119–120. [CrossRef]
28. Dubuisson-Quellier, S.; Lamine, C.; Le Velly, R. Citizenship and Consumption: Mobilisation in Alternative Food Systems in France. *Sociol. Ruralis* **2011**, *51*, 304–323. [CrossRef]
29. Cicia, G.; Cembalo, L.; Giudice, T.D. Consumer Preferences and Customer Satisfaction Analysis: A New Method Proposal. *J. Food Prod. Mark.* **2010**, *17*, 79–90. [CrossRef]
30. Pearson, D.; Henryks, J.; Trott, A.; Jones, P.; Parker, G.; Dumaresq, D.; Dyball, R. Local Food: Understanding Consumer Motivations in Innovative Retail Formats. *Br. Food J.* **2011**, *113*, 886–899. [CrossRef]
31. Freedman, M.R.; King, J.K. Examining a New "Pay-as-You-Go" Community-Supported Agriculture (CSA) Model: A Case Study. *J. Hunger Environ. Nutr.* **2016**, *11*, 122–145. [CrossRef]
32. Torjusen, H.; Lieblein, G.; Vittersø, G. Learning, Communicating and Eating in Local Food-Systems: The Case of Organic Box Schemes in Denmark and Norway. *Local Environ.* **2008**, *13*, 219–234. [CrossRef]
33. Markussen, M.V.; Kulak, M.; Smith, L.G.; Nemecek, T.; Østergård, H. Evaluating the Sustainability of a Small-Scale Low-Input Organic Vegetable Supply System in the United Kingdom. *Sustainability* **2014**, *6*, 1913–1945. [CrossRef]
34. Chiffoleau, Y. From Politics to Co-Operation: The Dynamics of Embeddedness in Alternative Food Supply Chains. *Sociol. Ruralis* **2009**, *49*, 218–235. [CrossRef]
35. Papaoikonomou, E.; Ginieis, M. Putting the Farmer's Face on Food: Governance and the Producer–Consumer Relationship in Local Food Systems. *Agric. Hum. Values* **2017**, *34*, 53–67. [CrossRef]

36. Tua, C.; Nessi, S.; Rigamonti, L.; Dolci, G.; Grosso, M. Packaging Waste Prevention in the Distribution of Fruit and Vegetables: An Assessment Based on the Life Cycle Perspective. *Waste Manag. Res.* **2017**, *35*, 400–415. [CrossRef]
37. Coley, D.; Howard, M.; Winter, M. Local Food, Food Miles and Carbon Emissions: A Comparison of Farm Shop and Mass Distribution Approaches. *Food Policy* **2009**, *34*, 150–155. [CrossRef]
38. Lughofer, E. Greenhouse Gas Emissions for Vegetables from Different Marketing Channels—A Case Study Including Shopping Traffic (in German). Master's Thesis, University of Natural Resources and Life Sciences (BOKU), Vienna, Austria, 2011.
39. Doernberg, A.; Zasada, I.; Bruszewska, K.; Skoczowski, B.; Piorr, A. Potentials and Limitations of Regional Organic Food Supply: A Qualitative Analysis of Two Food Chain Types in the Berlin Metropolitan Region. *Sustainability* **2016**, *8*, 1125. [CrossRef]
40. Trivette, S.A. Invoices on Scraps of Paper: Trust and Reciprocity in Local Food Systems. *Agric. Hum. Values* **2017**, *34*, 529–542. [CrossRef]
41. Galt, R.E. The Moral Economy Is a Double-Edged Sword: Explaining Farmers' Earnings and Self-Exploitation in Community-Supported Agriculture. *Econ. Geogr.* **2013**, *89*, 341–365. [CrossRef]
42. Lamine, C. Settling Shared Uncertainties: Local Partnerships between Producers and Consumers. *Sociol. Ruralis* **2005**, *45*, 324–345. [CrossRef]
43. Aggestam, V.; Fleiß, E.; Posch, A. Scaling-up Short Food Supply Chains? A Survey Study on the Drivers Behind the Intention of Food Producers. *J. Rural Stud.* **2017**, *51*, 64–72. [CrossRef]
44. Umweltberatung. Biokistl-Anbieterinnen aus Österreich. Available online: https://www.umweltberatung.at/biokistl-anbieterinnen-aus-oesterreich (accessed on 9 March 2016).
45. BIO AUSTRIA. Bio-Kistl Anbieter in Österreich. Available online: https://www.bio-austria.at/download/bio-kistl-anbieter-in-oesterreich/ (accessed on 9 March 2016).
46. VegBox Recipes (VegBox-Recipes.co.uk), Find a Box Scheme. Available online: https://web.archive.org/web/20150707173351/http://www.vegbox-recipes.co.uk/veg-boxes/find-a-box-scheme.php (accessed on 9 March 2016).
47. Réseau Des GASAP Bruxellois. La Carte Des GASAP. Available online: http://www.gasap.be/ (accessed on 9 March 2016).
48. Blankenhorn, B.; Demkina, T.; Franzmayr, S.; Funk, A.; Iwanov, G.; Jelović, D.; Lechthaler, S.; Paris, P.; Perrin, A.; Anna, S.; et al. *Organic Box Schemes. Student Report within Lecture "Organic Farming and Regional Development" (Lecture Nr. 933.316), Summer Term 2016*; Kummer, S., Ed.; University of Natural Resources and Life Sciences Vienna: Vienna, Austria; 109p. Available online: https://short.boku.ac.at/643epz (accessed on 18 February 2020).
49. Bernard, H.R. *Research Methods in Anthropology. Qualitative and Quantitative Approaches*, 4th ed.; Altamira Press: Oxford, UK, 2006.
50. Holloway, L.; Kneafsey, M.; Venn, L.; Cox, R.; Dowler, E.; Toumainen, H. Possible Food Economics: A Methodological Framework for Exploring Food Production-Consumption Relationships. *Sociol. Ruralis* **2007**, *47*, 1–19. [CrossRef]
51. Reko-Ringar I Sverige. Available online: https://hushallningssallskapet.se/forskning-utveckling/reko/ (accessed on 30 March 2020).
52. La Ruche Qui Dit Oui! Available online: https://laruchequiditoui.fr (accessed on 30 March 2020).