

Inter-Cooperation Barriers and Prospects among Olive Oil Cooperatives in the Island of Crete

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Abstract

Greek agricultural cooperatives are considered key players in the country's attempt to create added value from the agri-food sector. However, Greek agricultural cooperatives are usually small and characterised by low levels of processing facilities, technical skills and marketing expertise. One of the most emblematic products that these coops produce is olive oil, a product of widely recognised nutritional value, unique health benefits and increasing global demand. Approximately one-quarter of the country's 300 thousand tone production comes from the island of Crete. The goal of this study was to map the olive-oil producing cooperatives of Crete and examine the extent of their inter-cooperation and the barriers they encounter. In addition to being a key cooperative principle, cooperation among cooperatives can create new sales channels, lead to significant cost reductions, better profit margins, increased bargaining power and knowledge exchange. This study showed limited inter-cooperation levels among the olive oil-producing cooperatives of Crete but sufficient willingness to cooperate in the future.

Keywords: Agricultural Cooperatives; Greece; Crete; Olive oil; Inter-cooperation

INTRODUCTION

Over the last few decades, the social economy has started to gain increased recognition as an effective alternative to the only-for-profit economy. Politicians, business owners and consumers are slowly realising the multilateral benefits of social enterprises and are re-evaluating their role in countries' economies and societies. For example, the European Commission's Social Economy Action Plan provides clear directions and actions for strengthening the social economy in the EU level over the next decade. In a period of rising global challenges, it has become more than ever necessary to create paradigms of social enterprises that have managed to grow and conquer national and international markets. A contributing factor for such growth is cooperation, a term that refers not only to cooperation among members of a social enterprise, but also to inter-cooperation between social enterprises at the local, national and international level. Cooperation constitutes one of the basic principles of the International Cooperative Alliance (ICA, 1995) and can yield strong network effects in terms of sales volume, cost reduction, risk minimisation, knowledge transfer and innovation.

Agricultural cooperatives (ACs) constitute a large part of the social economy and play an important role in food sufficiency, income creation and employment in rural areas of both developed and developing countries. Greece is one of them. Agricultural cooperatives have a long history of presence in Greek rural areas, and despite the numerous problems they have faced over the years, they remain a key actor in the country's agricultural production. This study attempted to measure their level of inter-

cooperation by focusing on the olive oil Agricultural Cooperatives in the island of Crete. This sector and area was chosen because of the long history of olive oil production, the existence of multiple active agricultural cooperatives in olive oil production and the growing international demand for the product. After a short literature review about the crises faced by the Greek economy during the last two decades, the contribution of the primary sector, the role of agricultural cooperatives and the production of olive oil in Greece, the specific research questions are outlined, followed by an explanation of the methodology that was used in this particular study, the results of the survey and finally, the conclusions and recommendations.

LITERATURE REVIEW

The Greek economy has experienced two severe crises over the past 15 years. The first was the Greek government debt crisis which started in 2009, and its effects are still troubling the economy, and the second was the COVID-19 pandemic in 2020. The debt crisis was triggered by various long-term structural weaknesses of the Greek economy, mainly related with government budget deficits, increased borrowing and low productivity. As a result of the crisis, the country lost almost a quarter of its Gross Domestic Product (GDP) between 2008 (232 billion euros) and 2019 (183 billion euros) (Eurostat, 2022); from 2010 has one of the largest unemployment rates in the European Union area (14% in 2021 from 27% in 2014); there have been thousands of business closures and a rise in social problems such as poverty and access to housing and healthcare. As the economy was slowly starting to recover, with small increases in GDP during 2017 and 2018, the COVID-19 pandemic took its toll on the population and the economy, reduced the GDP by almost 10% (to 165 billion euros), and severely affected multiple economic sectors of activity.

One of the most important sectors of the country's economy is the agri-food sector, which comprises agricultural production and food processing. Due to its unique geographical and climatic conditions, Greece produces a variety of cereals, vegetables, nuts, fruits, animal products and fish for domestic and international consumption. The primary sector accounts for 4,3% of the country's GDP (Hellenic Statistical Authority, 2022), which is one of the highest percentages in the European Union. The average EU27 added value percentage in GDP from agriculture, forestry, and fishing is just 1,6% (World Bank, 2022). On the other hand, the food industry is the most dynamic industrial sector in the country in terms of production value and employment, and creates 25% of the secondary sector's total added value (17,9%) (Foundation of Economic and Industrial Research, 2021).

ACs are at the heart of agricultural production and some of them are also active in food processing as well. Greece has a very long history of agricultural cooperativism, starting from the common Company of Ampelakia, which was founded in 1780 in the mountains of Thessaly and the official legislation for the recognition of ACs in 1914 (Law 602/1915). However, during the last century, the Greek agricultural cooperative movement faced various problems and challenges, such as political parties' interventions (Douvitsa, 2016), opportunistic behaviour by cooperative managers (Skilakaki et al, 2019) and numerous amendments to the cooperative law (Lambropoulou-Demetriadou, 1995). Demakis (2004) argued that the consequences of these problems included lost market shares and a generalised public distrust of ACs as a sustainable business model. According to the National AC Registry (maintained by the Greek Ministry of Rural Development), by the end of 2021, there were 1.042 active

ACs in Greece. One of the most important products that Greek ACs produce is olive oil.

The production of olive oil in Greece dates back more than 6.000 years, whereas petrified olive leaves found on the islands of Thyra and Nisiros were estimated to be from 50.000 to 35.000 years old. In ancient Greece, olive cultivation flourished and spread beyond Greece into the Greek colonies of the time. From there it was transported to other areas such as the Iberian Peninsula and southern France. In the ancient Greek literature there are reports of 16 olive varieties known in ancient Greece. During the Minoan and Mycenaean eras, olive oil was a source of wealth and power, as their economies were largely based on the olive oil trade (Kostelenos & Kiritsakis, 2017). Currently, Greece has an annual average production of about 300.000 tonnes of olive oil and 2.7 million tonnes of olive fruits, making it one of the biggest producers worldwide (Table 1). It is also worth mentioning, that although olive cultivation is practiced in the US, Chile, Australia and other countries around the globe, 95% of olive oil worldwide is produced in the Mediterranean region (Fraga et al, 2021). About a quarter of the country's 300.000 tonne production comes from the island of Crete.

Tab. 1. *Three largest olive oil-producing countries*

Ranking	Country	Estimated Production in Tons (2019/20)
1	Spain	1.125.300
2	Italy	366.000
3	Greece	275.000

Source: International Olive Council

Over the last few decades, international studies, books and media have highlighted the multiple nutritional, gastronomical and health benefits of olive oil, leading to a drastic increase in its international demand (e.g. Preedy & Watson, 2010; Pools & Ridgway, 2016). Table 2 presents the value of olive oil exports in thousands of euros from the four largest export countries, noting that these countries accounted for 85% of total global exports. The total export value between 2013 and 2017 rose by +40%, from 5 billion euros to 7.1 billion euros.

Tab. 2. *Value of olive oil exports in euros*

No	Country	2013	2014	2015	2016	2017
	World	5.039.188	5.290.702	6.600.234	6.653.653	7.186.861
1	Spain	1.950.029	2.724.188	2.632.536	3.161.893	3.661.294
2	Italy	1.295.781	1.299.874	1.444.462	1.533.389	1.456.924
3	Portugal	340.846	372.754	433.544	412.216	495.245
4	Greece	494.279	260.235	632.856	584.132	481.312

Source: UNCOMTRADE, data processing by Kotsios, 2019

This increasing demand has led to an increase in average export prices, as presented in Table 3. The international average price increased from 2.98 euros per litre in 2013 to over 4 euros in 2017 (+37%), whereas the average price for Greek olive oil increased by +44%. A good example of this increase in demand is the US market, in which the imports of olive oil increased from 50.000 tonnes in 1980 to 380.000 tonnes in 2020 (+660%) (International Olive Council, 2022).

Tab. 3. Average export price of olive oil per litre in euros

A/A	Country	2013	2014	2015	2016	2017
	World	2,98	2,77	3,61	3,62	4,09
1	Spain	2,76	2,45	3,49	3,45	3,89
2	Italy	3,76	3,47	4,48	4,35	5,01
3	Portugal	3,25	2,92	3,60	3,50	4,05
4	Greece	2,96	3,53	3,64	3,63	4,27

Source: UNCOMTRADE, data processing by Kotsios, 2019

However, coping up with increasing international demand and taking advantage of its consequences in terms of volume of sales and prices, requires large production quantities, strong quality certifications, well-organised supply chains and effective marketing strategies. Olive Oil Agricultural Cooperatives (OOACs) can play a key role in fulfilling these conditions by creating economics of scales in production, processing, marketing, sales and distribution. Inter-cooperation between small local agricultural cooperatives can unite their quantities and strengthen their position in the international market. The key role of cooperation between ACs is verified by the fact that the International Cooperative Alliance has placed cooperation as the 6th Cooperative Principle: *“Cooperation among Cooperatives: Cooperatives serve their members most effectively and strengthen the cooperative movement by working together through local, national, regional and international structures.”*¹

Leite, Padihla & Binotto (2021), in their research about the level of cooperation between agricultural cooperatives members in Brazil, found that cooperation creates benefits such as better access to information, exchange of knowledge, sales opportunities and technical assistance, while trust is a key aspect for the development of cooperation. Silva (2014) supported that inter-cooperation can create multiple benefits, such as distributing risks, combining strengths, jointly creating products and services, increasing bargaining power and expanding knowledge and access to technology. Zabala (2020) highlighted that the formation of important inter-cooperation processes, is one of the main challenges that the cooperative movement has to achieve, in order to promote economic and social development. The International Labour Organization (ILO) (2021) has taken action on the field of promoting cooperation and education by organising study tours for cooperative leaders from different countries.

¹ <https://www.ica.coop/en/cooperatives/cooperative-identity>

Cooperatives of The Americas (2021), in collaboration with the International Cooperative Alliance (ICA) and the European Commission has published a study that presents successful cases of cooperation between cooperatives in the Americas region, and characteristically mention that “*inter-cooperation, integration and partnerships are determining factors to unlocking the transformative potential of cooperatives*” (p. 11).

In this context, this study investigated the number and location of olive oil cooperatives in the island of Crete, examined the extent of their cooperation, the barriers they encountered and how cooperation can be improved. The methodology that was applied in this study is outlined below.

METHODOLOGY

The method chosen to address these issues, was a survey to all of Crete’s active Olive Oil Agricultural Cooperatives (OOACs). In order to retrieve them and their contact emails, the researchers obtained the excel file “*List of updated ACs up to 08/12/2021*” from the website of the Hellenic Ministry of Rural Development and Food². This list included the name of each AC, region and regional unit, email address and registration number (code). The researchers filtered the ACs that were located in the four regional units of Crete (Chania, Rethymnon, Heraklion and Lasithi), and their number was 163. Then they selected only those that had the title Olive Cultivating or Olive Producing in their title, and their number fell to 83. For these 83 ACs, the researchers found their address, map coordinates and telephone numbers. An online questionnaire was sent to the email addresses of all ACs, followed by a telephone call for the verification of its delivery.

The questionnaire was divided into two sections and included 16 questions in total: the first section aimed to collect demographic data and included nine questions, out of which 5 were open-ended and 4 multiple choice, and the second section included 7 questions about their commercial activity and cooperation. It consisted of 2 multiple choice and 5 open ended questions. The questionnaire was created through the online platform Google Forms, as this platform is free of charge, enables the bulk sending of the questionnaire via e-mail, the ability for respondents to respond quickly by clicking on a link, immediate collection of answers, production of graphs and extraction of raw data. The questionnaire was accompanied by an information sheet and a consent form. Prior to mass sending, it was pilot tested for a period of a few days.

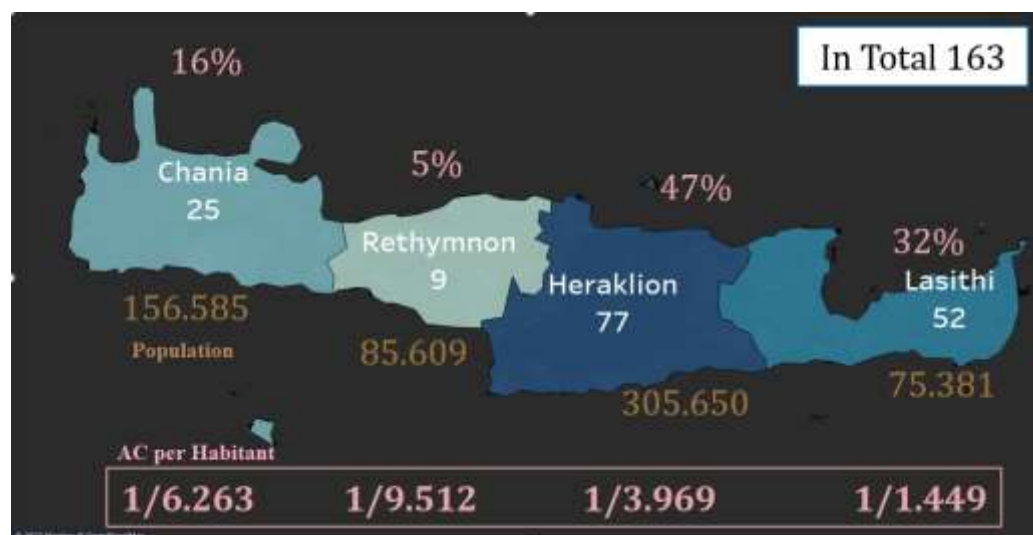
The email was sent on Sunday 27 of March 2022, and the deadline for receiving replies was 15 of April 2022 (20 days). On Monday 28 March 2022 and Tuesday 29 March 2022 the researchers also phoned all the OOACs, in order to confirm that they had received the questionnaire, informed them about the survey and kindly ask them to respond. A reminder call was made on Wednesday 30 March 2022 and Thursday 31 March 2022, to OOACs that had not answered the questionnaire. During the telephone contacts, in 17 cases the researchers were asked to send the questionnaire to a different email account than the one declared in the Registry, and from these cases 12 replies were received. An observation was that in some cases multiple OOACs had declared the same email address. The total numbers of replies received was 29, and the OOACs that replied represented a little more than 8,200 Cretan olive oil farmers.

RESULTS AND DISCUSSION

² <http://www.minagric.gr/index.php/el/for-farmer-2/silogikes-agrotikes-organoseis>

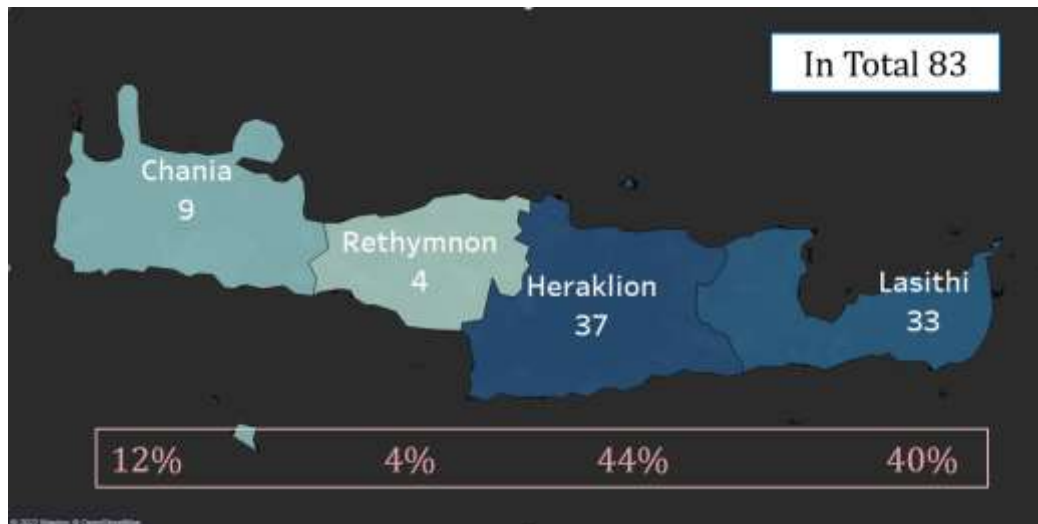
The results begin with the presentation of active ACs in the four regional units of Crete (Graph 1). Out of the total 163 active ACs, most were located in the regional unit of Heraklion (77), followed by Lasithi (52). **Graph 1** also presents the population size of each regional unit and a calculation of the ratio ACs per inhabitant. The lowest analogy was in Lasithi, with one AC per 1.449 habitants³. The largest was in Rethymnon, with one AC per 9.512 habitants³. The total number of OOACs was 83, noting that these had the term Olive Producing in their title. Their numbers per regional unit are presented in **Graph 2**. Heraklion hosts 44% (37) of all OOACs, Lasithi has 40% (33), Chania 12% has (9) and Rethymnon has 4% (4). The OOACs that replied the questionnaire were 29 in total, which gives a response rate of 39%. Their geographical distribution is presented in **Graph 3**. OOACs from Lasithi constituted 45% of the sample (13 replies), from Heraklion 31% (9 replies), from Chania 21% (6 replies) and from Rethymnon 4%, as only 1 reply was received out of 9 active OOACs. The first question was asking about the respondents' role in the OOAC the replies received were 29. Most of the respondents were communication managers (31%), followed by employees (28%) and members of the managing board (24%) (**Graph 4**). In most cases the respondents played an active role in the coop, as only 10% of the respondents were simple members.

The second question concerned the time period of the OOACs' establishment, and the replies received were 29 in total. The oldest cooperative was founded in 1872, counting more than 150 of activity, and the newest one in 2016 (**Graph 5**). Divided in time periods of 50 years, 3% was established between 1850 and 1900, 59% between 1901 and 1950, 31% between 1951 and 2000, and 7% after 2001. A remark from these data is that most OOACs of the sample were quite old, as 62% had more than 70 years of activity and 93% had more than 22 years.

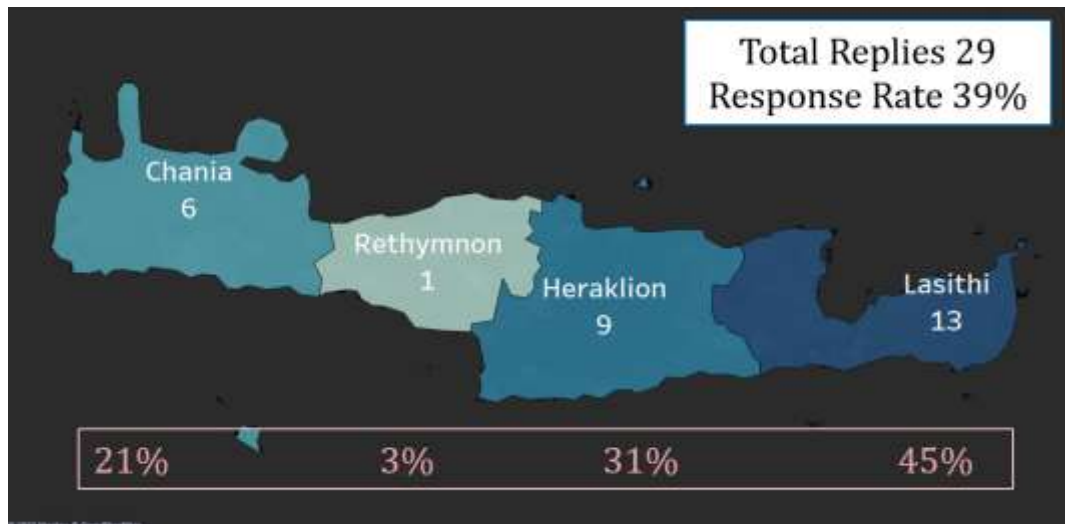


Graph 1. Active ACs of Crete per Regional Unit (end of 2021)

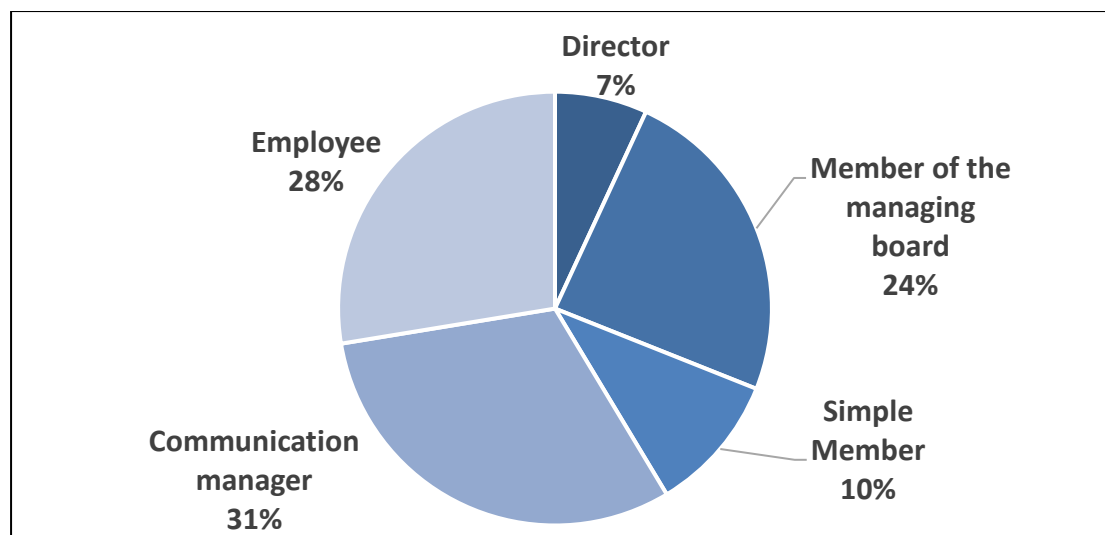
³ Lowest analogy here means that there more ACs per habitant.



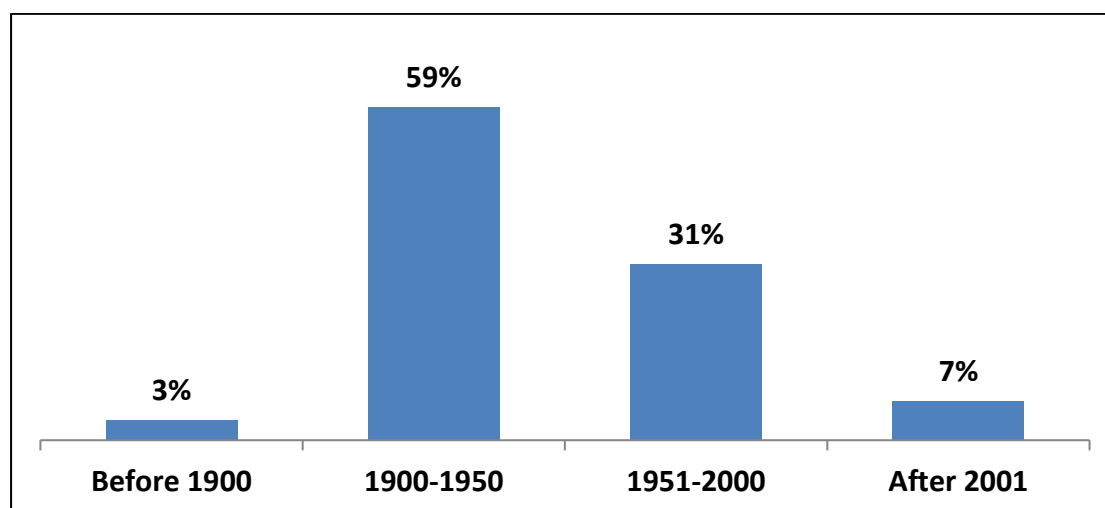
Graph 2. OOACs of Crete per Regional Unit



Graph 3. OOACs that replied to the questionnaire

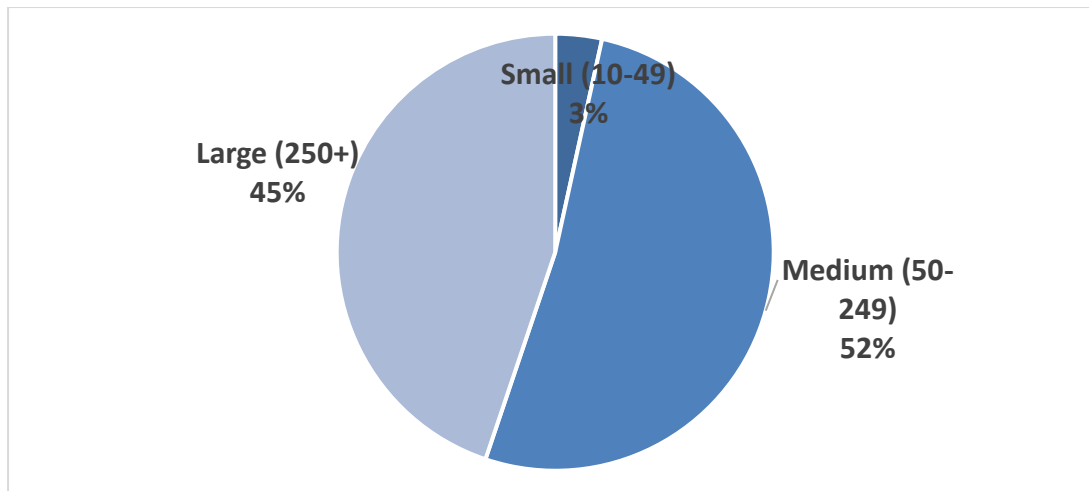


Graph 4. Respondent's Role in the AC



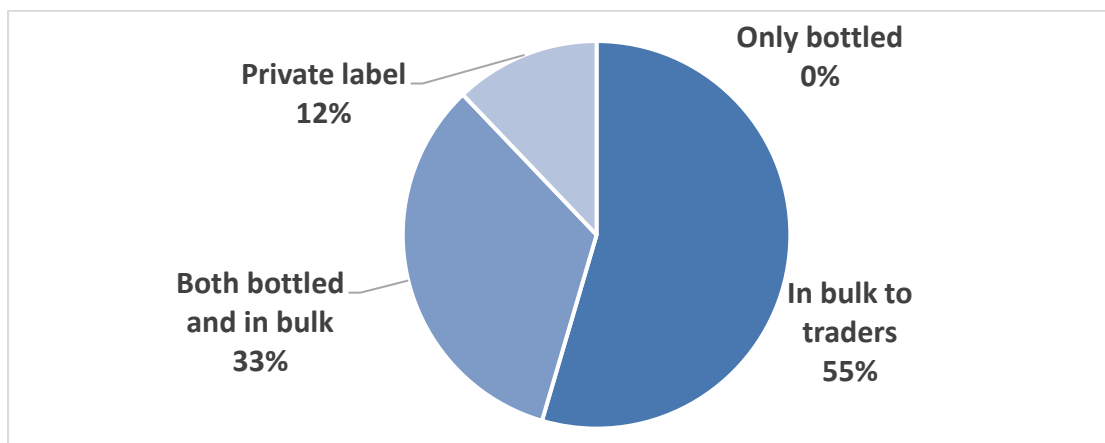
Graph 5. Time Period of OOAC Foundation

The third question was asking about the number of members that each cooperative had. The total number of coops that replied was 29 and the number of farmers represented by them was 8.214. The smallest OOAC had only 21 members, the largest one 1.350 and the average was 315 members. In **Graph 6** the OOACs are divided into sizes according to the classification used for private enterprises by the European Union and Eurostat: Micro enterprises have up to 10 persons employed; Small enterprises have from 10 to 49 persons employed; Medium-sized enterprises have from 50 to 249 persons employed; and Large enterprises are those with 250 or more persons employed. From the graph we see that 52% can be classified as medium sized, 45% as large and only 3% as small.



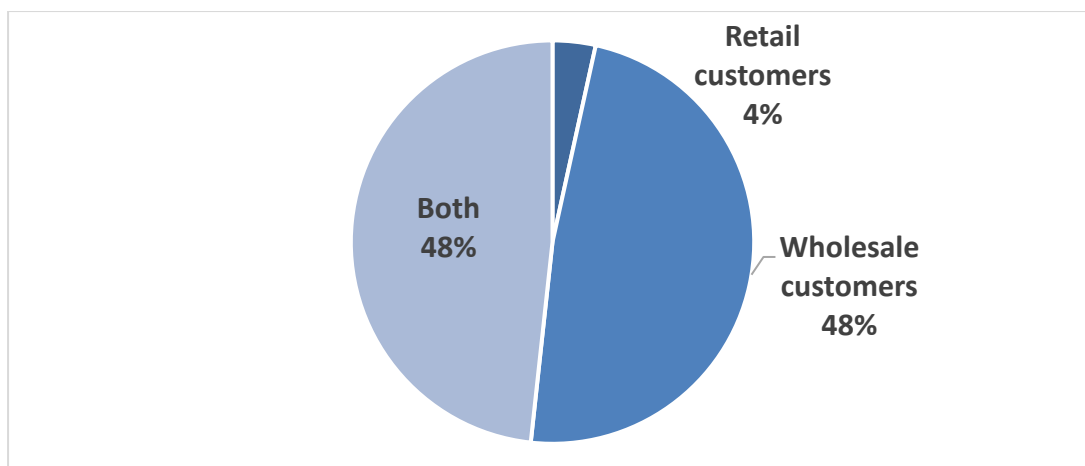
Graph 6. Size of OOAC by Number of Members

The fourth question was asking about the cooperatives' sales methods and was replied by all respondents (**Graph 7**). The choices given for the sale of the olive oil was bulk sales, bottled or as a private label. According to the replies, 55% sold the oil in bulk to various traders, 33% sold their oil both in bulk and bottled, while 12% bottled and sold their oil for some other brand (private label).



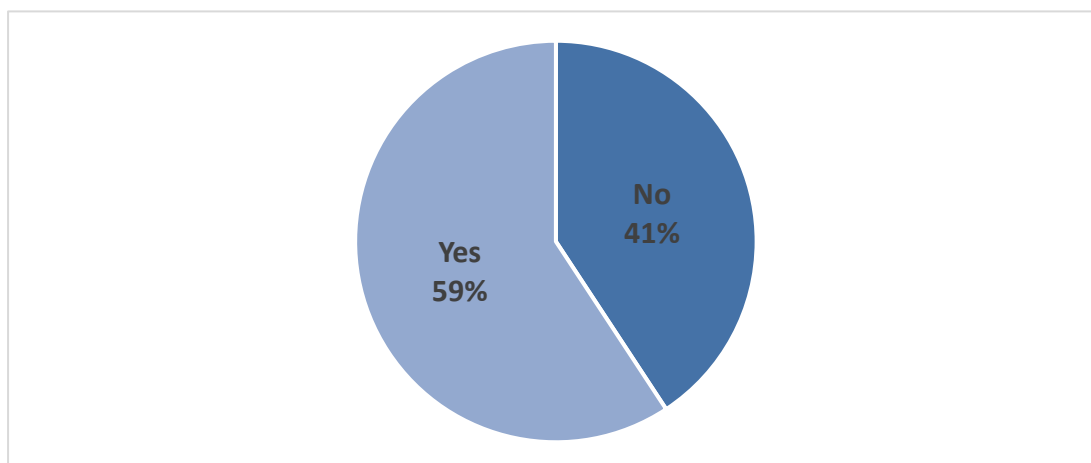
Graph 7. Sales methods

Following was a question about the type of customers that the agricoops were selling their products. According to the answers received, 48% sold their olive oil only to wholesalers, 48% both to wholesalers and final consumers, and only 4% solely to consumers (29 answers) (**Graph 8**). From this result it can be concluded that almost half of the Cretan OOACs operate only in the wholesale market and do not try to grasp added value from the large olive oil retail market.



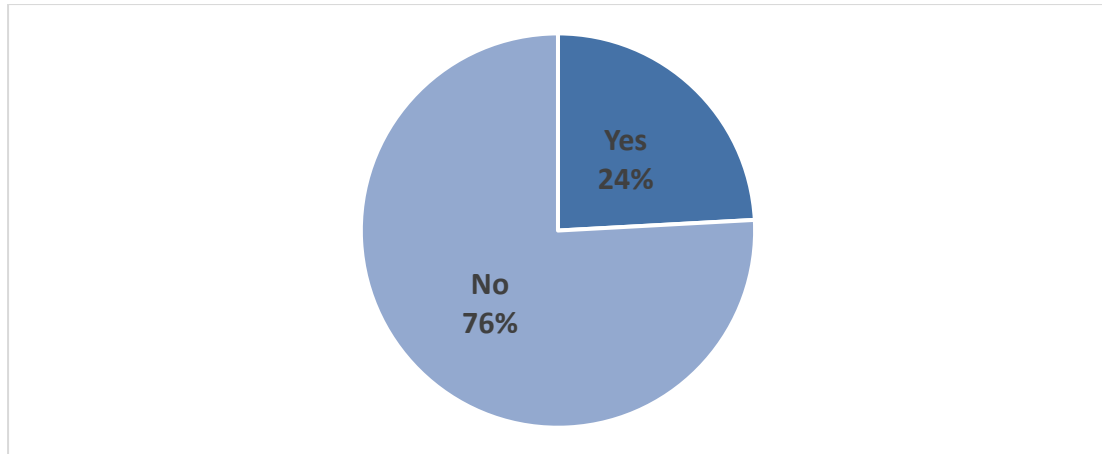
Graph 8. Type of Customers

The sixth question was asking them if they were involved in exporting. The replies received were 29, and 59% answered affirmatively and 41% negatively (**Graph 9**). A second branch of the same question was asking them about the countries to which they were exporting their olive oil, and most mentioned European Union countries like Italy, France and Germany, whereas a few mentioned Australia, Japan and Canada.



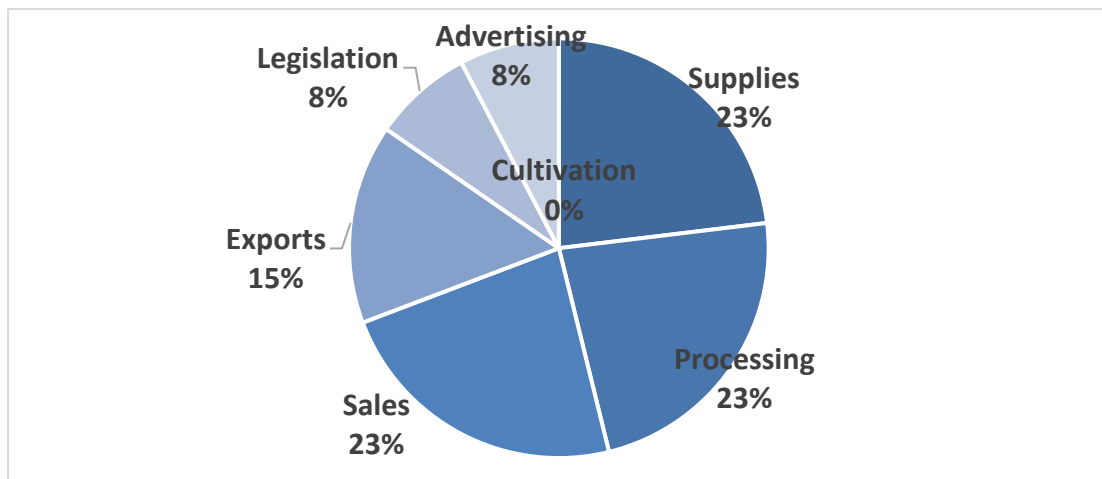
Graph 9. Exports

The seventh question was the key question for this research, asking them if they cooperated with other OOACs. The replies received were 29 and 76% mentioned that did not, while 24% answered yes (**Graph 10**). The question was also asking them about the names of the OOACs that they cooperated with. From the geospatial analysis of the replies of all 7 coops that replied, it was noted that all were in the same regional unit and close to their own location. So, according to the replies from the sample, cooperation among OOAs of Crete is limited, and when it happens it occurs with OOACs with geographical proximity.



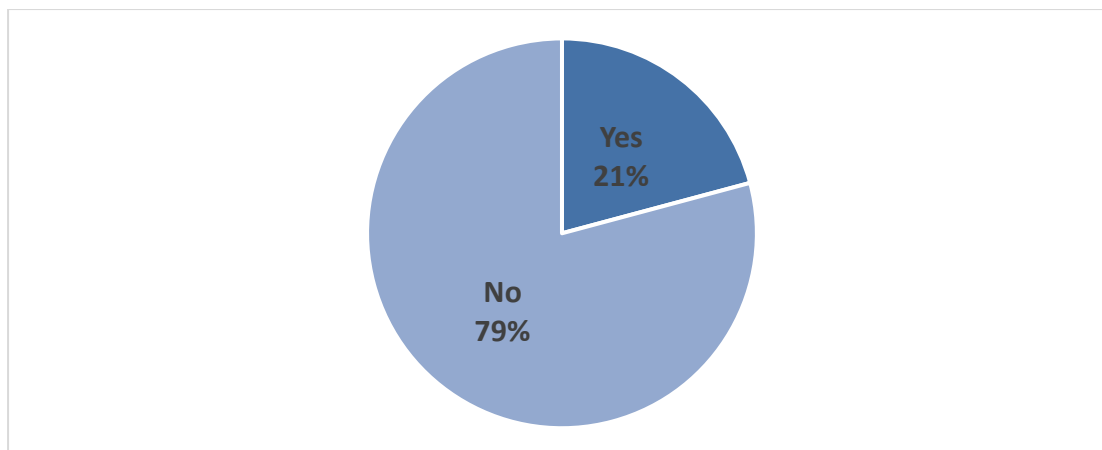
Graph 10. Cooperation with other OOACs

The eighth question was asking those coops that replied positively in the previous question, the reasons of their cooperation with other OOACs (**Graph 11**). According to the 7 replies received, cooperation was established mostly for reasons of supplies, processing and sales, and at smaller extent for exports, legislation and advertising.



Graph 11. Reasons for Cooperation

The last close-ended question was asking if the Cretan OOACs were cooperating with other types of cooperatives (such as supplier coops, consumer coops and cooperative banks) (**Graph 12**). The goal of this question was to examine if there were inter-cooperation networks with other social enterprises in Crete or abroad. The replies received in this question were 24, and 79% answered negatively and 21 answered positively.



Graph 12. *Cooperation with Other types of Coops*

The questionnaire in the end included three open ended questions. The first was asking the recipients of the questionnaire about their perceived benefits of cooperation among OOACs. The replies received in this question were 12 and the answers, by number of appearances, included market access, cost reductions, increased negotiating power, increased profits, exchange of experience and increased production. The second question was asking them about the barriers that they believed that existed and prohibited cooperation among agricultural cooperatives. The replies received were 19 and, by number of appearances, included different targets, insufficient management, distance, lack of cooperation culture, competition among OOACs, lack of communication and lack of education. The lack of education in Greek agricultural cooperatives is a chronic problem identified also by previous researchers (Kamenidis, 2001; Papageorgiou, 2007). Competition between olive oil cooperatives in the same prefecture has also been reported in earlier research by Oustapaidis et al (2000).

The third and last question was asking them on the methods that they believed that cooperation between OOACs can be improved. The 17 replies mentioned better communication among OOACs, common quality and spatial certifications, state and EU intervention and motives, trust building initiatives, mergers and the creation of a common vision.

In parallel, the researchers investigated various initiatives organized in the island of Crete for the promotion of olive oil, and found the following;

- On the island there are two Agricultural Cooperative Unions that produce, bottle and sell olive oil: one is in Heraklion (Peza)⁴ and it represents 19 OOACs and one in Lasithi (Sitia)⁵ comprised by 41 OOACs. Both were founded in 1933.

- Another initiative is the Association of Cretan Olive Municipalities⁶, which aims to promote Cretan olive oil.

- In September 2021 a new company (Société Anonyme) was formed with the name “ΑΕΣ ΚΡΗΤΩΝ ΕΝΩΣΙΣ ΑΕ” with an aim to create a common Cretan Olive Oil brand. Various Cretan OOACs participate in the initiative but their exact number could not be verified, as the company has no active website yet.

CONCLUSIONS

The Greek economy has been swept by a series of crises during the last years, and these crises have severely affected the country’s business activity and economy in

⁴ <https://pezaunion.gr/>

⁵ <http://www.sitiaunion.gr>

⁶ <https://www.sedik.gr/neo/en/>

general. The agri-food sector proved to be one of the most resilient economic ones. It constitutes one of the most dynamic sectors of production in terms of quantity, value added and employment and includes a large number of businesses of various sizes and types, from individual farmers to large food factories. In the center of the sector's production lay 1,042 Agricultural Cooperatives which are spread across the country, and aim to unite individual farmers' productions and protect their incomes. One of the most important products that the Greek agri-food sector and agricultural cooperatives produce is olive oil, a product of long history, exceptional taste, rich nutritional value and growing global demand. This research focused on the Olive Oil Producing Agricultural Cooperatives in the island of Crete, an area of 8,336 km² which is responsible for about a quarter of the country's production. The goal was to examine the number and regional distribution of these coops, measure the extent of their inter-cooperation, the barriers they meet and the methods through which inter-cooperation can be strengthened.

According to the findings, the total number of Olive Oil Producing Agricultural Cooperatives in Crete was 83, and 44% were based in the regional unit of Heraklion, 40% in Lasithi, 12% in Chania and 4% in Rethymnon. According to the sample statistics, two thirds of them have more than 70 years of activity and 315 members on average. They sell their olive oil both bottled and in bulk, and almost two thirds of them are also active in exporting. Inter-cooperation among them is very limited and usually is with cooperatives from the same area. Limited cooperation between agricultural cooperatives in the area of Chania was also found in the research by Oustapaidis et al (2000). Their representatives believe that cooperation can provide coops with multiple benefits, such as better market access, cost reduction, increased negotiating power and increased profits. The most important barriers that prohibit inter-cooperation among agricultural cooperatives are related with distance, competition among OOACs, lack of communication and lack of cooperative education. According to their replies, methods for improving inter-cooperation among them include common quality and spatial certifications, state intervention and motives, trust building initiatives, mergers and the creation of a common vision.

These results point out some important conclusions and policy recommendations. A first conclusion is that there is a large number of small, local Olive Oil Agricultural Cooperatives in Crete and each one of them operates relatively autonomously. The fact that most of them are quite old, is a proof that they are economically viable. On the other side, their small size may constitute an impediment to their expansion in a global market that is growing rapidly. Cooperation between them can allow them to combine their production quantities, build recognizable brands and secure supply deals with buyers in large markets. Cooperators understand the benefits of cooperation, but there are number of impediments that need to be overcome. The most important ones are related with educating farmers about the practical benefits of cooperation and building physical and digital communication channels between them, as frequent communication is a prerequisite for building trust. Local authorities, the Greek State and the European Commission can organize and fund educational programs, meeting events and communication channels, in order to promote closer cooperation and perhaps the establishment of larger cooperatives. The results of the initiative such as the "ΑΕΣ ΚΡΗΤΩΝ ΕΝΩΣΙΣ ΑΕ" remain to be seen.

Further research could focus on a comparison of the prices that farmers receive from different selling channels (e.g. personal sales, through the cooperative, for large buyers)

and a comparison with the prices received from farmers from other olive oil-producing countries.

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