Innovative Finance Inclusion

ARTOLIO – An Artisanal Regional Economic Model A Case Study on Social and Sustainable Economic Models

Date: March 2022

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Disclaimer: The case was developed and published by a partner in project ARTOLIO (https://www.enicbcmed.eu/projects/artolio)

Co-funded by the Erasmus+ Programme of the European Union

INNOVATIVE FINANCE INCLUSION

Project number 619453-EPP-1-2020-1-IL-EPPKA2-CBHE-JP

This project has been funded with support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein

Abstract

This case study offers several questions designed to foster an alternative economic model through integrating sustainability into marketing. By connecting sustainability, public health, and inclusion to define value and by establishing new business models, this approach is aimed at articulating an alternative economic system .This fresh method will help to highlight the unique values of ARTOLIO, an advanced consortium of smallholder artisanal farmers, funded by the European's Union 'ENI CBC Med' Programme, in terms of nutrition and health value; environmental sustainability; finance transparency and thinking to establish its brand position as an attractive alternative to the mass-produced brands. The case study also highlights the need to support regional producers and foster efforts to shift power and capital directly to artisanal farmers' communities by catalyzing local investment, and by reshaping the economic narrative towards an inclusive one, which might be considered the essence of a sustainable economy.

Keywords

Regional Economy, Digital Finance, Organizational Models, Alternative Economy

Introduction

Food systems are usually considered in the context of rapid population growth, urbanization, growing wealth, changing consumption patterns, and globalization as well as climate change and the depletion of natural resources. The developments in food systems have yielded many positive results, especially over the past three decades in developing countries. These results include the expansion of off-farm employment opportunities as food industries have developed, and the widening of food choices beyond local staples, thus satisfying consumers' preferences in terms of taste, form, and quality.

However, the associated rapid structural transformations have also resulted in increasing and significant challenges, with potentially wide-reaching consequences for the state of food security and nutrition. These include the many highly processed, high-calorie and low nutritional value food items that are now widely available and consumed; limited access of small-scale producers and agri-enterprises to viable markets; high levels of food loss and waste; increased incidences of food safety, and animal and human health issues; and an increased energy-intensity and ecological footprint associated with the lengthening and industrialization of food supply chains (Nguyen, 2018).

Business and finance professionals often struggle to consider social or sustainable initiatives as feasible opportunities worth integrated into investment analyses, partly because viability for sustainable causes is hard to assess in ratings and other classic business standardizations (financial share, shareholders primacy, short-termism, quantity, corporate branding and more). In this context, the ARTOLIO case study proposes various means to integrate niche businesses into the global market, turn cooperation into advantage over size, turning a commodity into a unique asset, and leverage sustainability and health as credit. To read further information on the ARTOLIO Olive Oil Producers' Consortium see - https://www.enicbcmed.eu/projects/ and on page 23. Rather than seeing global business and local initiatives as separate domains, this case integrates them by connecting the relationship between them to create a new value, and address the venture value drivers, into a sustainable strategy. Finally, the purpose of analyzing this case is to examine how new, alternative value drivers such as sustainability, locality, and health, can translate into a marketing strategy and generate profit, via decommodification for small farmers .

The ARTOLIO consortium has advanced small farmers independence, the biodiversity and cultivation of local variants, and sustainability, and by that it introduces a viable new "player" in the global business realm. It is believed that such different organizations will spark much more conversation, change the business discourse, and increase the diversity of opportunities to small businesses owners in the future .

Beyond introducing and promoting new options of sustainable organizations, the case also illustrates the need for a vigorous and fundamental approach to assess access of local economy into the global market. Moreover, we would like to examine how an integrated approach (i.e., cooperation and ecology, sustainability and scale, health and culinary, local, and global) can be translated into a viable go to market (GTM) strategy to build conviction in an investment. Furthermore, in our experience, investors who invest in this type of sustainable, integrated and intricate initiative are more likely to stay and less likely to exit, and hence have longer holding periods which can help the venture to develop and grow. A fundamental question about customers remains. Are they attracted to this type of producer and their products? Will they cooperate with the ecological and social sentiment? How do we penetrate the consumer market using novel business marketing, alter the discourse and sell the new product story? Do they care? Can it be used to reach them?

The following sections give an introductory background to the conflict between a neo-liberal attitude and a sustainable one - particularly in the food sector. Then comes a section describing the advantages of a local consortium model through description of the ARTOLIO organization. In the next section, a list of current challenges is briefly presented, where digitization can be an answer. The final section presents the extra factor of sustainability with the understanding it should be incorporated within any agenda nowadays. we encourage you to find answers to fit the organizational, digital, and sustainable parameters into one marketing strategy, and present your GTM solutions.

1 The Power of Collaboration

"There are four pillars that make a community: … community by interest, by action, by place, or by experience. Any community you can think of fits into one of those four boxes… Small-scale farming has been around for over 10,000 years… It truly is the oldest community in the world. That's why it's so multi-faceted, so large, and can be so powerful. It's not just a niche group of people sharing tips on how to work better. Farmers come together for support, for research, or guidance, for belonging. They come together to leverage the power of community and move their agenda forward".
Dr. Diana Nsubuga Nambatya, Uganda, October 5, 20211

Once again, this year, Abed, an olive press mill owner from Araba, a small Arab town in the North of Israel; Hadas, an owner of a Fair-Trade olive oil cooperative of small farmers - mostly women - in Kfar-Khana, Israel and Vagelis from Northern Thessaloniki in Greece looked at their poor crops and the meager yields of oil and exclaimed what an extremely difficult year they had experienced. Dimitris from Cyprus could not estimate his crop at all, because all his trees were completely burned in the summer fires in Cyprus… Climate change? Not enough irrigation water? Lack of agricultural knowledge?

Whereas on the other side of the Mediterranean, Emily, from Moulin Oltremonti in Corsica, France, looked astonished at her trees bowed under their load of beautiful fruit laden with the promise of fine extra virgin olive oil. Ivo, Emily's spouse, the best Corsican olive presser, knew he was facing three arduous months attempting to press all this bountiful green gold. Irrigation? Fertilization? Love? And yet, Emily and Ivo were unable to recoup their investments.

How can we connect Emily and Hadas, Vaggelis, Abed and Ivo? How can a size advantage be produced for small farmers without them losing their livelihood? How can local uniqueness be preserved without losing it to mass production? How can small holder farmers market their extremely beautiful and remarkably healthy local product with the higher prices it deserves? How can we prevent Abed and Hadas from having to sell their trees, which are vital carbon sequesters and environmental necessities? How can small regional economies be protected from the mass production of the corporate world? Our current economic system, which is based on the model of shareholder primacy in favor of stakeholder economy, has emerged in recent years as exploitative and unsustainable. It maximizes the wealth of the few over the wellbeing of all and prioritizes short-term gains over long-term sustainability. This reality is starkly exemplified in the production chains of our food.

[1] A Ugandan farmer, M.D with a PhD in public health, and founder of Integrated Health Kwagala Farm - an urban farming foundation that encourages young people to seek financial independence through farming. October 5, 2021 At : https://about.wefarm.com/blog/a-success-of-community-in-conversation-with-dr-diana

Solutions to achieve a more inclusive economic paradigm that create shared wellbeing on a healthy planet, include social innovations and generate more inclusive economic systems while advancing economic dignity for marginalized players. This can be achieved through shifting practices and policies towards local, peripheral, and small holders, and through ensuring equitable access to capital for all producers without sacrificing the local producing communities, nature, and end users' health, for corporations and profit.

According to the UN Food and Agricultural Organization (FAO) report on trends and challenges in the future of food and agriculture (FAO, 2017)2, agriculture and food production can become more sustainable in the global context of rising population and living standards, climate change, and environmental degradation. This can be done through the development of innovative practices and tools to reduce resource depletion, material consumption and waste production, and reverse the trend of biodiversity loss, while ensuring that society is provided with sufficient, nutritious, sustainable, and affordable food. In terms of organization and strategy, a new economic model which is more oriented towards restructuring of production and consumption requirements is also needed, where food security, dignity, and locality are combined to be part of restructuring of a social economy. This is also in line with the importance of food and agriculture in achieving the 17 Sustainable Development Goals of the UN.

1.1 The Industry of Small, Domestic, and Standalone Producers

The FAO (2017) report shows how agricultural policy has been hijacked in the last few decades by lobbyists, driving out independent small farmers and food processors in favor of large companies and corporations.

According to David Perry, the president and CEO of the technology company Indigo Agriculture, the problems of food and agriculture are some of the biggest facing our society and our planet. There are four major problems:

One is that the population is growing faster than agricultural production. Secondly, the current methods of agriculture consume far too many of earth's resources than we can afford. Third, current methods of agriculture are producing less and less healthy food since the focus is on volume instead of quality.Finally, farmers aren't making any money. About 40% of the people on our planet are involved in agriculture, 80% of agriculture farmers in Africa are smallholders, and many of them live below the poverty line .

[2] At :https://www.fao.org/3/i6583e/i6583e.pdf

1.2 Opinions about mass production in the food sector and its failures:

- Mass production harms product quality and thus harms the environment
- Mass production causes the loss of special and sustainable production, fertilization and harvesting techniques, and the reduction of the variety of varieties.
- Mass production harm small producers and the fabric of regional communities
- Short term profit realized in mass production can lead to forgeries and corruption
- Moving away from the local place of production leads to lack of transparency
- Mass production is one of the reasons for the widespread distribution of ultra-processed food, which is defined as industrial formulations, the sort of food that harms public health by driving diseases, such as obesity, diabetes, heart disease, and cancer. (Lustig, (2020:); Moubarac, at.el, 2014) (see glossary)

"*We work harder and harder, try to produce more and better while preserving the environment. But while our plants and fruits grow, while the profits of the supermarkets grow, the prices we receive never seem to grow. They cannot sustain a decent standard of living ".*
(Anton Bowman, small producer, Windward Islands, Caribbean)

1.3 Why struggle against mass production in the food industry?

One of the most prominent virtues in local food production is the quality. Mass production detracts from qualities such as taste, variant uniqueness, precision, and traditional production. Thus, maintaining produce quality and originality are a social necessity, ensuring the livelihoods of local farmers and maintaining different regional qualities and strains, as well as preserving green lungs. Surrendering to market forces that seek to sell a cheap, imitation, or low-quality product at an inflated price harms the income of small local farmers, who try to produce healthy, unique, and valuable produce.

Another problem with mass production is the harm to small producers in favor of the big corporations. A corporate and monopolistic culture in any sector inhibits the market share of and obstructs the ability to stand out in qualities for small businesses, let alone local, peripheral businesses. Additionally, business management aimed at mass production and quick profit can be sometimes conducted in a non-transparent manner, and even go as far as unethical conduct and counterfeiting.

One of the consequences of small producers competing in this environment is the "shut down" of local culture. The disappearance of local industries and the weakening of regional communities, results in the loss of regional uniqueness and hampering of regional development. Therefore, there is a growing belief that preserving small and unique producers maintains regional uniqueness and increases the potential for local rehabilitation – resulting in the establishment of local tourism, job creation for residents, building community projects, environmental care and more.

1.4 From Regional Expertise to Global knowledge/adoption/implementation?

"Agricultural areas will need to expand considerably if we are to feed the growing, and increasingly affluent, global population. In our urgency to produce more food, some farming methods are stripping nutrients from the soil, fueling climate change, and driving biodiversity loss. We also risk undermining future generations' chances to grow food."
(Katherine Latham BBC: Follow the Food: How to use food waste for good)

Stewardship of the land will play an ever-increasing role in the development of future-proof sustainable agriculture. To ensure proper use of the land and waste, farmers must accept this responsibility and act to ensure that farming is sustainable and operated in the most circular method possible. Traditional landowners and farmers will by nature be more dedicated to this stewardship as they are truly connected to the land and its produce. Large producers of olives and other crops tend to prefer monoculture farming to increase production. Modern agriculture often exacts a heavy price on the environment. According to a WWF report, olives, like other crops, are suffering from agricultural intensification, which is an aggression on the tree and the environment. The traditional large fields of centenary olive groves, separated from each other and watered with the rains, and collected manually, have given way to plantations of small shrubs placed in a row, barely separated from each other with the sole objective of facilitating their mechanized collection[3].

On the other hand, from the perspective of local farmers, global and even national policy is often invisible, where the national policy largely ignores the local reality of rural smallholders. On the other hands, many entrepreneurs will often point to the inability to persuade smallholder farmers to adopt technology that will help them join, collaborate, become more efficient and create value for their work (Nkomo, 2021).

3 https://www.wwf.es/nuestro_trabajo/alimentos/el_olivar_que_queremos These' artificial 'groves do not support the wide variety of species of flora and fauna that naturally share' traditional 'olive habitat.

1.5 Is There a Market Potential for Small Farmers?

There are about 500 million small farmers and over a billion people who are directly engaged in small-scale agriculture around the world. Together they grow 70% of the world's food and spend more than $400 billion annually on agricultural inputs (fertilizer, seeds, mechanization, piping, technology, and knowledge), generating more than $2 trillion (FAO, 2017:11-12). Lack of access to the Internet and information, quality agricultural inputs and particularly the inability to use technology, to manage their own business and to reach prospective markets have prevented small-scale farmers from realizing their economic potential for decades and restricted them from growing and increasing quality.

Nsubuga (2021), Nkomo (2021), Sirolli (1999), and more, point to the misconception of entrepreneurship, innovation, and competitions among smallholder farmers, arguing they usually do not compete with each other due to corporate dominance as was expected from them in order to succeed. Nsubuga highlights another problem:

> *"…while small farmers do not compete and even support each other, one of the traps of this community is that historically it has been pretty poor in its organization in groups. Farmers and small producers come together as a community to support each other, but do not converge as a collective, in global markets. In this sense, they are still individuals and not a common community. If small farmers could unite and organize themselves well, they would be able to compete better in the global markets"* (Nsubuga, 2021:17).

Yet, these policy, behavior and tradition gaps sometimes create the space in which innovative practices and novel experiments may emerge. Already 20 years ago Vorley (2002) argues, that without being rooted in a broader policy context with strong institutional backing these 'islands of success' frequently fail to spread or be scaled up (2002:6). But, as in every other sector, in agriculture too, technology has the power to change the game.

There is a consensus in the agricultural industry that recognizes that things must change (UN FAO, 2019). Despite this, agriculture has been very slow in adopting new production and business methods and technologies. McKinsey bases one of the annual ranking of industries on their technology adoption. According to last years' ranking, agriculture is the last of the large industries to adopt new technologies. Indigo technologies CEO, David Perry, explains in a lecture at Harvard Business School (HBS) in 2020, why this is so by reverse engineering - pointing to what agriculture industry is ***not***:

> "**Size:** It is not a small industry. Agriculture is the third or fourth largest industry in the world depending on the year.
> **Importance:** It is not a niche industry. We depend on agriculture numerous times every day to ensure our livelihood.

Technology: It is not the technology. The same technologies that are driving other industries like computing power, networking, DNA sequencing, the development of sensors and so on, all apply equally well to agriculture. Technologies applicable in agriculture are available, just not implemented."

Perry argues that the reason for this late adoption of innovation and technology is the agricultural system itself since it is set up as a commodity industry. That is, most farmers get paid for the loads, masses, and quantities they produce, let it be corn, wheat, or olive oil, without regard to how those products are produced or what the quality of the product is. Therefore, there are no incentives for farmers to focus on quality or sustainability. Because they get paid for volume, they invest in methods and technologies that will enable them to produce more, but not in the processes or resources that allow them to produce better, healthier, or more sustainable produce.

It might be, that the reorientation of traditional farmers into adopters of new technologies is dependent on changing the commodified system into a sustainable and quality oriented one. To turn the traditional, rural farmers from late adopters of new technologies to early adopters of new business models and marketing strategies.

1.6 De-commoditizing the Industry and Agritech: The Evolving Promise for Local Farmers

Agricultural technology (AgriTech) has changed the rules of the game between local farmers and large corporations. Today it allows growth and expansion for even the most remote or uneducated farmers. AgriTech can push to growth in size (scalability) and quality through tremendous advancement in crop yields, farm productivity, healthy plant, sustainability, and waste reduction. But the real gamechanger is in the business options that the integration of technology has created. Agri-tech is a fast-growing industry ripe for innovative business models and opportunities to close the digital divide between traditional farmers and the young generation, by increasing farm productivity and decreasing food loss through innovative business applications and by proposing new value to farmers. Furthermore, technology gives farmers the gift of transparency. Financial and business transparency that will enable efficiency and growth, and transparency that will allow them to tell the world which farmers are producing quality, and which are not. Indeed, agriculture is an aging industry (3.5 times more farmers are above 65 than below 35), and in Africa only 3% of smallholder farmers are actively using any form of digital service[4]. But farmers are known

4 Why Agri-tech? Milken Montsepeprize. At :https://milkenmotsepeprize.org/why-agritech /

for their resilience, and right now farmworkers could own sustainable small businesses in the regional food economy and gain the power and capital to collectively own critical aggregation, distribution, processing, sales, and marketing abilities by adopting and leveraging new digital technologies. Most importantly, artisanal farmers can exercise their cultural and economic independence and value. **Artisan farmers can once again feel pride in their uniqueness, culture, and tradition. They can resort to being the true stewards of the land and champions of the environment instead of chasing commodification of their produce.**

Agri-tech and food tech also allow for creation of digital marketplaces, in which combined with geospatial solutions (GIS) can create knowledge networks to exchange information on more sustainable choices and innovative solutions by farmers and producers, as well as provide cooperation opportunities for size advantages. Smart or automated marketing strategies can allow analysis of food needs, preferences, and cultures on the one side and information on the economic, social, and environmental impacts of daily food choices on the other. Timpanaro (2021) demonstrate how these digital technologies allow promotion of digital training programs for producers and awareness campaigns to consumers to make food production and consumption patterns healthier and more sustainable and to adopt more responsible food behavior to reduce the environmental, economic, and social impact of food waste (Timpanaro, 2021:87).

Digital marketplaces connect farmers directly to buyers, allowing farmers to get paid more for catering to the consumers specific requests. Farmers could get paid for growing produce of higher quality and more sustainably. This facilitates every farmer to produce what consumers want, which means instead of a commodity, they are producing a specialty product with a greater margin, and often with a unique story and worth.

Yet, due to the limited access to training, and the means to scale up small enterprises, local farmers risk being left behind. Since small-scale farmers are usually not connected as a community, they are not able to maximize their networks, connect with each other and access (and share) their professional knowledge, or build collective buying or selling power. Not to mention understanding the importance of the connection between the various stations in the production chain, which can help them be masters of their own produce not just in the growing phase (for example the disconnect between cocoa growers in Africa and the chocolate processing industry in Europe). The ultimate result is that they are disconnected from realizing their true economic potential, ignoring the potential of increasing profitability and recognition. This is while many economically excluded communities around the world have become empowered through the rise of digital platforms, affordable smartphones, and lower costs of data (see appendix 3: Alternative Business Frameworks).

To sum up, Agri-tech enables farmers to track the way their product is produced on a field-by-field basis and provide traceability all the way from farm to table. This enables consumers to specify certain attributes. Quality of the product, origin, specific ingredients, protein specification, traditional processing and more. Technology enables consumers to even decide upon the growing methods in ways that sequester more carbon in the soil than is emitted (carbon positive). The direct connection of buyers to farmers and the traceability of the products from the farm to the buyer can be now possible and transparent. This allows to de-commoditize agriculture and creates the footing for dramatic change towards quality, sustainability, and transparency.

Develop Alternative Global Networks and Coalitions for Supporting Local Producers Trade and Development - the Case of The Olive Oil Industry

ARTOLIO, the subject of this study, was established in the belief that small-scale olive farming will be no different. The empowerment DNA of ARTOLIO is in its core belief: No one else has the solutions to farmer's problems – other than the farmers themselves. Each farmer in the network is a small business owner and entrepreneur who holds knowledge they can share with the others through the network and platform.

The financial and entrepreneurship education accessed through digital applications assist by offering the necessary skills and knowledge to transition into the global market and effectively engage remote farmers in the agribusiness value chain. This allows them to utilize the resources they have efficiently and improve not only their personal economic prospects but also that of their wider communities.

The benefits from participating in a network and joined platforms goes even further. The World Bank has identified local agricultural development as one of the most powerful tools to end poverty, SDG1, whilst directly contributing towards achieving SDG2 - Zero Hunger, and SDG8 - Decent Work and Economic Growth.

1.7 The Local Olive Oil Sector

Though tripled consumption in the last 60 years[5] due to health and culinary advantages, olive oil represents only around 2% of the worldwide production of oils and fats. It is an ingredient cherished by the consumers in Mediterranean countries where it is of major economic importance for their farmers. Accordingly, 20% of farms in Spain are devoted to olive cultivation compared with 25% in Greece and 19% in Italy. These countries produce

[5] IOC News: World's Olive Oil Production Has Tripled. Madrid, 4.1.21 At: https://www.internationaloliveoil.org/worlds-olive-oil-production-has-tripled/

around 70% of global production, Spain and Italy being the main producers (Gonzales, at.el (2019: Table 1).

Olive oil production has been traditionally associated with the producing countries of the Mediterranean Basin, but this association is not completely accurate today. In fact, the 620 million productive olive trees on the Earth are situated on over 11 million hectares, including countries as far flung as Australia, USA, South Africa, and Chile. These countries all have areas within them with pedoclimatic conditions like those found in Mediterranean countries. Research shows the evolution of the production in the whole World vs. the European Union, and clearly displays that year-on-year production is moving outside the EU[6]. Therefore, the traditional association between cultivars and determined geographical regions is not so well stablished as it was in the past.

In recent decades, global demand for olive oil is in constant growth, fueled by health-driven consumer behavior (e.g., the "Mediterranean diet") and the search for a wider array of tastes and flavors. The economic prosperity associated with olive oil, however, has not been spread equally across the value chain in the Mediterranean. Specifically, globalization affects small local producers in two main ways:

a. Large olive oil conglomerates (e.g. Deoleo, Sovena, Borges, and Gallo) have risen to control the entire supply chain, producing large volumes of mid-quality oil at low prices thus pushing local and regional producers out of business
b. Pressure to optimize quantity over quality has favored new engineered olive varieties pushing out traditional varieties thus decreasing biodiversity and richness of tastes. JOP socio-economic needs indicates that 90% of total small farmers business are micro-enterprises with less than 10 employees, which cannot withstand economic downturn and the credit crunch yet need to tackle globalization (ENI JOP p.19). This holds true for small olive oil regional producers. Small farmers in the olive oil sector in the Mediterranean basin suffer from similar problems: they own small plots of land and use traditional rain-fed farming, while relying on family manpower. Given globalization challenges, these MSMEs (Micro, Small and Medium Enterprises) are unprofitable, and many olive orchards are now abandoned or untended, no longer under the stewardship of the original farmers, resulting in unemployment within marginalized communities, degradation of the environment as well as loss of original olive varieties. Facing rising olive oil demand, this phenomenon is becoming even more prominent.

[6] Updated reports on the information of olive oil production (i.e. cultivars, PDO/PGI, and categories) from EU and non-EU provenances. FOODINTEGRITY Ensuring the Integrity of the European food chain 613688: Collaborative Project Seventh Framework Programme KBBE.2013.2.4-01: Assuring quality and authenticity in the food chain.

Located in remote rural areas, most small olive-oil businesses are physically and conceptually distant from major urban areas where technological and business innovation usually occurs. In rural areas, the dominant role of tradition and culture can inhibit the adoption of new technologies and farming and business methods which can assist them to become competitive and profitable. A diligent irrigation and fertilization regime, for example, can improve both overall olive yield without compromising olive quality - yet traditional olive dry-farming is still the most prevalent method for many rural Mediterranean farmers.

Also, olive trees can grow on relatively arid, marginal land which is unsuitable for other crops. Most olive farmers cannot simply switch to other crops. Thus, an unsustainable olive-oil small business means high levels of unemployment, desertification, and abandonment of land due to lack of agricultural and business alternatives.

Indeed, locked in this vicious circle, the farmers of the traditional olive oil industry have never dreamed of the possibility of exporting their product under their own name. At best they sold their oil to large corporations without marking their produce, labor, investment, history, quality, and faith.

The olive oil agricultural sector is vital for the Mediterranean countries economies. However, the economic success of the sector is highly dependent on drivers such as expansion rates of lands, water supply, machinery, education, quantity of olives and growth in public demand. Moreover, the olive oil sector is highly vulnerable to extreme weather events which are likely to be aggravated by climate change.

The current challenges of the olive oil market are related to quality, traceability, regulation, standard methods, and origin. The olive oil industry actors are farmers, producers, retailers, importers, exporters, analysts, regulators, and consumers.

1.8 Consequences for consumers

Olive oil is an important element of the Mediterranean economy since antiquity and the characteristic component of the so-called Mediterranean diet (Nestle, 1995; Ness, 2002). Although olive oil has a long history of trade, consumption still has largely been restricted to the producing countries (Ramon-Munoz, 2000). During the last 20 years this has changed: olive oil, hailed as a healthy food and culinary asset, increasingly appeared in food stores in non-producing countries and developed from an expensive niche product to a standard component of diets (Scheidel & Krausmann, 2011:48).

But turning olive oil into a shelf product had implications that are becoming clear today, both to producers and to the environment, radiating to consumers, such as the

quantitative development of production, and the increasing spatial disconnect between production and consumption (Würtenberger et al., 2006; Erb et al., 2009) and its significance for land use change (see Part 3: The Power of Sustainability).

While suppliers are the first to suffer the consequences of any changes in situation in the olive oil trade, negative consequences for consumers will likely arise sooner or later. If retailers continue to capture an increasingly excessive share of olive oils values, and buying prices are forced down to unsustainable levels, suppliers will struggle to survive. More vulnerable smaller producers may be forced to leave the industry and will no longer be able to support their families through the traditional olive oil trade. Ultimately, the result may well be a highly concentrated production chains, from retailers to producers, generating further negative social and environmental impacts in producing countries, while reducing the choice and quality available to consumers.

1.9 Food Fraud and Olive Oil

Olive oil has the potential to benefit or harm public health. It is one of the most counterfeit pressed food products in the world (Mueller, 2011). The high prevalence of counterfeit and defective olive oils is due to how easy it is to fake, and profitable it is to sell defective oil. Extra Virgin Olive Oil (EVOO) is considered very healthy, while in contrast, defective oil poses a danger to public and environmental health (Visioli & Galli, 1998).

Despite food fraud being rife and growing as both countries and corporations seek profit over transparency and quality, it has not yet become uppermost in consumer consciousness. Consumers tend to believe the packaging and marketing strategies of the products themselves and the supermarkets where they are sold, preferring to focus on cost as they rely on the apparent regulatory control of the food supply chain to shelf to protect them. It is precisely this mindset that ARTOLIO needs to overcome.

Furthermore, the fraudulent practice of mislabeling non-EU olive oils as EU olive oil would impact on revenue within the European Union and may harm consumer opinion and health. Thus, it is vital to ensure traceability and originality.

Marketing Appeal and Public Interest

Within only two decades olive oil developed from a niche product which could hardly be found in food stores outside the producing regions towards an integrated component in the diets of industrial countries. According to Scheidel & Krausmann, "high amounts of subsidies of the European Common Agricultural Policy and feedback loops within production and consumption systems were driving the transformation of the olive oil system" (Scheidel

& Krausmann, 2011:47), indicating "the process of change was not immediately driven by increases in demand for olive oil in non-producing countries, but rather by the institutional setting of the European Union and by concerted political interventions" (ibid).

The culture of olive growing, (oliviculture) is of great socio-cultural and economic significance for many countries in the Mediterranean. It was only in the 1980s that conversion of olive cultivation to organic farming began to evolve, and only in the 1990s that health advantages of olive oil became evident (Mueller, 2011). During the last few years, culinary advantages and richness were added to the new value creation of this product. Additionally, the environmental advantages of olive trees as highly efficient carbon sequester; essential elements of local ecosystems; and their need for a relatively small amount of irrigation water also recently came to prominence.

In recent years, consumers are also becoming increasingly concerned about the integrity of the food on their tables and considerable efforts are now being invested to guarantee food integrity (Brereton, 2018).

Yet, despite the increasing research on the distinct healthy value of olive oil, and despite the evidence for its richness and unique culinary properties, and despite the potential that this sector can engender for regions through tourism, employment, well-being, co-existence, environmental health, and sense of local pride, most consumers still encounter a reality where most olive oil is either defective or counterfeit. End customers are ignorant of its provenance and local exceptionality and relate to it simply as a commodity. As a result, veteran producers are not replaced by a younger generation who perceive the sector as outdated, old, and poor. Therefore, they end up selling their olive trees or produce to large commercial groups interested only in mass production and sales and who farm mostly table olive rather than olives for oil. The public is losing health quality, culinary richness, areas of natural beauty and ecological importance, and fascinating stories. Furthermore, consumer interest in a reliable geographical origin declaration of extra virgin olive oil (EVOO) has increased in previous years - but not in the expected percentage.

Sophisticated marketing strategies are unfamiliar to small and traditional farmers because they are trapped in a survival mode that does not allow for growth of productivity, professional development, regional affluence and most importantly – local and personal pride.

Within the context of a changing olive oil retail environment, the Mediterranean olive oil sector is faced with numerous challenges. According to recent IOC reports, the overall production of olive oil is declining, though consumption of olive oil remains stable and is even

growing due to new health and culinary discoveries. Overall household penetration of olive oil is high and is particularly pronounced across certain demographics.

The growing fragmentation of shopper loyalty across channels increases the complexity of distribution and access to market. At the same time, there are significant changes in eating and tourism cultures that are both driven and result from the changes in awareness to sustainability, health, and local production.

Marketing-wise, despite these challenges – or perhaps because of them – unprecedented opportunities have arisen. Olive oil is aligned with many long-term trends, including the growing Specialty Foods Sector, and continued burgeoning interest in exciting and international foods as well as "better-for-you" foods. There is a trend for people to be more educated about their food. It is believed that as people become more educated about food, they will in turn become more discerning and be more willing to try different things. They will also be willing to pay more for quality foods they prefer, the foods they perceive as healthy, and where they can be sure that money will get honestly passed down the chain to the small producer.

1.10 THE ARTOLIO PROJECT

ARTOLIO has banded together several small and medium-sized olive oil producers from 6 Mediterranean countries to form a novel network focused on preserving their local culture and conserving native olive cultivars. Strengthening local and regional economies is the most important aim of ARTOLIO. Additionally, educating the public in the benefits that olive oil can contribute to public health and culinary richness, as well as growth of local tourism and regional original designations visibility.

As discussed above, the existing dynamics of the olive oil market have proven to be challenging for small olive oil producers. ARTOLIO was founded to build a space for growers and millers considered to be "olive oil artisans." The unique oils from these producers seldom reach supermarket shelves, and the producers are under-represented in a sector that is dominated by larger companies and producers.

ARTOLIO Network was formed to assist such businesses not only to survive globalization but indeed thrive, by creating new jobs and regional opportunities, and creating a trickle-down effect that stimulates the socioeconomic development of their local areas. The ARTOLIO Network was created through the realization that to ensure success of members, the adoption of technology and marketing and sales innovation are inseparable.

Technological efforts to increase yield and oil quality must go together with appropriate business, sales, and marketing skill sets. The 21st century farmer can and should be assisted to achieve these skills. To this effect, ARTOLIO is operating on three distinct levels:

a. The Local Farmer/Miller Level: through training and adoption of both technologies and advanced agronomic practices to increase the yield and quality as well as increased training to build knowledge of globalized business practices. Higher yields and higher quality combined with business acumen mean increased net income, business growth and increased employment. The challenge at this level is one of culture and trust - farmers should feel comfortable to adopt new practices as well as feel confident that this change will yield improved results.
b. The Regional Level: by establishing regional centers of knowledge which assist local farmers at the technological and business level simultaneously as well as improving their access to finance and advocate for the advancement of relevant regional policy measures.
c. The Pan-Mediterranean Level: by harnessing the combined power and knowledge of the regions to generate a sustainable Pan-Mediterranean regulation, sales and marketing platform which will reflect the interests of small businesses in the olive-oil industry (which are very different from the industry giants) and allow them to successfully compete globally.

ARTOLIO Network is currently working on the first two levels to facilitate simultaneous and seamless operation, to achieve profitability and sustainability for Mediterranean olive-oil small and medium businesses. Thus, addressing the objective of promoting economic and social development in the olive oil sector, with significant contribution to local business development and promotion of a new economic model of social inclusion.

ARTOLIO PROFILE (https://www.enicbcmed.eu/projects/artolio):

Consortium profile: All Mediterranean olive oil producing countries (Israel, Cyprus, Greece, Italy, France, Spain, and Portugal)
Partner countries: Israel, Palestinian Territories, Jordan, Cyprus, Greece, France, and Spain
Number of farmers: 65
Quantity of EVOO: 50% *See appendix 1 - Olive oil categories and quality parameters

1.11 General Objective of ARTOLIO

To promote scaling, leveraging, and economic sustainability of MSMEs (Micro, Small and Medium Enterprises) in the olive oil sector in rural Mediterranean areas.

Specific objectives:

1. Support rural olive MSMEs by:
    a. Increasing olive oil yield and quality through uptake of advanced technology and updated agronomic knowledge to reach at least 200% of current yield and consistent extra-virgin levels respectively
    b. Developing the management and marketing practices and facilitating access to finance to be able to export and grow.
2. Establish local regional knowledge institutions in each participating region, which will continuously provide its local farmers and mills with updated agronomic, technical, and business development knowledge and guidance.
3. Establish a Pan-Mediterranean network which aggregates all producers to form a unified platform to assist MSMEs across the Mediterranean basin in fundraising, marketing, sales, policy, and legislation at all levels.

1.12 ARTOLIO Local and Regional Solution Level

Simply ensuring the access to physical resources is not adequate support for local farmers in the olive oil industry. Rural farmers, especially women, need protection from exploitation and must be provided with the opportunity to develop transferable skills to thrive in the increasingly complex agribusiness value chain and competitive olive oil market. ARTOLIO enables the farmers to gain the following:

1. **Financial capability:** The ability to manage and understand money improves farmers' confidence and enables them to make responsible decisions about the use of monetary and non-monetary resources and the capacity to produce value. It helps them better navigate the challenges involved with learning to save, creating value, growing their business, and managing the risks that might prevent them from achieving their goals.
2. **Transferable skills and rights awareness:** Through involvement in ARTOLIO's information days, trainings, and workshops, and through linking to and working with ARTOLIO's technology application, farmers will gain a better idea of their rights, regional laws, their strengths, weaknesses, and what they hope to achieve for their business, families, and their community in the future, and how to better protect themselves from making mistakes.
3. **Entrepreneurial and management skills:** The ability to engage in income generating activities to improve their livelihoods and maximize their success in the agribusiness
4. **Benchmarking** on farming from other counties.
5. **Sophisticated marketing strategies**, to help to leverage regional uniqueness, health value, coexistence potential, and intensify unique culinary elements.

ARTOLIO Global strategy aims at de-commodifying olive oil and introducing it not simply as a commodity but as a social and cultural experience and a culinary product of

high value and uniqueness. ARTOLIO's challenge is to integrate the third, global level, without erasing small farmers identity, tradition, and personal and regional stories. ARTOLIO's Pan-Mediterranean network forms a united platform: "United tastes of ARTOLIO", will assist olive oil producers across the Mediterranean basin at the national and international levels. These measures and actions will enable olive MSMEs to export their product to foreign markets at premium prices. ARTOLIO global platform aims to counter the inherent weaknesses in branding, marketing, and sales of small farmers to achieve international capability.

To exploit the arising opportunities, ARTOLIO needs to have a clear sight on the needs of underpenetrated segments and channels such as:

- Millennials: the dominant buyers of Specialty Foods
- Health and organic oriented shoppers
- Quality transparency seekers
- Underrepresented demographics of extra virgin qualified olive oil consumers such as Middle-Class clientele in the Far East, South America, and Scandinavia.
- Entering new, non-olive oil consumers markets such as Africa and India
- Growing alternative channels (online, eco-tourism, Foodies)

Olive oil already possesses all the characteristics required to attract these consumers. Critically, what needed is a change in mindset from producing a simplified commodity to creating a product offering that is high quality, unique, engaging, relevant, quality transparent and accessible.

2 The Power of Collaboration

"…What can be done to progress small farmers? "Digitization. So many communities have gone digital. It's allowed them to come together at a larger scale…. But it's only a matter of time before that happens. The key is - we must be intentional. … we have to make decisions and actively pursue the next steps for this community, so it can be successful in a digital, global market environment."
Diana Nsubuga Nambatya, a Uganda farmer, An M.D with a PhD in public health, and founder of Integrated Health Kwagala Farm - an urban farming foundation that encourages young people to seek financial independence through farming. https://about.wefarm.com/blog/a-success-of-community-in-conversation-with-dr-diana

"The agriculture sector has adopted lots of technology in terms of seeds, fertilizers, and pesticides over the past decades to become much more productive. But as a McKinsey report reveals, the agriculture sector has been a laggard in adopting information technology. That represents a huge opportunity to make the sector even more efficient throughout the supply chain. Agriculture supply chains are complicated, but let's simplify it into four stages where IT and biotech innovations can dramatically reduce its climate impact:" What we eat, the seeds that get planted, how they're grown, and how crops are shipped. Along each step of this chain, there are really exciting innovations going on that could reduce the climate impact of the agriculture industry."
Mikel W. Toffel, Harvard Business School, 2021

Traditional food security programs tend to adopt a production-focused approach, which seeks to directly influence food security through increasing the supply of food. Recently, other approaches that employ systems thinking have gained momentum. The value chain (VC) development approach, for instance, uses systems thinking to examine the way value is created and captured not only by producers, but also by other stakeholders, including workers, governments, and consumers. Another increasingly popular approach- the market systems approach- recognizes markets as complex adaptive systems to address systemic constraints to market linkages that can affect multiple value chains (for instance, strengthening linkages to financial services for farmers). While it can overcome the VC approach's "one chain at a time" limitation, the market systems approach tends to be constrained to one market and as such subject to a similar narrow perspective challenge as the VC approach.

A food systems approach is a way of thinking and doing that considers the food system in its totality, considering all the elements, their relationships, and related effects. It is not confined to one single sector, sub-system (e.g., value chain, market) or discipline, and thus broadens the framing and analysis of a particular issue as the result of an intricate web of interlinked activities and feedbacks. It considers all relevant causal variables of a problem and all social, environmental, and economic impacts of the solutions to achieve transformational systemic changes.

How to design and implement an effective marketing strategy that will be based on a system approach that includes all stakeholders and advantages of olive oil?

Many unique olive oil brands appeared in the last 10 years within Mediterranean producing countries. However, few of them met long term success in the international market. Only a few extra virgin brands have succeeded to implement an effective marketing strategy, where the use of social media & digital marketing was an important determining factor for their successes.

The case of ARTOLIO is unique due to the presentation of a system approach as a marketing strategy. The Network expects to grow and witness a significant impact through a replication cascade by olive small business across the Mediterranean with the benefits of more economically resilient olive business, new job creation in rural areas, awareness to the precious health advantages and environmental sustainability through increased carbon uptake. Furthermore, olive oil might be the first industry, but not the only one, that can enjoy this small holder networking model. Yet, many small scaling networking models (see appendix 2) are around to learn from.

1.13 The ARTOLIO management Application (see appendix no. 2)

ARTOLIO app (www.artolio.world) is aiming at building infrastructure for a new model of data-driven knowledge sharing, economic scale, and algorithmic justice[7] that bolsters regional production small communities and combats systems of complexity and exclusion created by unrepresentative data sets.

By bringing together farmers, consultants, policy makers, and other key players in the regional olive oil industry, ARTOLIO App has built a unique network for creating both free consultancy and collaborative learning through the marketplace platform. This network will enable small holder farmers to share local and artisanal knowledge; forge new collaborations; it will provide real financial opportunities through grantmaking and capital products; and connect this to mainstream actors in local municipality ,national government, philanthropy, investing, and policy to in turn influence other regional economic systems.

ARTOLIO App was developed for local farmers and producers as an easy to use and efficient system that aims to improve the process of olive oil production and sales quantitatively and qualitatively. The system consists of an interactive online platform and mobile app that will allow farmers to obtain objective, specific and real-time data about the

[7] See for instance Data for Black Lives organization

steps of theirs and others production processes. Moreover, the application of business intelligence technologies will result in the parameterization of the different stages, creating process patterns that in time will allow implementation of predictive process management. This will lead to significant economic, operational, environmental, and social/communal improvements.

Through the App the farmers can parameterize the most critical aspects of irrigation, fertilization, harvesting, processing, bottling, and packaging, and predict the duration of these processes and the quality of their outcomes. The information in the system will help them to: measure and compare their own manufacturing processes, prepare against specific hazards, and most importantly increase value for themselves. The idea of the value creation App is that monitoring production, processing and sales parameters allows defining more clearly and objectively, the standard of quality of each farmer, comparisons between years, variants, and places of origin of the olives. It also allows for separating the oils into diverse packaging, according to the requirements of different customers and tastes. The information recorded by the system brings value to each farmer, thus better positioning them against their competitors. Notwithstanding, as the amount of data collected grows, the value and power of the system will too.

Zespri E-commerce:
Zespri is a New Zealand Kiwi Growers Association. Most farmers are very small. The history of the Kiwi fruit industry has been challenging, characterized by low prices, and harsh competition. Thus, farmers decided to set up a full profit co-op run by people with marketing experience. The front-end marketing organization now passes consumers demands back to farmers and consumers pay accordingly. The farmers are producing fruits earlier or sweeter according to consumers wishes. The commodity cycle cuts off the farmer from the consumer. Now, farmers have no incentive for commodity production, they grow specifically what their educated customers request.

The Zespri case study can act as interesting example for ARTOLIO marketing platform, helping the consortium to realize that once the consumers are more knowledgeable, they can pass precise requests of tastes, blends, and health on to the producers, which in turn will start to reduce the commodification of the olive oil and turn it into a unique local product, along with the possibility of the producers to gather together to give the product visibility beyond the production areas with the help of digitized App and the global platform. Olive oil is another example for the increasing spatial disconnect between producing and consuming regions because of the globalization of the food system (Erb et al., 2009; Kissinger and Rees, 2009).

3 The Power of Sustainability an Extra Perspective

Olive oil is another example for the increasing spatial disconnect between producing and consuming regions because of the globalization of the food system (Erb et al., 2009; Kissinger and Rees, 2009).

As seen from much research during the last 20 years, production and consumption patterns of olive oil in the European olive oil system underwent a fundamental transformation. As Scheidel & Krausmann (2011) pointed out already 10 years ago, it is indeed striking how rapidly a crop, which has been particularly valued for its adaptation to the specific climatic limitations of the Mediterranean and its frugality has been converted into an industrial cash crop based on irrigation, agrochemical inputs and mechanization. The transformation of the production system took less than 20 years. However, while it had positive effects on the rural economy, it led to fundamental impacts on Mediterranean agro-ecosystems and landscapes. The emergence of new markets played a key role in that process, but new analyzations of the sector indicates that it was not immediately initiated by "consumer driven increases in demand for olive oil in the non-producing countries but rather by concerted political interventions which simultaneously drove industrialization of olive production in the producing countries and created new markets for olive oil in non-producing countries. It was the integration of the producing countries into the European market in combination with export and production subsidies and offensive marketing strategies that created this new market, which soon obtained a momentum of growth" (Scheidel & Krausmann, 2011:54).

Indeed, with the intensity of olive production, the environmental pressures associated with olive farming increased. The high ecological adaptation of olive trees to the Mediterranean climate and to marginal soils and the many positive ecological functions associated with traditional olive growing, made traditional olive farming an adequate and sustainable type of Mediterranean land use as well as air carbon sinking (Montiel, 1998; Araque Jiménez et al., 2002; EFNCP, 2000). Therefore, it might be that the abandonment of traditional farming practices and the rapid intensification of olive mechanical production together with the extension and regional concentration of the production areas, have led to the current trend of local agro-ecosystems (Guzmán and González de Molina, 2008), that can be appealing to some customers who are tuned to environmental impacts.

The new EU subsidy regime and cross compliance measures are a positive institutional development toward the avoidance of intensification of production at the cost of

environmental health. However, trade of agricultural commodities remains a relevant driver for land use and land cover changes. This issue should be better included into ARTOLIO marketing policy by using innovative approaches to reach new consumers, e.g., digital GIS story of the land use, to guarantee marketing of sustainable global production chains and avoid global shifts in environmental pressures.

Consumers also care about pollution of air. They care about minimizing waste, about fair and diverse employment, and clear and transparent financial conduct. They are not always aware of these issues, but once exposed to them – they generally care. Climate change particularly is now overwhelmingly obvious to all consumers on an ongoing basis because of the effects, often extreme, it has on our daily lives. Consumers are increasingly affected by the cascading effects of climate change and thus care as it affects them more obviously and personally than before.

The power that agriculture must fundamentally impact climate change for the better is enormous (FAO 2019, 2020). Indeed, in recent years, researchers argue how olive oil is not only good for consumers, but also for the environment. Data have been exposed that support a concrete link between olive oil production and reduced carbon dioxide emissions. The International Olive Council (IOC) was set up in 2012 an expert group to calculate the carbon footprint of olive oil. GAEA, Greek products company, was estimated the footprint for its own Greek extra virgin olive oil, discovering that pesticides and fertilizers accounted for almost 70% of their olive oil's carbon footprint. This meant they could substantially reduce that footprint by increasing their reliance on organic production (Radinovski, 2020). GAEA shows how unlike palm oil and other vegetable and seed oils whose production is too often associated with deforestation; olive oil is the juice of a fruit grown in an often ancient and permanent forest of carbon-sequestering trees that consume relatively little water. This information adds another layer to the importance of preserving regional groves of olive trees of diverse cultivars, and encouraging growth in this sector, to stop the abandonment of small farms to other crops and the loss of small farmers – the stewards of the land and protectors of the environment - to other professions.

According to Radinovski (2020), the International Olive Council (IOC) has tried for years to raise awareness of the positive impact of olive growing, as not only good for human health but also for its contributions to the health of the planet by helping fight climate change. For hundred years the Mediterranean basin was known for the "Mediterranean forest" of olive trees which both protect against desertification and clean the atmosphere by removing carbon. The IOC developed an assessment tool and sponsored extensive research on olive cultivation, olive oil production, and bottling, considering the methods used for

approximately 95% of olive oil production in different parts of the world. They discovered that for every liter of virgin olive oil produced, 10.65 kg of carbon dioxide are removed from the atmosphere. Jaime Lillo, deputy executive director of the International Olive Council, explains that one hectare of olive trees can compensate for the carbon footprint of one person, and world olive oil production absorbs the CO2 of a city the size of Hong Kong. (In Radinovski, 2020). Indeed, Yale Olive Sciences and Health Institute (YOSHI), is focusing on facilitating and coordinating rigorous study, robust research, and creative interdisciplinary education and activities related to the olive tree and its products, for the sake of "both public health and planetary health." (Vasilis Vasiliou, Yale School of Public Health and co-founder of YOSHI).

1.14 The Castillo de Canena case:

Although no longer a small business, the Spanish olive oil company Castillo de Canena (https://www.castillodecanena.com/en/) is a good example of how a local business can succeed and become prosperous if it applies the entire chain of components to a healthy circular economy. Castillo de Canena is already acting on a variety of plans for sustainable farming and oil production. They have created a circular economy that uses reforestation, innovation, technology, precision agriculture, and ecosystem regeneration to encourage biodiversity and combat global warming. Their long list of eco-friendly activities includes producing a natural fertilizer from olive byproducts, monitoring their carbon and water footprints, and utilizing renewable energy (Francisco Vañó, Castillo de Canena, 2019).

1.15 Food retails in Europe – a short perspective:

Modern grocery retail sales account for 54% of the total food sales in the EU. On a value basis, hypermarkets and supermarkets are the two main operators, accounting respectively for 35% and 33% of food sales in Europe, while discounters are the third most popular outlets with a 17% market share[8].

At the pan-European level, the ten biggest retailers represent almost 50% of modern food retail sales and are among the 30 largest world retailers. Five of them are German (Schwarz, Aldi, Edeka, Metro and Rewe), four are French (Carrefour, Leclerc, Auchan and Intermarché), and one is British (Tesco)[9].

Local businesses have the potential to become more comprehensive, where adaptation and mitigation are constructively linked in the context of sustainable

[8] Banana splits: Bananas, supermarkets, and a tale of Unfair Trading Practices, BASIC and Make Fruit fairs, at: https://www.bananalink.org.uk/wp-content/uploads/2019/04/banana_splits_media_briefing_FINAL_WEB_0.pdf P.5)
[9] Banana splits: Bananas, supermarkets, and a tale of Unfair Trading Practices, BASIC and Make Fruit fairs, at: https://www.bananalink.org.uk/wp-content/uploads/2019/04/banana_splits_media_briefing_FINAL_WEB_0.pdf P.5)

development, regional development, and local pride; Resilience building of new economic models to strengthen and secure local producers and MSEM becomes a central objective; Policymakers and stakeholders are willing to challenge structural and institutional constraints; Persistence is maintained even in the face of widespread resistance of local farmers and producers to a transformative agenda.

Appendix

Appendix1: Olive oil categories and quality parameters:

The different categories of olive oils are graded according to quality parameters, relating to:

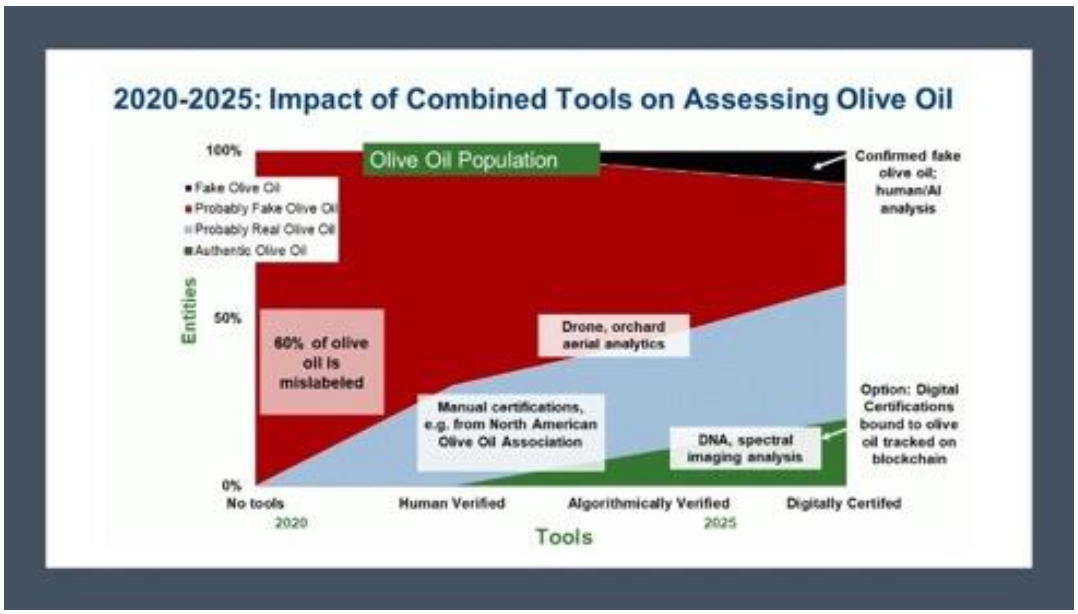
- physical-chemical characteristics, such as the acidity level, peroxide index, fatty acid content and sterols composition.
- organoleptic (sensory) characteristics, such as the fruitiness and the absence of organoleptic defects.

There are three different categories of olive oils:

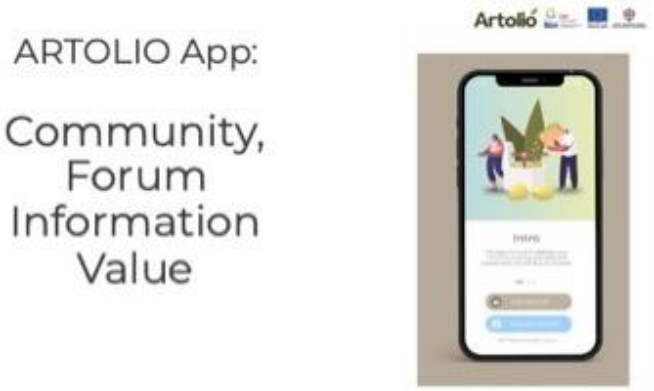
1. Extra virgin olive oil (EVOO) is the category of highest quality. From an organoleptic point of view, it has no defects and is fruity. Its acidity level must not exceed 0.8%.
2. Virgin olive oil (VOO) may have some sensory defects but at very low level. Its acidity must not exceed 2%.
3. Lampante olive oil is a lower quality virgin olive oil with an acidity of more than 2%, with no fruity characteristics and substantial sensory defects. Lampante olive oil is not intended to be marketed at a retail level. It is refined or used for industrial purposes.

Types of controls

Besides controls that are specific to the olive oil sector, EU countries must ensure that other legal requirements are respected. The general food law covers all stages of the production, processing, and distribution of food. The general labelling rules ensure that consumers are not mislead regarding characteristics of oils (composition, quality, origin, category, method of production) and that labelling of olive oil is in accordance with general food labelling rules established in EU regulation 1169/2011.



Appendix 2: ARTOLIO App



Appendix 3: Alternative Business Frameworks

Model name and link	Description	Pros and cons	What else?
Air bnb	Cooperative economy, use of existing resources.	There is a need for a sense of security or protections for the use of private space for both parties.	Sharing economy
ETSY - https://www.etsy.com/il-en/	A platform for selling works by small artists around the world, an opportunity for producers to transcend community boundaries.	Knowledge is required in setting up and managing a user page (store), some of the sales percentages go to the platform, and marketing and advertising must be budgeted.	Digital economy
Haute Couture	Maintaining the quality and value of the work done by hand in the field of fashion.	The rules are strict and high-quality requirements must be met in order to be considered a haute couture product	Niche economy
AMAZON digital marketplace	Emphasis on cheap prices and accessibility of product and service to consumers.	Mass production, elevation of the customer over the manufacturer and supplier, production is cheap and not always high quality.	Digital economy
Festivals and farmers' markets	Exposure to the general public and sales options for small manufacturers at a reasonable price.	Rarely and does not allow regular sale.	From farm to table
INDIGO Agriculture https://www.indigoag.com/about?hsLang=en-us	Harnessing nature to help farmers sustainably feed the planet.	Improves grower profitability, environmental sustainability, and consumer health through the use of natural microbiology and digital technologies.	Agritech
Zespri https://www.zespri.com /	Kiwi farmers in New Zealand.	Circular economy	
TasteAtlas https://www.tasteatlas.com/	e-commerce website of artisanal producers		

Glossary

Agroecology
The science and practice of applying ecological concepts, principles and knowledge (i.e., the interactions of, and explanations for, the diversity, abundance and activities of organisms) to the study, design and management of sustainable agroecosystems. It includes the roles of human beings as a central organism in agroecology by way of social and economic processes in farming systems. Agroecology examines the roles and interactions among all relevant biophysical, technical and socioeconomic components of farming systems and their surrounding landscapes.

Climate change
Climate change A change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/ or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing such as modulations of the solar cycles, volcanic eruptions, and persistent anthropogenic changes in the composition of the atmosphere or in land use. Note that the United Nations Framework Convention on Climate Change (UNFCCC), in its article 1, defines climate change as: 'a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods'. The UNFCCC thus makes a distinction between climate change attributable to human activities altering the atmospheric composition and climate variability attributable to natural cause.

Food system
Food systems comprise all the processes involved in keeping us fed: growing, harvesting, packing, processing, transforming, transporting, marketing, consuming, and disposing of food. They include the inputs needed and outputs generated at each step. A food system operates within and is influenced by social, political, economic, and natural environments.

Resilience
The capacity of a system to withstand the impact of shocks, while adapting and transforming to continue to fulfil its functions. Resilience building can be described as "helping people, communities, countries, and global institutions prevent, anticipate, prepare for, cope with, and recover from shocks and not only bounce back to where they were before the shocks occurred, but become even better off".

Sustainable, healthy diets
Sustainable, healthy diets are dietary patterns that promote all dimensions of individuals' health and wellbeing; have low environmental pressure and impact; are accessible, affordable, safe, and equitable; and are culturally acceptable.

A vision for global food systems in 2030 that will meet will both human and planetary needs will be[10]:

1. **Inclusive** – Smallholder farmers, including women and young people, are fully integrated into food systems with access to financing, insurance, transport, education, mechanization leasing and storage. Businesses, governments, international organizations and other food systems stakeholders effectively provide farmers with the infrastructure, policies, regulations and services they need to thrive.
2. **Sustainable** – With the knowledge, desire and means to make eco-friendly decisions, consumers focus on purchasing food with the minimum environmental impact. Sustainably grown foods are universally affordable. Retailers are incentivized to stock eco-friendly foods. Companies and farmers share more information than ever about their sustainable practices, and their reputations benefit. Conscious of their land's value, farmers deploy practices that reduce environmental damage, while countries meticulously monitor their food systems environmental impact, land rights and plan for land use.
3. **Efficient** – Food is produced in the right variety and in the required amounts to nutritiously feed the world. Little is lost or goes to waste: any food that is not consumed is delivered to those in need, reused to create other products or recycled into other uses, such as compost. Farmers have access to inputs and information tailored to their specific agro-environmental conditions. Government policies positively influence the decision-making of all actors towards common objectives. Land and other resources are used to their full potential. Price volatility is no longer an issue.
4. **Nutritious and healthy** – The triple burden of malnutrition – undernourishment, micronutrient deficiencies and over-nutrition – is reduced as everyone has access to nutritious food and follows a healthy diet. Enjoying better nutrition, adults are living longer, healthier lives and children are growing up to reach their full potential. Moreover, food is safe. People have better visibility of the sources and ingredients of the food they buy.

Inclusive economy

Smallholder farmers, including women and young people, are fully integrated into food systems with access to financing, insurance, transport, education, mechanization leasing and storage. Businesses, governments, international organizations and other food systems stakeholders effectively provide farmers with the infrastructure, policies, regulations and services they need to thrive.

Small holder farmers

Smallholders are small-scale farmers, pastoralists, forest keepers, fishers who manage areas varying from less than one hectare to 10 hectares. Smallholders are characterized by family-focused motives such as favoring the stability of the farm household system, using mainly family labor for production, and using part of the produce for family consumption. The term "smallholders" includes small farmers who own/control the land they farm and those who do not. Often, the term "outgrower" is used to refer to a smallholder who is in a dependent, managed relationship with an exporter.

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