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Community supported agriculture as a domain of economic exchange: Models, social capital and performance of three community supported agriculture groups in Turkey

PELIN ATAKAN*, MURAT YERCAN**

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Abstract

Community supported agriculture (CSA), an innovative food distribution model that encourages environmentally sound agricultural production, has been embraced in Turkey since the early 2000s. Although the model has been widely studied within the framework of ethical consumption, environmentalism and social justice, its perspectives as a domain of economic exchange in Turkey has yet to be explored. The present study attempts to investigate the viability of CSAs in Turkey as domains of economic exchange by looking at the interaction between their performance and their main resource, namely their social capital. Following an exploratory approach, we, first, examined the characteristics of the operational, organizational and support models to determine the performance factors indispensable for CSAs in Turkey to survive as domains of economic exchange. We then expanded this understanding by looking into the relationship between these performance factors and social capital indicators of three CSAs in Turkey. The findings reveal that each CSA adopts different support, operational and organizational models that result in different levels of risk sharing. In all three CSAs, the character of the social capital that interacts with the performance indicators is bonding rather than bridging. Therefore, investing in bridging social capital can be a potentially beneficial strategy for CSAs in order to become more sustainable as domains of economic exchange.

Keywords: *Community supported agriculture, Social capital, Performance, Alternative food networks, Turkey, Canonical correlation analysis.*

1. Introduction

The increased potential of the global food system in terms of abundant food supply has also brought on several negative ecological and social externalities i.e. environmental degradation, high emissions of greenhouse gases, biodiversity loss, livelihood crisis for farmers, food insecurity and related health issues which are becoming

more and more apparent (Roe *et al.*, 2019; IP-ES-Food, 2016). In addition, direct volumetric increase agricultural production has not solved the problems of hunger or malnutrition (FAO *et al.*, 2020) or enhanced rural development as expected (Van der Ploeg and Renting, 2000).

Community supported agriculture (CSA) suggests an innovative food distribution system

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which encourages environmentally sound agricultural practices (Hinrichs, 2000). Based on a partnership between the farmer and the group of consumers, the CSA model attempts to create a direct agricultural market where the risks and benefits of environmentally sound agricultural production are shared among equal partners (Baronov, 2018; Hinrichs, 2000). In the traditional CSA model, consumers (i.e. members of the CSA) buy a “share” of the harvest at the beginning of a season and get the corresponding amount of produce on regular delivery days throughout the season (Hinrichs, 2000). In a less productive season, the members might receive fewer produce than expected but the farmer would earn no less than the value of his/her effort. While not every CSA adopts the traditional share model, they all are based on the idea of partnership that challenges the established food regime in different ways (Ostrom, 2007). On the basis of this idea of partnership, each CSA tailors its own support, operational and organizational model as a reflection of their needs, resources and characteristics (Dedeurwaerdere *et al.*, 2017; Balázs *et al.*, 2016; Freedman and King, 2016; Flora and Bregendahl, 2012; Shi *et al.*, 2011; Feagan and Henderson, 2009; Ostrom, 2007). In most CSAs, volunteer members of the community coordinate all necessary tasks related to the distribution of the produce (Van Oers *et al.*, 2018; Çelik, 2016; Flora and Bregendahl, 2012; Ostrom, 2007). Most CSAs often organize social or educational events (Firth *et al.*, 2011; Hinrichs, 2000).

Studies have shown that CSAs can be beneficial for small scale farmers in terms of stabilization of prices and market conditions (Moellers and Bîrhală, 2014; Balázs *et al.*, 2016); better access to working capital (Paul, 2016); risk sharing mechanism (Andreatta *et al.*, 2008); and, better access to information about ecology, sustainability, innovative agricultural methods and marketing (Flora and Bregendahl, 2012; Shi *et al.*, 2011; Ostrom, 2007). However, any benefits that come and for how long they last are closely related to the particular operational and organizational model, the social characteristics of the CSA members and the social relationships within the CSA communities (Opitz *et al.*, 2019; Van Oers *et al.*, 2018; Flora

and Bregendahl 2012; Galt, 2013; Ostrom, 2007; Hinrichs, 2000). Most CSAs are largely dependent on urban kinds of cultural capital, including using the right ‘jargon’, intuitions about marketing strategies, and computer literacy, which creates barriers for some farmers to join a CSA (Shi *et al.*, 2011; Si *et al.*, 2014). Several studies have highlighted the challenges of CSAs, such as the cooperation problems within the CSAs’ volunteer body (Flora and Bregendahl, 2012); problems due to the traditional share model which poses some restrictions on consumers’ food preferences (Freedman and King, 2016; Ostrom, 2007) and the arising obstacles of scaling up CSAs (Balázs *et al.*, 2016). These challenges were also encountered in the results of the studies conducted on the CSAs in Turkey (Çelik, 2016; Özden, 2020).

The CSA mentality has been widely embraced by grassroots food communities in Turkey since the early 2000s (Weitzhofer-Yurtışık, 2012; Çelik, 2016; Karakaya, 2016). However, only a few studies have been conducted on the CSAs in Turkey to date. Those studies have looked into the particularities of CSAs operational models in Turkey, along with the challenges they face, and their interaction with the local communities and the local food regime (Karakaya, 2016; Yıldız, 2017; Çelik, 2016; Weitzhofer-Yurtışık, 2012; Özden, 2020). Meanwhile, academic studies have pointed to the CSA model as a promising solution to structural problems (e.g. organization and marketing) of organic agriculture and sustainable rural development in Turkey (Çörek Öztaş and Karaaslan, 2017; Yıldırım *et al.*, 2016; Kenanoğlu Bektaş, 2014; Yıldırım, 2017; Peker and Çelik, 2005).

In this study, we attempted to increase the understanding of the viability of CSAs in Turkey as domains of economic exchange by looking at the interaction between their performance and their main resource, namely their social capital. We identified the following research question: “What is the relationship between social capital and performance of CSAs in Turkey?” where performance indicates a set of indispensable factors that ensures the survival of CSAs as domains of economic exchange. In order to determine the characteristics of these performance factors, in the first phase of the study, we fol-

lowed an exploratory approach to understand the unique nature and functioning of CSAs in Turkey. We adapted the findings and the academic literature on the viability of CSAs to the Cooperative Success Frame developed by Sexton and Iskow (1988). We adapted the social capital scaled developed by Ruben and Heras (2012) to the CSA example by utilizing the findings of the first phase of the study and the academic literature on CSAs in Turkey. Then, we analyzed the relationship between the dimensions of their social capital and performance using canonical correlation analysis.

2. Community supported agriculture

2.1. Community supported agriculture as an innovative domain of economic exchange

In the traditional CSA model (also known as “the share model”), consumers, i.e. “shareholders” or members of CSA, at the beginning of the growing season, make a pledge by making a lump sum payment for a “share” of farm produce and in return receive the farm produce corresponding to their “share”. The farmer, on the other hand, obliges to provide food to the “shareholders” produced only via environmentally sound agricultural practices (Brown and Miller, 2008; Hinrichs, 2000). In this way, the market and yield risk of environmentally agricultural production is shared between the farmer and the group of consumers as equal partners rather than atomized self-interested actors (Balázs *et al.*, 2016; Brown and Miller, 2008; Hinrichs, 2000). Economic exchange takes place on the regular food delivery days organized by volunteer members of the community where the farmers can deliver their products directly to the consumers (Balázs *et al.*, 2016; Hinrichs, 2000). Delivery days system play a crucial role in the functioning of CSAs, both because it provides partners a physical ground to strengthen their relationships, and because it allows farmers to reap a larger share from the entire value chain (Firth *et al.*, 2011; Hinrichs, 2000). Through these two key elements of the traditional CSA model, lump sum payments and delivery days, CSA aims to support

the farmers by providing a more predictable, stable and fairer income that is not highly dependent on volatile market conditions or long supply chains (Balázs *et al.*, 2016). However, not all CSAs adopt the aforementioned model as a whole; instead, they adapt their own support or working models reflecting the capacities and expectations of their communities and their farmers (Ostrom, 2007; Freedman and King, 2016; Flora and Bregendahl, 2012; Feagan and Henderson, 2009). In the share model, consumers generally do not have the freedom to choose the product or the amount of products that fall into their weekly share. This can lead to low member retention rates as consumers may have difficulty adjusting their dietary habits accordingly (Ostrom, 2007). Therefore, some CSAs employ more flexible models such as “pay-as-you-go”, in order to increase the convenience for the consumers (Freedman and King, 2016). Similarly, some CSAs deviate from the traditional idea that volunteer members of CSA communities are responsible for making all important decisions, resolving conflicts, organizing educational or social events, arranging the pipeline for produce distribution, recruiting farmers, collecting orders, ensuring quality of products etc. Such CSAs are more business-oriented and farmer-led: rather, the community is supported by farmer(s) (Feagan and Henderson, 2009; Ostrom, 2007). A link can be observed between the level of community involvement to operational processes of CSAs and the influence of social relationships within and around the CSA communities on the continuity of the CSAs as domains of economic exchange (Hinrichs, 2000; Van Oers *et al.*, 2018; Flora and Bregendahl, 2012).

The tension between the level of community involvement in operational decisions and responsibilities of CSAs, the convenience of the consumers and the financial gains of the farmers is the center of the critics regarding the alternativeness of CSAs. This tension stems from the situation that CSAs still operate within the incumbent food regime to which they are attempting to create an alternative (Baronov, 2018). CSAs may compromise some of their founding principles such as risk sharing

or decommodification of food as they adapt themselves to real-world conditions, however they still challenge the incumbent food regime on a different level (Feagan and Henderson, 2009; Ostrom, 2007). On the other hand, like some other forms of AFNs, CSAs have been facing criticism for being elitist and perpetuating existing social inequalities as most CSAs operate outside of the low income households and/or farmers without urban roots (Bui *et al.*, 2019; Woods *et al.*, 2009; Shi *et al.*, 2011; Si *et al.*, 2014).

2.2. Local context: community supported agriculture in Turkey

The very first CSA in Turkey, Güneşköy, was founded in the early 2000s, in the Kırıkkale district, near Ankara (Weitzhofer-Yurtşık, 2012). Founded as a cooperative and an ecovillage, Güneşköy has established a model where consumers make a lump sum payment at the beginning of a season and regularly receive a box of fresh vegetables and fruits or paste, vinegar, or dried vegetables that at their door or a common pick up point (Weitzhofer-Yurtşık, 2012; Güneşköy, 2020). The CSA supplies farm products to about 50 to 80 households each year (Güneşköy, 2020). This differs from most CSAs in Turkey who adopt the share model only occasionally and generally for a single product such as potatoes, onions or beans (Özden, 2020). A less predictable model where consumers usually place weekly or bi-weekly bulk purchase orders from multiple farms and receive their orders on regular delivery days, mostly directly from farmers, is also more common (Çelik, 2016; Özden, 2020). In all CSAs, including Güneşköy, the volunteer members of the CSAs are responsible for all processes related to food distribution, such as organizing delivery days, recruiting farmers, resolving disputes, making relevant decisions, as well as organizing social or educational events (Çelik, 2016; Weitzhofer-Yurtşık, 2012). CSAs are mostly located in major cities in Turkey and are often linked to the farmers in the villages close to these cities (Özden, 2020). With 6 CSAs, İzmir is the city with the highest number of CSAs (Özden, 2020).

The organic produce market in Turkey mostly appeals to upper-middle and high income consumers since the price premium is up to 100% higher (Ünal and Can, 2018). A significant proportion of farmers are not willing to shift to organic agriculture since they perceive that organic production does not return high profits, mainly due to very limited market, risk of yield loss and challenging production requirements (Yercan and Özden, 2015). The motivation of the CSA members is mostly stem from above mentioned key problems of organic market in Turkey: the low availability of safe local food, and/or the need to support small scale farmers who prefer to follow environmentally sound agricultural production despite all constraints including the limited market (Özden, 2020; Çelik, 2016). The major problems CSAs face are the difficulty of the members to adapt to the CSA food delivery system, which does not offer as much “shopping” convenience as the regular markets, and the inadequacy of time devoted by volunteers (Çelik, 2016). In addition, CSAs face challenges related with logistics such as packing products or keeping track of orders (Çelik, 2016; Earth Association, 2017).

3. Theoretical background

3.1. Social capital

The definition of social capital indicates to which value it is associated with rather than what constitutes it (Coleman, 1988). Social capital refers to the resources accumulated in the relationships of actors (individuals or corporate actors) which is often associated with community benefits such as dissemination of information, social learning and cooperation (Coleman, 1988; Putnam, 1993; Ostrom, 1990; Narayan and Pritchett, 1999; Grootaert and van Bastelaer, 2002; Kola *et al.*, 2014). Like all forms of capital, social capital does not automatically provide future benefits; it needs regular maintenance, as repetitive social interaction and trust building behavior (Grootaert and van Bastelaer, 2002). Unlike physical capital, social capital does not depreciate with use; rather, it is reinforced. And unlike physical capital and human capital, social

capital cannot be built individually (Grootaert and van Bastelaer, 2002).

In order to understand the characteristics of the value with which social capital is associated, we need to look at the characteristics of the relationships from which it arrives. Social capital arising from close relationships in families and friendships refers to “bonding social capital” and is characterized by dense trust and reciprocity, as well as the tendency of homogeneity and introversion in groups (Gittell and Vidal, 1998). Bonding social capital is associated with the capacity for building cooperation and creating a common identity in groups (Ruben and Heras, 2012; Firth *et al.*, 2011). The social capital accumulated in the networks between different social circles, characterized by less intimacy and density, is termed “bridging social capital” (Gittell and Vidal, 1998). Similarly conceptualized as *leveraging capital* by Briggs (1998), as *weak ties* by Granovetter (1973) and as *structural holes* by Burt (1992), bridging social capital is associated with heterogeneous resources that usually do not come together (Gittell and Vidal, 1998). These resources are more accumulative rather than overlapping (Burt, 2001) and therefore could support communities in their development (Gittell and Vidal, 1998). Bridging social capital also helps build bonding social capital (Gittell and Vidal, 1998).

Communities can be well empowered, when both bonding and bridging social capital are generated in balance (Gittell and Vidal, 1998; Flora *et al.*, 2018; Ruben and Heras, 2012). Ruben and Heras’s study on agricultural cooperatives in Ethiopia (2012) claim that when bridging social capital is more prominent than bonding social capital, cooperation becomes less approachable since actors feel less dependent on each other because external networks and alternative solutions are reasonably reliable. Glowacki-Dudka *et al.*’s study on the local food system in the Midwest in the United States (2012) suggest that important barriers related to infrastructure (such as facilities for mass canning or storage), distribution or production are linked to lack of cohesiveness between farmers and also to their relationships with other business, with government entities and with the consumers being poor.

While thoughts on what constitutes social capital vary, most theorists agree that trust, reciprocity, networks and rules (norms) are the elements of social capital. All elements together form social capital, and are also reproduced by social capital, as the nature of social capital is reproductive of itself (Öztopçu, 2017). On the other hand, it would be misleading to consider these elements as indicators of social capital in any case. In order to be considered as elements of social capital, they must be in some manner interacting with each other. Durlauf and Fafchamps (2004) depicts the interaction between these elements: “to the extent that social networks and associations are part of the definition of social capital, evidence must also be provided that trust and shared norms are achieved via social interaction based on interpersonal networks and associations”.

CSAs usually generate social capital by bringing people together with a common purpose; creating a meeting place (common pick-up points) where people can engage in dialogue; bringing people together from different backgrounds for joint activities like growing, cooking and eating food; and linking communities with institutions and authorities (Firth *et al.*, 2011; Flora and Bregendahl, 2012). However not all CSAs are not interested in these kind of communal activities (Feagan and Henderson, 2009; Ostrom, 2007; Pole and Gray, 2012) and they prioritize other aspects.

3.2. Performance

Defining performance factors indispensable for CSAs to survive as domains of economic exchange varies widely as no CSA has identical main motivation, operational models and resources. However, regardless of operational methods and the levels of community involvement in operational processes, all CSAs need to provide a certain level of convenience for their *sellers* and their *buyers* in order to maintain the economic exchange (Flora and Bregendahl, 2012; Hinrichs, 2000; Ostrom, 2007). Factors, as operating methods and level of community involvement in operational processes, certainly play an important role in this (Ostrom, 2007; Feagan and Henderson, 2009).

In CSAs where the operations rely on volunteer contributions of their members, lack of cooperation or imbalanced work distribution might result in problems with continuity or convenience for the delivery days (Çelik, 2016; Flora and Bregendahl, 2012). In such CSAs, the communities need to be strong and effective in terms of cooperation and problem solving to ensure the persistence of CSAs as domains of economic exchange (Van Oers *et al.*, 2018; Flora and Bregendahl, 2012; Lyson, 2004, pp. 103-104). Fostering a common identity and sense of ownership by creating spaces where members can participate in decision-making processes and organizing social and educational activities can contribute to the development of collaboration and problem-solving skills in a community (Firth *et al.*, 2011; Van Oers *et al.*, 2018; Flora and Bregendahl, 2012). Convenience also depends how flexible CSAs can be to their members' eating habits and willingness to pay (Ostrom, 2007; Shi *et al.*, 2011). CSAs also need to be able to attract and mobilize enough external resources to overcome potential challenges regarding time, volunteers, and finances (Seyfang *et al.*, as cited in Van Oers *et al.*, 2018). Several studies claim that in local agricultural groups, what can only be achieved with internal resources is limited and relying solely on internal resources makes them vulnerable to future challenges (Van Oers *et al.*, 2018; Firth *et al.*, 2011; Glowacki-Dudka *et al.*, 2012).

3.3. The relationship of social capital and performance in the case of CSAs

The relationship between the social capital, accumulated through social relationships within and around the CSAs, and their performance depends on how much the vital activities of CSAs (e.g. convenience of food distribution and decision making) rely on the involvement of the CSA members (Ostrom, 2007; Flora and Bregendahl, 2012; Van Oers *et al.*, 2018). For CSAs which rely on volunteer involvement of their members, the collaboration between the members is crucial (Van Oers *et al.*, 2018; Flora and Bregendahl, 2012). Collaboration in such CSAs is largely associated with a sense of common identity and ownership, as well as cohesion between mem-

bers, all of which are indicators of the presence of bonding social capital (Van Oers *et al.*, 2018; Firth *et al.*, 2011; Flora and Bregendahl, 2012; Sharp *et al.*, 2002). On the other hand, the link between the bridging social capital and CSA performance becomes apparent when their internal resources like volunteer workforce or knowledge are insufficient or when achieving future goals requires different resources (Van Oers *et al.*, 2018).

4. Methodology

The field research for this study was designed in two stages. In the first stage, an exploratory approach was adopted to reveal the unique managerial and operational models of CSAs in Turkey. The aim was to establish a foundation on which we could examine the main research question by creating a comprehensive picture of the main causes of CSAs, their support, operational and organizational models, and the level of CSA members' involvement in key operational tasks. In the second stage, we designed variables for the social capital scale representing the resources accumulated in social relations and the performance scale representing the factors indispensable for the survival of CSAs as domains of economic exchange. Next, we conducted a canonical correlation analysis to understand the interactions between performance factors and social capital indicators in CSAs.

4.1. Participants and procedure

In the first phase we localized the active CSAs in Turkey via a short online questionnaire which was sent to 58 alternative food networks (AFNs) identified by reviewing academic and gray literature, and input from experts' opinions. The AFNs were asked to provide the following information: (1) self-identification (CSA, buyer club, participatory guarantee system or food community etc.), (2) number of members and farmers/producers involved in AFN, and (3) level of member involvement in their operational tasks. The self-identification was necessary in order to include all different kinds of CSA models and to exclude those that work similarly to the traditional CSA model but do not prioritize the part-

Table 1 - Community supported agriculture in Turkey.

<i>CSA name</i>	<i>Place</i>	<i>Active since</i>	<i>Total number of consumers¹</i>	<i>Total number of farmers/producers</i>	<i>Reason for exclusion from the first phase (if any)</i>	<i>Reason for exclusion from the second phase (if any)</i>
Senin de Bir Kovanın Olsun [A Hive for You]	West Aegean, mostly Muğla	2015	300 (uncertain)	38	not being based on voluntary contributions	
İmece Evi [Co-op House] ¹	İzmir	2007	uncertain	5-8	uncertain number of members	
İzmir Doğa ve İnsan Dostu Topluluk Destekli Tarım Grubu (İDİ) [İzmir Nature and Human Friendly CSA Group]	İzmir	2012	101 (15)	3		
Güneşköy Kooperatifi – Bahçemiz [Güneşköy Cooperative – Our Garden]	Ankara	2001	100 (50-60)	1		being the only one adopted the share model that is quite different than model of other CSAs
BİTOT (Batı İzmir Topluluk Destekli Tarım Topluluğu) [CSA Group of West İzmir]	West İzmir	2014	1500 (23)	25		reluctant/busy to provide data
Homeros Gıda Topluluğu [Homeros Food Community]	Central İzmir	2016	40 (15)	7		pre-CSA phase
ÇİTTA Gıda Topluluğu (Çukurova İnsan, Tohum, Toprak Atölyeleri) [Food Community of Çukurova Workshops for Human, Seed and Soil]	Mersin	2017	76 (15)	3		
Kuzey Adana Gıda Topluluğu [Food Community of North Adana]	North Adana	2017	6-10 (8)	1		too small number of members
Banadura Gıda Topluluğu [Banadura Food Community]	South Adana	2014	8 (8)	4		too small number of members
Kadıköy Gıda Topluluğu [Food Community of Kadıköy]	Kadıköy, İstanbul	2015	639 (uncertain)	45		reluctant/busy to provide data
GETO (Gediz Ekoloji Topluluğu) [Gediz Ecology Community]	North İzmir	2015	Uncertain (30)	5-6		

Notes: ¹ This CSA is not active according to information obtained in September 2020. ²Total number of consumers does not reveal the number of consumers who are actively engaged with food purchase through the CSAs since CSAs do not have a formal membership system and members usually irregularly purchase products from CSAs. Numbers in parentheses refer to the average number of active members on the delivery days, and this provides a more realistic idea about the size of the CSAs.

nership between the consumers and the producers. From the twentyfour AFNs that responded, eleven defined themselves as CSA. From these, two CSAs for which reliable quantitative data on the effect of social capital on performance could not be obtained (those with uncertain number of members or those that do not rely on the voluntary contributions of their members for the continuity of their operations) were excluded (Table 1). Semi-structured interviews were conducted with the remaining nine CSA coordinators/facilitators focusing on the following: (1) the main causes of their CSA, (2) their model of support, (3) their operational and managerial structures, (4) the level of involvement of their members in operational tasks and organizational matters. The data were evaluated using content analysis, and used to tailor the two scales to be applied in the second phase of this study.

After the semi-structured interviews conducted in the first phase of the study, four CSAs were excluded from the second phase of the study for the reasons stated in Table 1. The remaining five CSAs were determined as eligible for the second phase of the study; however, the two were reluctant / too busy to participate. Therefore, the second phase of this study was based on the data collected from the members of three CSAs: GETO, ÇITTA and İDİ. Data for the second phase of the study were collected through a questionnaire aiming to reveal the social capital and performance of the CSAs, and their member characteristics. Determining the sample size and sampling method was difficult as CSAs do not have a formal membership system and most members irregularly engage in CSA activities, including food purchase. To define the sample size, “total number of members” and “average number of members on the delivery days” were asked separately in the semi-structured interviews that were conducted in the first phase of the study. Considering the irregular purchase frequency of many members in CSAs, the answer to the second question accepted as the population of CSAs (Table 1) and data was collected through questionnaires from the CSA members who were randomly approached on the delivery days, meetings, or at occasional visits. Each of the three CSAs was

randomly visited twice. In total, 74 CSA members were surveyed: 22, 30 and 22 from GETO, ÇITTA and İDİ, respectively.

4.2. Variables

The social capital scale was structured based on a scale used in different studies which aimed to analyze social capital and economic performance e.g. a study of coffee cooperatives in Ethiopia (Ruben and Heras, 2012). The scale operationalizes social capital accumulated in groups through four latent variables: trust, internal cohesion, reciprocity and external networks (Ruben and Heras, 2012). Trust is embodied as general trust, behavior of trust and approach on trust (Etang *et al.*, 2007 as referred in Ruben and Heras, 2012); and a study of reciprocity is embodied as positive and negative reciprocity, and the general approach on reciprocity (Dohmen *et al.*, 2009, as referred in Ruben and Heras, 2012); internal cohesion is embodied as a feeling of cohesion and closeness (Grootaert *et al.*, 2004, as referred in Ruben and Heras, 2012); and external networks is embodied as the type and quantity of external networks in which respondents actively participate (Ruben and Heras, 2012). Statements representing components of social capital are presented in Table 2. Participants were asked to reveal their opinions about 15 statements according to a five point Likert scale with the following options: strongly disagree; disagree; neither agree nor disagree; agree; strongly agree. Following the reliability analysis (Cronbach's alpha: 0,743) and confirmatory factor analysis (p value: 0,05; RMSEA index: 0,06; Tucker-Lewis: NNFI: 0,91; Bentler CFI: 0,93), the scale was confirmed as appropriate for further analysis (Cronbach, 1951; Kline, 2005; Hooper *et al.*, 2008). The variables of the Social Capital Scale are given in Table 2.

To unfold the performance of CSAs, we adapted the cooperative success frame developed by Sexton and Iskow (1988) utilizing the findings of the first phase of this study.

The frame identifies the following three factors as the key to successful cooperative development: operational, organizational and financial (Sexton and Iskow, 1988). The operational fac-

Table 2 - Social capital scale.

<i>Factor</i>	<i>Statement</i>
Trust	<ul style="list-style-type: none"> • Generally speaking, I can trust the members of in my CSA group • If I lose a personal valuable and some other member finds it, it will be returned • If I meet financial difficulties, my fellow members will lend me money • When I make an agreement with other members, they always fulfill the terms • When I lend something to other members, they always return it on time and in good condition
Reciprocity	<ul style="list-style-type: none"> • To help someone is the best strategy to ascertain that I will be helped in the future • When someone makes me a favor, I feel committed to repay him/her • I am ready to work hard to return someone's previous assistance • If I voluntarily share important information with someone else, they will do the same with me
Internal cohesion	<ul style="list-style-type: none"> • In our CSA, we are in unity and solidarity • If I have to leave the town/city for some days, I count on others to care for my property/family • I have only formal (or only informal) relationships with people in my CSA
External networks	<ul style="list-style-type: none"> • Number of civil society organizations, civil initiative, social enterprise and professional chambers that I am actively participating in • Number of cooking club, sports club, parent teacher associations, political, religious and the like that I am actively participating in • Number of online social groups that I am actively participating in

Adapted by authors from Ruben and Heras (2012).

tor assesses the capacity of cooperatives in terms of member retention by examining their capacity of maximizing interests of their members. In the case of CSAs, this capacity is highly determined by the convenience of delivery day operations. The organizational factor refers to the capacity of transparent and efficient governance in cooperatives. Considering the structure of CSAs, this factor was represented by the inclusiveness of CSA members in managerial decisions, transparency in matters like price-setting and quality control, and the capacity of CSAs in terms of educating and informing their members about principles and values that are commonly accepted. The financial factor was developed aiming to assess the capacity of cooperatives in terms of raising and managing financial resources. Considering CSAs, the financial resources can be examined in two sorts of capital: (1) monetary capital which refers to the working capital that can be utilized for expenses of CSAs (if any) and/or as credits/grants for CSA farmers/producers; and (2) physical capital which refers to the physical places that can be utilized for CSAs' operational needs, such as distribution, storage,

social and organizational meetings. The emphasis here is on the capacity of CSAs to utilize these resources rather than whether they own them. However, data obtained on CSAs' monetary capital was too ambiguous since not all CSAs keep financial records on a regular basis, therefore was excluded from further analysis. Hence, the financial aspect of performance in our scale represents only the capacity of CSAs to utilize abovementioned physical capital. Participants were asked for their opinion on 18 statements corresponding to the three dimensions of performance according to the five-point Likert scale with the following options: strongly disagree; disagree; neither agree nor disagree; agree; strongly agree. By principal components analysis, 8 statements which explained less than 0,5 of total variance were excluded for further analysis (Schwab, 2012). The scale with the remaining 10 statements was considered reliable, considering the following indicators: Cronbach's Alpha=0,711; *p value*=0; KMO=0,632 (Cronbach, 1951; Cerny and Kaiser, 1977). Ten statements representing the performance of CSAs are given in Table 3.

Table 3 - Performance scale.

<i>Factor</i>	<i>Statement</i>
Organizational	<ul style="list-style-type: none"> • All members of my CSA can participate equally in decision-making processes in our community • Prices are determined by consensus among CSA members and producers • As a community, we visit producers frequently and organize social activities at the farms • In the community, apart from distribution days and meetings where administrative issues are discussed, social events are frequently organized • In these social events (mentioned above) important experience and information about sustainable living practices and food are shared.
Operational	<ul style="list-style-type: none"> • I find it difficult to adapt my food needs according to the delivery days of my CSA • I find it difficult to set aside time for CSA delivery days • Delivery spot is far away from my apartment, I find it hard to bring the food I purchase back to my house
Financial	• It is easy to find a place to store the products
	• It is easy to find a place to deliver the products

Adapted by authors from Sexton and Iskow (1988).

4.3. Analysis

In order to understand the relationship between social capital and performance of CSAs subject to this study, the factor scores for social capital and performance were calculated by confirmatory factor analysis and principal components analysis, respectively. At this stage, two outliers were spotted and excluded from further analysis. Factor scores of both social performance and performance were analyzed using one-way ANOVA and post-hoc Tukey tests to see whether there are significant differences between the CSAs. After confirming that the data is suitable for canonical correlation analysis with the following procedures, we proceeded with the analysis to see the relationship between social capital and performance: First of all, the deviation from normality in the sample was checked. It was detected only for the reciprocity factor. Therefore, it was transformed using the logarithm ($\text{rec_log} = \lg_{10}(0,90917+1-\text{rec})$) in order to improve the linearity of relationships between variables and the normality of their distribution, considering the -1,5 - +1,5 range for the skewness and the kurtosis (Tabachnick and Fidell, 2007). Homogeneity of variance was observed for both sets of variables. Finally, in the entire sample, no significant outliers

($p < 0,001$) considering z scores of variables (Tabachnick and Fidell, 2007) or missing values were observed.

5. Results

5.1. Support, operational and organizational models

The first CSA, İDİ, is a workplace CSA which is founded by and consists mostly of academicians of the faculty of agriculture at Ege University, İzmir. The second CSA, ÇİTTA, was established by members of ÇİTTA ecology collective, located in Mersin. The third CSA, GETO, is founded mainly by inhabitants in the Bostanlı-Mavişehir districts in the north part of İzmir. None of these three CSA groups employed the traditional share model. Instead, they have adopted a model that is similar to the *pay-as-you-go model* (Freedman and King, 2016) with minor varieties in each group (Table 4). However, all CSAs stated that they irregularly employ a product-based share (or credit) system and would like to establish the traditional share model for more products in the future. To establish the traditional share model, all three CSAs stated that they need to recruit more members and/or producers. An important strategy highlighted by all three CSAs was that to increase the number of producers and members in a bal-

Table 4 - Main causes and models of support of CSA groups.

<i>Name</i>	<i>Main cause</i>	<i>Model of support</i>
ÇİTTA	To raise awareness about clean food, soil, air and water.	<ul style="list-style-type: none"> • Weekly bulk orders • Raising money for investments (irregular) • Volunteering for harvest (irregular) • Pre-payment for some products (irregular)
GETO	To support small-scale farmers who practice environmentally sound agricultural methods, and to establish rural aspects of awareness about food and ecology	<ul style="list-style-type: none"> • Biweekly bulk orders • Pre-payment for some products (irregular) • Guarantee of purchase for some products (irregular)
İDİ	To create an alternative to the current food system	<ul style="list-style-type: none"> • Weekly delivery days with no bulk orders • Occasional bulk orders • Credit/grant system (not usual) • Agricultural consultancy (irregular)

anced way in order to establish a comprehensive risk-sharing system (if not the traditional share system), and let the CSA be divided into smaller, more efficient groups, as the growth continues. Increasing the number of producers and/or the number of members can be challenging for various reasons and impact the long-term operation of the CSA. All interviewed facilitators expressed their concern regarding the need to change food purchasing perceptions and habits of the members. One interviewee stated: “But it’s hard to change people’s habits. They prefer to go to the market as CSA sounds like *chore*”. Another facilitator mentioned the difficulty of recruiting farmers: “It is not easy to recruit farmers, due to the nature-friendly production requirement. Second, there is the problem of ensuring the continuity of production. Also, logistics can cause problems”.

The model of support differs in each CSA based on their needs and resources. ÇİTTA, typically, (1) asks farmers/producers what products are available that week, (2) makes a list of the available products including prices and sometimes brief information about the products, (3) collects the orders from the members, (4) lets the farmer(s)/producer(s) know about the demand, and (5) organizes weekly delivery days on which the products are distributed to the members. Steps (1) and (2) may be skipped from time to time since the list of available products do not change often. GETO follows the same routine every two weeks. From time to time, ÇİTTA and GETO organize prepayments for certain products. It is usual-

ly decided in the beginning of the sowing time. This system is similar to the share model, however instead of receiving a share of the product, members receive the product at a reduced price throughout the season. İDİ, on the other hand, does not usually organize bulk orders since they are connected to only one regular farmer who more or less forecasts the weekly demand. The farmer delivers products at the faculty building on a decided day every week. Occasionally, İDİ organizes bulk orders for certain products that are not produced by their regular farmer. No prepayment system is preferred. Delivery days are the main spaces where members meet other members and producers in all three CSAs. Producers of all three groups often bring their products to the delivery points themselves, unless the products are delivered by cargo. While ÇİTTA organizes weekly meetings to make decisions and organize deliveries, GETO organizes such meetings only when needed. These meetings are open to all members and decisions are taken collectively. The typical issues discussed in these meetings are recruiting producers and distribution of tasks among volunteers or future steps / projects, if any. On the other hand, there is no decision making body in İDİ. Matters to be decided are often dealt with in personal conversations between the volunteers and the farmer. Among all, only ÇİTTA established specialized organizational bodies for recruiting producers, planning festivals, planning film screenings, planning workshops, communication with producers and dissemination. The

lowest level of involvement of members in organizational matters, operational tasks, and social events was observed in İDİ, compared to GETO and ÇİTTA.

None of the CSAs is a legal entity. While all three CSAs often interact with several agri-food-related non-governmental networks or other non-governmental networks, none of the groups seem to engage with any municipalities or central governmental authorities.

Continuity of operations relies heavily on the solidarity and cooperation capacity of the members since all operational tasks for coordinating the delivery days are carried out by volunteers in all three CSAs. None of the CSAs use a scheduling method for distribution of the tasks among volunteers. Tasks are usually fulfilled by the same one or two people in İDİ, and the same few people in ÇİTTA and GETO.

The cultural similarity between producers and members is observed in all three CSAs. The members are generally from the upper middle income group with higher education, while the producers are either people of urban origin or higher formal education or “intellectual” or “marginal” charac-

ter. They share similar causes (e.g. agroecology, ethics about food, ideologies) and ways of behavior (like jargons, routines etc.). On the other hand, all CSAs indicated the difficulty in recruiting new farmers whom they can trust, and presenting the idea of the risk sharing, of the share model, to rural-rooted farmers. One of the interviewed CSA facilitators expressed their experience of being unable to explain the risk sharing idea as follows: “We worked really hard to convince a farmer we genuinely trusted, but the farmer did not want to join the CSA [i.e. the share model], saying that he would feel embarrassed if he cannot meet the members’ demand. Instead, without any type of prepayment, the farmer continued to supply weekly produce for our CSA group”.

5.2. Assortment, prices and certification

ÇİTTA and GETO offer its members a wide variety of vegetables, fruits, bread and hand-made products such as paste or vinegar while İDİ usually lacks fresh fruits and vegetables. Table 5 presents members’ purchasing patterns of CSA products. In all three CSAs, prices are usually set

Table 5 - Members’ purchasing patterns of CSA products ($n = 72$).

	ÇİTTA $n = 30$	GETO $n = 21$	İDİ $n = 21$
<i>Frequency of purchasing CSA products</i>			
Every delivery day	11 (36,7)	13 (61,9)	7 (33,3)
Skip 1 of every 2 delivery days	6 (20)	1 (4,8)	7 (33,3)
Skip 3 of every 4 delivery days	2 (6,7)	1 (4,8)	1 (4,8)
Irregular	11 (36,7)	6 (28,6)	6 (28,6)
<i>The last time CSA products were purchased</i>			
In this month	15 (50)	17 (81)	17 (81,0)
In the last month	9 (30)	2 (9,5)	2 (9,5)
Over two months ago	6 (20)	2 (9,5)	2 (9,5)
<i>Weight of CSA products in total household food consumption</i>			
100% - 75%	2 (6,7)	0	0
75% - 50%	6 (20)	4 (19)	1 (4,8)
50% - 25%	10 (33,3)	6 (28,6)	1 (4,8)
Less than 25%	12 (40)	11 (52,4)	19 (90,5)
<i>Monthly spending on CSA products, mean \pm standard deviation (nominal prices)</i>	224,41 \pm 30,84	259,76 \pm 202,61	172,14 \pm 152,13

Note: Numbers in parentheses are percentages.

Table 6 - The canonical model.

Pair of canonical variates (CV)	Canonical correlations (R_c)	Squared canonical correlations (R_c^2)	Wilk's lambda (λ)	Chi-SQ (X^2)	Degrees of Freedom	Significance
CV 1	,636	,405	,565	38,220	12	,000
CV 2	,197	,039	,950	3,439	6	,752
CV 3	,109	,012	,988	,800	2	,670

Table 7 - Canonical coefficients.

	Standardized Canonical Coefficients (Canonical weights)	Structure coefficients (Canonical loadings)**	Squared structure coefficients
<i>Social Capital set</i>			
Trust	-,212	-,843	,711
Reciprocity*	-,379	,323	,104
Internal Cohesion	-,935	-,892	,796
External Networks	-,311	-,351	,123
<i>Performance set</i>			
Organizational	-,809	-,820	,672
Operational	-,330	-,500	,250
Financial	-,448	-,384	,147

Notes: * Logarithmic transformation was used to this variable in order to meet normal distribution which is one of the requirements of canonical correlation analysis (See Research Design section). ** All structure coefficients were found meaningful considering a cutoff point of 0,30 (Pedhazur, 1997; Tabachnick and Fidell, 2007).

by the producers and usually similar to or under the prices at organic bazaars in the neighborhood.

None of the CSAs require organic certification since the certification process can be costly and time consuming for most producers. Instead, confidence has been established between producers and CSAs as to whether the production methods are environmentally sound.

5.3. The evaluation of social capital and performance of CSAs

We first explored an analysis of the factor scores of social capital (trust, internal cohesion, reciprocity and external networks) and performance (organizational, operational and financial) using one way ANOVA and Tukey tests in order to see the differences between CSAs, if any. No significant differences were observed between groups except the following factors:

- In terms of internal cohesion, GETO is significantly different from ÇITTA ($p=0,043$) and İDİ ($p=0$).

- In terms of organizational factor of performance, İDİ is significantly different from GETO ($p=0$) and ÇITTA ($p=0$).
- In terms of operational factor of performance, GETO is significantly different from ÇITTA ($p=0,007$) and İDİ ($p=0,016$).

We then proceeded with canonical correlation analysis to see the relationship between social capital indicators and performance factors. Canonical correlation analysis (CCA) produces the linear combination (i.e. canonical variates) of two sets of variables (social capital and performance) which captures the highest correlation between sets (Pedhazur, 1997). Table 6 shows the sets of canonical variates (CV) produced by our canonical analysis. According to significance results, the first set of CV is eligible for further analysis. The first set of CV explains 40,5% of the variance (Table 6).

Table 7 presents each variable's weight in its own canonical variate (standardized canonical coefficients); each variable's correlation with

Table 8 - Commonality analysis: The partitioning of the development variate by social capital variables (of the first pair of canonical variates).

<i>Variables</i>	<i>Coefficient</i>	<i>Total</i>
Unique to trust	0,0019	0,4811
Unique to reciprocity*	0,0258	6,3657
Unique to internal cohesion	0,0533	13,1694
Unique to external networks	0,0272	6,7055
Common to trust reciprocity*	0,0009	0,2167
Common to trust internal cohesion	0,2542	62,7763
Common to reciprocity* internal cohesion	0,0234	5,7806
Common to trust external networks	0,0246	6,0703
Common to reciprocity* external networks	0,0257	6,3532
Common to internal cohesion external networks	-0,0234	-5,7891
Common to trust reciprocity* internal cohesion	-0,0044	-1,0969
Common to trust reciprocity* external networks	-0,0234	-5,768
Common to trust internal cohesion external networks	0,0248	6,1321
Common to reciprocity* internal cohesion external networks	-0,015	-3,7071
Common to trust reciprocity* internal cohesion external networks	0,0094	2,3103
Total	0,405	100

Note: *Logarithmic transformation was used to this variable in order to meet normal distribution which is one of the requirements of canonical correlation analysis (See Research Design section).

its own canonical variate (structure coefficients) and how much variance of a CV is explained by its own variables (squared structure coefficients). Organizational variable represents the highest weight (-,809) and explains most of the variance (67,2%) of the performance variate. Therefore, performance variate is mostly characterized by organizational dimension but also shaped by operational and financial dimensions. On the social capital side, internal cohesion has the highest weight (-0,935) and it explains most of the variance (79,6%) of the social capital, besides trust (71,1%). Most of the variance of the social capital variate comes from internal cohesion (79,6%) and trust (71,1%) which leads to the conclusion that the social capital variate is highly characterized by these two variables (Table 7). On the other hand, trust and reciprocity variables demand further attention for the following reasons:

(1) Although trust does not receive much credit developing the first canonical variate (.212), it explains the amount of variance larger than reci-

procity (10,4%) and external networks (12,3%), both of which have larger canonical weights than trust. This substantial difference indicates that much of the contribution of trust is also explained by (an)other variable(s) (Nimon *et al.*, 2010).

(2) The signs of structure and standardized canonical coefficients of the reciprocity variable are different, signaling presence of a suppressor variable (Tabachnick and Fidell, 2007). A suppressor variable reduces the irrelevant variance in terms of predicting dependent variable(s) and thus, enhances the power of related prediction (Tabachnick and Fidell, 2007; Pedhazur, 1997). However, the magnitude or direction of suppression is not readable from the above canonical analysis, therefore we proceeded with the following analysis.

In order to spot the real effects of trust and reciprocity variables, we used commonality analysis since this analysis uses semipartial correlations to provide: (1) unique contributions of each variable and (2) common contributions of a group of variables in explaining the variance

of the sets of CV (Pedhazur, 1997)¹. Performed commonality analysis exhibited that much of the variance is explained commonly by internal cohesion and trust (62,8%) and uniquely by internal cohesion (13,2%) (Table 8). Considering the near zero unique contribution (0,0019) of trust, the high unique contribution of the internal cohesion variable (0,53) and the canonical weights of these variables (-0,212 and -0,935, respectively), it was observed that trust has very small contribution in predicting performance since it more or less represents a part of the information that is already provided by the internal cohesion variable. In other words, as far as the performance of the CSAs subject to this study is concerned, trust and internal cohesion are highly interrelated. On the other hand, negative signs of the groups in which reciprocity is involved indicate that reciprocity is a suppressor variable (Table 8) (Pedhazur, 1997). Accordingly, reciprocity enhances the common effect of internal cohesion and trust (which is mostly internal cohesion, as mentioned earlier) (-0,0044), the common effect of trust and external networks (-0,0234), and the common effect of internal cohesion and external networks (-0,015). In other words, although the reciprocity variable does not seem positively correlated with the performance variate, it contributes in predicting its variance by affecting different combinations of trust, internal cohesion and external networks.

The findings above indicate that stronger internal cohesion and higher levels of trust, reinforced by reciprocity, are correlated with higher organizational and operational factors of performance. Less strongly they also indicate a correlation with a higher financial factor. On the other hand, the external networks variable is also correlated with higher performance, but this correlation is not as strong as the correlation between other social capital dimensions and performance.

6. Discussion and final remarks

This study was conducted to shed more light on the relationship between the main resource of CSAs and a set of factors that are indispensable for their survival as domains of economic exchange, namely, social capital and performance, respectively. We started by forming a comprehensive picture of the main causes of CSAs, their support, operational and organizational models, and the level of involvement of CSA members in key operational tasks. We then conducted a canonical correlation analysis to understand better the interactions between the performance factors and the social capital indicators in CSAs. Our study provides empirical results on the support, operational and organizational models of three CSAs in Turkey, and also refers to the foundations on which CSAs continue their operations as domains of economic exchange. The findings contribute to the body of literature of CSAs in Turkey which includes an insufficient number of research compared to the innovative efforts and aspirations of CSAs to build a fairer and more environmentally friendly food system (Karakaya, 2016; Yıldız, 2017; Çelik, 2016; Weitzhofer-Yurtışık, 2012; Özden, 2020).

The CSAs subject to this study show similarities to most CSAs from other studies, in terms of member profile, the cultural similarities between the producers and the members, and social embeddedness (Vasquez *et al.*, 2017; Galt *et al.*, 2017; Volz *et al.*, 2016; Shi *et al.*, 2011; Ostrom, 2007; DeLind and Ferguson, 1999). All these CSAs are at the stage of development where they continue to tailor their own support, operational and organizational models that meet their needs, causes and resources. Although there are some minor differences between their models, it was observed that all three CSAs adopted the *pay-as-you-go model*, which is more flexible compared to traditional CSA model (Ostrom, 2007; Freedman and King, 2016; Feagan and Henderson, 2009; Özden, 2020). As stated by all three CSAs,

¹ Unique contribution is squared semipartial correlation between the dependent variable (canonical variate, in this case) and the variable of interest, after ignoring all the other independent variables from it. Common contribution, on the other hand, indicates the semipartial correlation between the dependent variable (canonical variate, in this case) and the variables of interest after subtracting unique contributions of the regarding variables (Pedhazur, 1997).

establishing a more comprehensive risk-sharing system requires both member and producer capacity to be carefully increased in balance. While their current support models do not fulfill the promise of sharing the risks of agriculture, they partially avoid one of the major setbacks of the traditional share models: the problem of the inability of the members to choose the products in their boxes (Özden, 2020; Çelik, 2016; Freedman and King, 2016; Ostrom, 2007). The impact of the voluntary contributions of the members on the performance of CSAs was found to be quite high, as revealed in many CSA studies in the literature (Ostrom, 2007; Çelik, 2016; Flora and Bregendahl, 2012). High reliance on the volunteer workforce signals a weak point that may cause problems in CSAs where there are no other mechanisms to ensure the continuity of food distribution activities in the cases of deterioration of internal cohesion or external economic or social pressures (Çelik, 2016; Özden, 2020; Ostrom, 2007; Baronov, 2018; Flora and Bregendahl, 2012). Specified working position for someone to coordinate key operational tasks can ease the pressure on the volunteer workforce (Çelik, 2016; Ostrom, 2007).

The correlation observed between the external networks and the performance factors was less strong than the correlation between the other social capital indicators and the performance factors, according to the results of the canonical correlation analysis. This finding suggests that the character of the social capital that is in interaction with the performance, in the CSAs is mostly bonding rather than bridging (Gittel and Vidal, 1998; Ruben and Heras, 2012). This structure of social capital is associated with strong capacity of cooperation but weak capacity to attract external resources (Firth *et al.*, 2011; Glowacki-Dudka *et al.*, 2012). In grassroots organizations, the capacity to attract external resources play a key role as goals reachable using only internal resources are limited, and overcoming challenges related to time, money and volunteers might require mobilizing external resources (Van Oers *et al.*, 2018; Firth *et al.*, 2011; Glowacki-Dudka *et al.*, 2012). In the case of CSAs subject to this study, possible strategies to cope with major challenges (volunteer workforce or logistics), and to increase

the scale to establish comprehensive risk sharing systems could be built on investing in bridging social capital. Investing in bridging social capital may include building connections with networks of different social backgrounds and resources, such as universities, civil society networks, rural communities or entrepreneurs (Çelik, 2016). Online social networks that offer the opportunity to reach individuals with different resources and enable the flow of information can also be evaluated within this strategy (Elghannam *et al.*, 2017).

The COVID-19 outbreak made the vulnerabilities of the existing food system more prominent shortly after its emergence and highlighted the need to enhance resilience of our food system. It has been observed that industrial agriculture causes conditions in which viruses can emerge and be easily spread, that food supply chains are vulnerable to various logistical bottlenecks, and that the economic disruption in food supply chains and beyond can cause serious effects such as hunger, malnutrition and extreme poverty on hundreds of millions of people (IPES-Food, 2020). Initial observations show that the CSA model stands out as a solution to ensure food security during the outbreak, with various forms of localized direct selling (IPES-Food, 2020; Worstell, 2020). In time, we will be able to gain important insights into how to build more resilient food systems not only to such pandemics and related problems but also to climate crisis, problems related to food security and excessive use of natural resources.

The sample size of this study and the wide variety of causes and resources of the CSAs in Turkey should be taken into account. Therefore, generalization of the findings should be avoided. Further research on the socioeconomic conditions in which CSAs operate and the external pressures they face, along with our findings, can provide a clearer picture of the viability of CSAs in Turkey as domains of economic exchange. On the other hand, investigating how farmers' earnings or production practices are affected by joining a CSA will be enlightening for understanding the contribution of the CSA model in establishing a resilient food system that is fair for farmers and nature.

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