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Ph.D IN "AGRICULTURAL, FOOD AND ENVIRONMENTAL SCIENCE"

Consumer behavior and policies for sustainable production: essays on sustainable labeling

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Setting out to get a PhD is an inherently selfish journey, but one that I could have never endeavoured on my own.

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Reflecting back on the last three years brings to mind a lot of memorable moments. And even so finishing this dissertation merely seems like and intermediate step, I am starting to feel relieved and a little proud. It has been quite a journey.

Off to happy endings and new beginnings!

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Abstract

This dissertation consists of five essays analysing several aspects of sustainable food labelling.

The first essay is aimed to assess the consumer purchasing behaviour towards sustainable seafood products, considering a number of attributes frequently investigated in the academic literature in this topic. Based on consumer purchasing behaviour, studies looking at a variety of seafood products, in different countries and year, and through different methodological approaches are reviewed. The results show that consumers easily scale up their willingness to pay for some specific attributes rather than others. The main shortcomings of the existing literature and possible trajectories for future research experience are also discussed.

The second essay assesses the analysis of who is responsible across stakeholder for making seafood production and consumption sustainable has been performed. More than three thousand consumers in seven European countries about their perspectives on this question have been interviewed. Data has been analysed with respect to country difference. Eight stakeholder were included in our survey: consumers, stores and other selling, seafood industry, national government, the European Union, international organizations like the UN, and two types of NGOs. Based on the results respondents in six of the seven countries see seafood industry as the most responsible and consumers as the least responsible group. National governments and the EU are in the top four in all countries, while stores vary from second most responsible in Germany and France to second least responsible in Poland. Based on

these results, European governments should be cautious of basing their seafood sustainability policies on an assumption of consumer responsibility. According to the consumers, they should rather target the seafood industry and stores. The results suggest that EU fishery policy should be targeted on the seafood industry and stores rather than only on the assumption of consumer responsibility.

The third essay examines the state of the art and research gap in the purchasing behaviour towards sustainable wine, through a systematic review of scientific literature from 2003 to 2018. The analysis also identified the consumers' profile for quality attributes toward sustainable wine. The results show how consumers have positive perceptions regarding sustainable wine and a willingness to pay a premium, even if the awareness about the broad concept of sustainability is still vague. Consumers seem to be prepared to pay a higher price for sustainable wine, but previous studies show different perception on taste and its influence on consumer behaviour. The main shortcomings of the existing literature and possible trajectories for future research experience are also discussed. The study concludes with observations on implications for industry practices and product development, providing useful information for both professionals and policy makers.

The fourth essay is aimed to understand the link between organic wine and consumer taste perception. Using a systematic literature review, the paper explores the characteristics of consumer willing to buy organic wine, as well as the consumers' perception and the role of taste when evaluating organic wine quality and in shaping consumers' attitudes The results show how socio-economic and psychological characteristics of consumer as well as

perceived risk toward quality perception affect the consumer behaviour for organic wine. Based on literature studies, overall, consumers have positive opinions toward organic wine, perceived as healthiness and environmental friendliness. However, an important obstacle to its consumption is the bad reputation linked to the wine taste. Understanding the profile of consumers and the factors that influence consumer' behaviour provide information to the organic wine industry.

The fifth essay is directed to examining the organizational structure of a fruit & vegetable producer organization (PO) of organic farming and the successful factors linked to sustainable labelling. The results reveal some possible strategies for the development and enhancement of the organizational and marketing performances. The methodological approach is based on the Strategic Orientation Round (SOR) analysis, which is based on SWOT method to prioritize the alternatives generated. This method helped us to identify the problems and formulate strategic options in order to support the process of innovation. The results of the case study reveal some possible strategies for the development and enhancement of the organizational and marketing performances of organic food.

Sommario

La tesi si compone di quattro capitoli volti ad analizzare diversi aspetti della certificazione di sostenibilità per le produzioni agroalimentari.

Il primo saggio valuta il comportamento di acquisto dei consumatori per i prodotti ittici sostenibili, considerando gli attributi della sostenibilità maggiormente indagati nella

letteratura accademica. Sulla base degli studi sul comportamento di acquisto dei consumatori, sono stati esaminati alcuni prodotti ittici, in diversi paesi e anni, e attraverso differenti approcci metodologici. I risultati mostrano che i consumatori aumentano facilmente la loro disponibilità a pagare per alcuni attributi specifici riguardanti la sostenibilità. Infine, sono discusse le principali carenze della letteratura esistente ed identificate possibili traiettorie per la ricerca futura su questo tema.

Il secondo saggio analizza il grado di responsabilità che è attribuito ai diversi stakeholder della filiera ittica per rendere sostenibile la produzione e il consumo ittico. È stata condotta un'intervista a più di tremila consumatori in sette paesi europei circa le loro percezioni in merito a questa domanda. I risultati mostrano che i rispondenti percepiscono il consumatore come l'attore meno responsabile della filiera.

Il terzo saggio, attraverso un'analisi della letteratura scientifica, esamina il comportamento d'acquisto dei consumatori di vino sostenibile. E' stata esaminata la percezione dei consumatori circa gli attributi di sostenibilità del vino sostenibile. I risultati mostrano come i consumatori abbiano percezioni positive riguardo al vino con attributi di sostenibilità e dichiarano di essere disposti a pagare un premium price, ma la consapevolezza dell'ampio concetto di sostenibilità è ancora piuttosto vaga. Anche se i consumatori sono disposti a pagare un prezzo più alto per il vino sostenibile, la letteratura mostra una diversa percezione del gusto. Vengono anche discusse le principali carenze della letteratura esistente e le possibili traiettorie per la futura esperienza di ricerca

Il quarto saggio, attraverso un'analisi della letteratura

analizza le caratteristiche del consumatore disposto ad acquistare vino biologico e la sua percezione del gusto e della qualità sensoriale del vino biologico. I risultati mostrano che le caratteristiche socio-economiche e psicologiche del consumatore, ma anche la percezione della qualità inferiore dei vini biologici influenzano il comportamento del consumatore. Sulla base della letteratura, in generale, i consumatori hanno opinioni positive sul vino biologico, percepito come più salubre e rispettoso dell'ambiente. Tuttavia, un ostacolo al suo consumo è la cattiva reputazione legata al gusto del vino.

Il quinto saggio è diretto ad esaminare la struttura organizzativa di un'organizzazione di produttori ortofrutticoli (OP) di agricoltura biologica e i fattori di successo che sono stati sviluppati. I risultati rivelano alcune possibili strategie per lo sviluppo e la valorizzazione delle prestazioni organizzative e di marketing. L'approccio metodologico fa riferimento all'analisi SOR (Strategic Orientation Round), che si basa sul metodo SWOT per dare la priorità alle alternative generate. Con questo metodo, è stato possibile identificare e formulare opzioni strategiche per supportare il processo di innovazione. I risultati del caso di studio rivelano alcune possibili strategie per lo sviluppo e il miglioramento delle prestazioni organizzative e di marketing dei prodotti con label biologico.

1. Introduction of thesis

In the market, consumers currently face to a lot of products, which are labelled differently, as eco-, environmental friendly, organic, sustainable, green. According to Polonsky, Bhaskaran, & Cary (2005, p.185), consumer are confused about different meaning of label related to sustainability, and also to the broad concept of sustainability. Since the labelling information has impact on consumers, it implies that improving information quality can change consumer attitude to sustainable products.

Choosing a sustainable consumption means shifting to a new consumer pattern. From the consumer side it requires greater awareness and responsibility with the adoption of new lifestyles and purchasing choices enabling to achieve high levels of well-being.

Over the past decades, consumer demand for sustainable products has grown substantially. While some studies suggest that the motivation to purchase sustainable products derives from environmental concerns, other production and quality concerns (safety, support of local community or small farms, and treatment of animals) are increasingly reported as issues guiding consumer choices (Thilmany et al. 2008). In response, industries have invested more in branding programs, while various international NGOs and national governments develop and oversee public certification programs meant to address asymmetric information in consumer product markets.

Policies have tried in last decades to encouraging sustainable production and consumption putting in practice the sustainable development principles. But still a long way is needed to achieve this objective. Policy makers - whose

priorities are a more sustainable consumption and production - question whether consumption choices are evolving taking into account the sustainability issues.

The growing attention to food chain for sustainable products leads scholars, industry, and policy makers to investigate how sustainability becomes part of new eating habits. Thus, agribusiness stakeholders could benefit from understanding patterns, consistencies and conflicts of research on consumer values for credence attributes related to sustainable food (Travisi and Nijkamp, 2008).

There is still lacking of a clear understanding about the effectiveness of sustainable-label in consumer consumption due to the lack of research in this field. We take this challenge as an opportunity for investigating about the role of sustainable-label in the process of leading consumers to purchase sustainable products. Furthermore, the results could be used to explore opportunities for food firms to enable sustainable-label effectiveness.

1.1. Defining sustainability

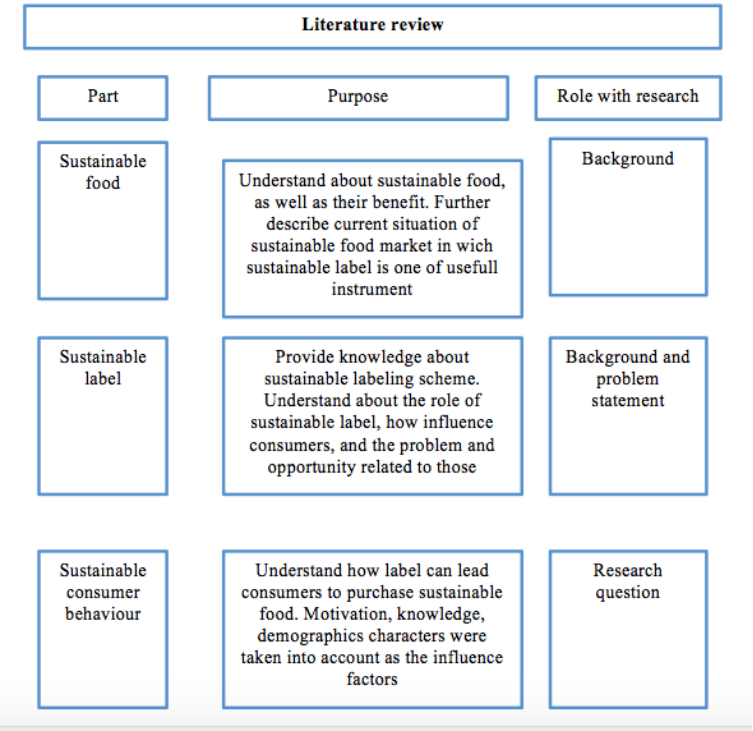
Nowadays, sustainability has become a significant word not only from an environmental but also from a political, an economical and a social point of view. Yet, it is not easy to define what sustainability exactly means, since a wide range of definitions of this term are given in the literature. The often-cited three-dimensional concept of sustainability (United Nations, 2005) defines the three main fields of sustainability as environmental, economic and social. Although the three-dimensional concept is widely accepted, the meaning and fields of application of sustainability are very differentiated.

Thus, sustainability terms, their definition and

interconnections are crucial for a better understanding and communication (Glavic and Lukman, 2007).

The purpose of thesis is providing insights for the research in effectiveness of sustainable label, the consumer' behaviour toward sustainable food products and the degree of responsibility across stakeholder for making production and consumption sustainable. These are presented in detail in the figure below.

Figure 1. Concept map of research question



Source: our elaboration

1.1.1. Sustainable seafood

During recent decade, sustainability of fisheries has become an important issue to the livelihoods, food security and nutrition in the seafood sector over the world. A noticeable amount of public concern about environmental and social aspects of food production, including fishery management and utilization, has arisen (Uchida et al., 2014). National governments and international organizations such as regional fisheries management organizations and FAO devote considerable resources to trying to ensure the sustainability of fish resources. Moreover, non-governmental organizations, agencies and retailers are increasingly trying to inform consumers, through labelling, as to whether products come from a sustainable fishery. This consumer advice can function both as a reward for well-managed fisheries, and as a lever to improve fisheries management. However, until now, consensus is lacking on a definition of what constitutes fisheries sustainability.

There is general agreement that sustainability is about continuing to produce the benefits to society that natural systems provide in the long term. In addition to these, the social aspects of sustainability include maintenance of fishing communities, equity in income and gender, and basic human rights. Actions that decrease the ability of systems to do so are not sustainable. In addition to these, the social aspects of sustainability include maintenance of fishing communities, equity in income and gender, and basic human rights.

Moving more specifically to the fishery industry and seafood production, literature highlights an increasing need for a wider system approach to seafood certification (Alfnes,

2017). The greater institutional attention in Western European countries toward the protection of a wide range of sustainability aspects of fishery is also related to the growing consumer preference toward the different sustainability related aspects of seafood products (Marousek et al., 2015).

Important social and environmental issues related to fishery are at stake (Banterle et al., 2018). Seafood consumers in developed countries are increasingly sensitive to more articulated credence attributes that include a wide range of intangible and interconnected characteristics, such as environmental and ecosystem conservation, product origin, creation of employment, support for small-scale enterprises, preservation of local rural communities, and workers' rights (Brecard et al., 2009). The clear emphasis is on producing benefits to society; in terms of fisheries, these are primarily food, employment, income and nutrition.

A common method for assessing sustainability is to monitor the abundance of fish stocks. A measure of sustainability is the intensity of fishing pressure. If fishing pressure is so high as to threaten the long-term productivity of the resource, then the production of benefits to society cannot be sustained.

For fisheries policy and management purposes, the concept of Maximum Sustainable Yield (MSY) is established. Management objectives are commonly to maintain fishing mortality at or below levels associated with MSY and ensure stock abundance is also at least at the MSY level. The MSY concept is useful in tackling, for example, overfishing and stock depletion.

Another approach to measuring sustainability is to

evaluate the process of management. Sustainable benefits to society arise from the interaction of the management system and the natural system. However, as only the management system can be controlled, the sustainability of a fishery should be judged by whether the management system can provide the benefits the natural system could potentially provide.

Key elements in a sustainable fisheries management system are the ability to monitor changes in the state of the resource, and the ability to take effective action to respond to those changes.

1.1.2. Sustainable wine

Since wineries are increasingly competing in the area of product differentiation, during last decades, the concept of sustainability has created great interest in the wine industry (Remaud et al., 2008). Several wineries have included environmental, social and economic aspects of sustainability at different stages in their management strategy to respond to consumer demand and to reinforce their brand and market positioning (Forbes and De Silva, 2012; Remaud et al., 2008).

Some authors argue that sustainability is very likely to become a major competitive advantage, especially at an international level (Forbes et al., 2009), showing that consumers consider sustainable practices an important feature of wine production and would buy the products from such wineries and vineyards, paying a price premium for this type of wine.

Generally speaking, sustainable winegrowing comprises growing and winemaking practices that are respectful to the environment (environmental dimension), responsive to the

needs and interests of society at large (social dimension) and economically viable to implement and maintain (economic dimension). However, in spite of its popularity, Szolnoki (2013) demonstrates that it is still very difficult to define the term sustainability. One of the main reasons that could explain this lack of consensus is that in the wine industry each country and even each winery has a different understanding of sustainability. Even today, the term is mainly associated with the environmental aspects of wine production. However, the support for these benefits claim is not equal and at times doubtful.

Because of the lack of clarity on the value added by wine eco-labels, some wineries currently follow organic and sustainable practices without being certified. Others become certified but do not disclose the information on bottle label (Rauber, 2006). One reason is that growers want to have the flexibility to change their inputs if it becomes necessary to save a crop during bad weather conditions or other pestilence (Wine Institute of California, 2006). The other reason is that most of these wineries think that there is a negative image associated with organic wine.

Therefore, wine represents an interesting case of sustainable-certification with variation in labelling strategies. This distinctive feature allows us to identify potential benefits that could be associated with the certification process independently from those associated with the actual label. In addition, wine is a differentiated product, celebrated for its many attributes and allowing for heterogeneous consumer tastes.

1.1.3. Sustainable F&V products

The fruit and vegetable sector is characterized by the quality of its production and the intrinsic link it creates with the territory. Nowadays, the agri-food sector is responding to an increased level of interest on consumer demand for products with an increasingly wide array of credence attributes related to environmental and other social outcomes.

Sustainable fruit and vegetable sector is closely related to organic production, a short supply chain, and locally produced food (Seyfang, 2006; Strano et al., 2013; D'Amico et al., 2014). Among credence features "local" is always ranked higher than organic and origin, even with no clear definitions or regulating body in place to monitor such claims. This suggests that consumers might interpret the attribute local as an implicit guarantee or direct assurance that they view as better than a 3rd party certification.

Personal assurance from the producers of fruit and vegetables appears to enhance the consumer's trust in this type of food (Midmore et al., 2005; Rodriguez-Ibeas 2007) more than a certification. Therefore, improving the contact between the producer and the consumer, for example, through direct markets where consumers and producers may interact (Midmore et al. 2005) could be an effective strategy for small firms.

Comparing WTP motivations for organic food vs. local food, Thilmany, et al. (2008) found that supporting local farmers is a more powerful motivator than supporting natural systems. The challenge associated with the attribute local is for better communicating interrelated aspects such as health nutrition, environmental concerns and the

willingness to support the local economy of the home region that could indirectly increase a local claim's relevance in buying decision.

Based on growing interest by consumers in sustainable-labelled food, opportunities may exist for increasing sustainable production. In order to keep up with the growing consumer demand for sustainable food, more producers need to be established as sustainable or converted from conventionally farmed.

Studies in this field have important policy implications for the design and effective use of sustainable-labels. As policy makers and non-governmental organizations (NGOs) increasingly rely on the use of eco-labels to promote environmental performance.

Future research should be devoted to understanding the claims used for credence attributes, perceptions about the expected outcomes and marketing strategies that enhance trust and loyalty toward sustainable products.

2. What sustainable dimensions of seafood products are really important for consumers? A review of consumers' preferences (Article)

2.1. Introduction

Understanding seafood consumption is important for different reasons.

First, given current levels of demand, seafood and fish in particular will play an increasing role in feeding the world's growing population (FAO, 2016). Over the last years, the demand for seafood products is rapidly growing worldwide. According to the FAO (2016), global per capita fish consumption, for the first time, has risen to above 20 kilograms a year, as a result of the increasing world population, higher living standards and the good overall image of fish among consumers (Cahu et al. 2004).

Second, this trend is having a relevant negative ecological impact because the increasing fishing pressure is leading to an important decline of natural fish resources and becoming unsustainable for several species. In addition, with the rapid depletion of wild capture fisheries, aquaculture will play an increasingly important role in meeting the rising global demand for seafood (Wagner and Young, 2009). Fish supplied by aquaculture, which is the fastest growing food sector in the world with almost 70 million tons of annual production, accounting for about 50% of the fish consumed globally (FAO, 2014). Aquaculture has also negative impact because of the aspects related to intensive fish farming, such as escape of exotic or genetically modified farmed fish species, infection of wild fish stocks with parasites that thrive in farming sites, and the release of effluents such as waste feed, faeces, treatments

and pesticides, which are contaminating and disrupting the natural functioning of coastal ecosystems (Read and Fernandes, 2003).

Third, given the well-recognised health benefits of seafood, a deeper understanding of product-related consumption barriers from a consumer perspective is essential for "[...] health educators who want to make their campaigns more effective" (Trondsen et al., 2004, p. 302). Consumers in many European countries do not equally meet the recommended daily intake levels for fish consumption. Various factors that can influence fish consumption behaviour have been identified but limited research has been performed on fish consumption behaviour, discriminating between farmed and wild fish (Altintzoglou et al. 2011).

Sustainable seafood has gained increasing importance also in the framework of political discourse on sustainable food system as the rise in seafood production and consumption and the vulnerability of marine resources add weight to the call for a shared understanding in sustaining the natural capacity of marine ecosystems to provide food (UNEP, 2016; Olson, Clay, & da Silva, 2014).

Policy makers are attempting to increase consumer responsibility towards the use of environmental resources by supporting demand for seafood products obtained using more sustainable practices with several certification schemes and eco-labels (FAO, 2014). Moreover, non-governmental organizations and retailers are increasingly trying to inform consumers, through labelling, such as whether products come from a sustainable fishery.

The greater institutional attention toward the protection of a wide range of sustainability aspects of fishery is also

related to the growing consumer preference toward the different sustainability-related aspects of seafood products (Marousek et al., 2015). Seafood consumers are increasingly sensitive to credence attributes that include a wide range of intangible and interconnected characteristics, such as environmental and ecosystem conservation, product origin, creation of employment, support for small-scale enterprises, preservation of local rural communities, and workers' rights (Brecard et al., 2009).

Although public interest in sustainability increases and consumer attitudes are mainly positive, behavioural patterns are not univocally consistent with interests, preferences, or attitudes. Modern consumers care about food quality attributes, and the literature is full of contributions that through different methodologies evaluate consumers' preferences and willingness to pay (WTP) for mandatory and voluntary labelling programs linked with credence attributes, generating a great deal of information on this issue.

Despite a growing number of studies regarding consumers' behaviour towards fish and seafood has been produced recently, this knowledge remains highly fragmented and heterogeneous. First of all, the terms of fish and seafood are often used to encompass a variety of products such as wild and farmed fish, finfish, crustaceans and shellfish; both of marine and freshwater origin, processed and unprocessed forms. Some studies consider the whole food category in their analysis while others focus on one or more specific types of fish products. Therefore, it is difficult to identify patterns, similarities or differences in consumer purchasing behaviour without analysing the results of these studies with a sound methodological

approach.

A review has been conducted in this study with the objective of seeking a full, meaningful description of the findings presented in a collection of studies. The aim is to generate a set of findings about consumer preferences that are not conditional on the particulars of a single study, and to provide a concise summary of the existent work.

The paper is organized as follows. In second section the narrative systematic review is described. Third section comprises the literature review summarizing the main results of the analysing studies. Fourth section discusses concluding remarks.

2.2. Method: literature-searching criteria

The narrative systematic review was performed to select studies from a large body of research and to summarize the literature about consumer preferences and consumer purchasing behaviour towards sustainable seafood products. The systematic review followed a detailed protocol, consisting of organized, transparent and replicable procedures (Littell, Corcoran, & Pillai, 2008).

Data were collected using the main scientific/economic electronic research databases and reference lists from identified studies. We also searched the websites of authors who have an established history of conducting WTP studies.

The literature searching criteria on consumer purchasing behaviour towards sustainable seafood products was conducted using a combination of keywords in the four most powerful on-line scientific search engines: Google Scholar, Web of Science, Scopus, and Science Direct. Two major keywords, “sustainable” and “seafood” were used with the

following terms: “consumers”, “consumption”, “attitudes”, “preferences”, “behaviour”, “willingness to pay”, “segmentation”, “choices”, “attributes”, “label”.

The first set of keywords was used to limit the search to studies that consider seafood products, while the second group to identify the studies based on consumer behaviour analysis. The word "fish" was not used because it leads to "fishery", which has no association with our goal of investigation.

The search was carried out in February and March 2017 and it was limited to the post 2000 period, which was considered satisfactory to capture the most relevant recent trends on the topic of interest and to exclude outdate studies. Only research papers written in English and published in scientific journals were included in order to process information and to delimit the literature characterized by high visibility within the scientific community. Because of the problems of availability and readability for some related literature, it is hard to include all studies in this field. However, this research does have collected a reasonable large and representative bundle of studies for quantitative analysis from which some fundamental conclusions could be drawn.

Articles were initially selected on the basis of information contained in the title and after that were excluded duplicated articles extracted from different databases. Each of the remaining articles were further reviewed on the basis of information contained, first, in the abstract, and, after, in the full text. The examination of the abstracts led to the exclusion of some articles not focused on consumers’ behaviour analysis, or not dealing with

sustainable fish and seafood products.

Finally, only 22 papers were selected for the systematic review.

2.3. Overview of selected studies

The articles selected for this systematic review are summarized in Table 1 that contain information in relation to author(s) and year of publication, topic, country(s) where the study was carried out, research design, data collection method and period, sample size and composition, type of data analysis and type of products analysed.

Table 1 shows that 19 studies were national surveys conducted in European countries, involving Norway (3), Italy (4), Denmark (5), Belgium (2), Spain (2), France (4), United Kingdom (3), The Netherlands (2), Germany (1), Poland (1); and the rest in the USA (2), China (1) and Japan (1),

The majority of these studies are based on primary data collected by means of a questionnaire administered face-to-face, by post or electronically, while some studies used focus groups, data set of prices, consumer panel scanner data or survey non-hypothetical choice.

With regard to sampling, high variability of data collection methods has been detected where country's representativeness of selected participants was usually not achieved.

Data analysis was mostly based on multivariate research methods, econometric models and, in some cases, original research designs combining different analytical tools.

Eleven studies considered fish and seafood as a unique and undifferentiated food category, while the remaining

studies focused on one or more specific fish products such as salmon, cod, pangasius, monkfish, shrimp, bass, bream, trout.

For this reason, the discussion will use interchangeably the terms of "fish" and "seafood".

2.4. Literature review

2.4.1. Origin certification

In consumers purchasing decisions from different geographical and socio-economic realities, country of origin is one of the most important seafood attributes of consumers' choice (Brécard, et al, 2009; Brunsø et al., 2009; Claret et al., 2012; Cosmina et al., 2012; Jaffry, et al., 2004; Loose, et al, 2012; Mauracher, et al., 2013; Stefani et al., 2012).

Country of origin has received ever-increasing attention because it is an important determinant of consumers' food preferences, with a long history in the product differentiation. There is evidence that consumers prefer domestic to imported products (Alfnes and Rickertsen, 2003; Lusk and Anderson, 2004). Many explanations for country of origin preferences have been suggested.

Some areas have distinctive environmental conditions or processing traditions, which make their products' quality especially appreciated and distinguished in national and overseas markets.

A second feature of origin is reflected in consumers' predisposition to prefer local or domestic food to food imported from other regions or countries. This consumer attitude, also called 'ethnocentrism' (Shimp & Sharma, 1987) denotes the consumer beliefs on relevance of

purchasing products made in domestic area because of the economic development, the country image, and the cultural distance (Balabanis and Diamantopoulos, 2004).

Environmental values and sustainability can also issues mentioned in literature because of long distance transportation has potential for detrimental environmental impact (Claret et al., 2012; Mauracher et al., 2013). In addition, consumers can be concerned about the safety of imported fish products, especially when they originate from countries where food regulations are perceived as insufficient (Lawley et al., 2012). Therefore, the specific country of origin image can also influence consumers' perception.

Jaffry et al. (2004) in a study carried out in the UK, have highlighted that country of origin is important for seafood preferences and has generated sizable and significant effects. They found that the marginal utility deriving from the consumption of fish caught in British waters was similar to that of fish obtained through sustainable fishing techniques. The more significant effects on the probability of choice derive from the presence of quality and sustainability labelling and from the origin of the fish labelling. A label conveying that the fish was either produced or caught abroad is shown to reduce the probability of being chosen by between 3.31% and 6.31%; the largest effect is experienced for cod fillets and tinned tuna. Of the two forms of labelling particularly targeted by this study (quality and sustainability certification), sustainability would appear to have the greatest positive influence on the probability of choice. The presence of a label conveying that the fish comes from a sustainably managed fishery increases the probability of being chosen

by 6.61%. Although this is the largest effect experienced for the product forms presented in the survey, the probability of a tin of tuna or a salmon steak being chosen is also increased by over 5% through the presence of the sustainability label.

Similarly, Stefani, Scarpa, and Cavicchi (2012), using a choice experiment on a national representative sample, investigated the preferences of Italian consumers for farmed sea bream with a focus on product differentiation strategies. The country of origin emerged as an important element of consumer choice. It was estimated a median value of WTP equal to 18.1 €/kg for farmed sea bream produced domestically. This pattern can be explained both by the cognitive/rationale and symbolic/emotional sphere of consumer preferences. From the cognitive point of view, domestic fish products are often considered superior in terms of freshness owing to the fact that fish is a highly perishable product, consequently a reduced distance between the places of production and consumption requires fewer preservation treatments (Claret et al., 2012; Lawley et al., 2012; Mauracher et al., 2013).

Asche et al. (2015) using a unique data set of salmon prices in eight different retail chains, found that consumer pay an approximately 25.3% in the UK, and Scottish origin has a 4% premium.

Claret et al. (2012) showed that country of origin was the most important factor when choosing sea fish. They found that Spaniards prefer marine fish caught in Spain to those imported from Norway and Morocco. Although fish of foreign origin less attracted Spanish consumers, the utility value of fish imported from developed country, as Norway, was higher than fish coming from developing country, as

Morocco.

Mauracher et al. (2013) applied a choice experiment in order to define not only the ordinal ranking of preferences, but also the WTP for the key characteristics of the newly introduced product. They found that consumers show a higher WTP for the sea bass country of origin than for the breeding method used. Consumers are very concerned about the place of origin and the authors estimate a relevant WTP for farmed sea bass produced domestically. Only 8% of interviewees are not willing to pay a premium price for the domestic Mediterranean Sea bass.

Using an experimental auction, Uchida et al (2014) found that when both MSC and fishery information are provided, Japanese consumers reveal a positive and significant premium consistently across product types, ranging from 14.4% to 25.8%. They also found that 'MSC information' alone is indeed insufficient to generate a statistically significant premium for the MSC label.

From an on-line survey of Japanese consumers, the same authors in the same year and Country, using a conjoint choice experiment, investigated the direct and interactive effects of seafood eco-label and other commonly observed labels, as well as and the differences in the resulting purchase decisions and WTP for the seafood sustainable labels. They found that consumers preferred domestic (Hokkaido) over imported salmon, and Norwegian over Chilean farmed salmon, and that these were correlated with WTP for sustainability. By focus group, they found that consumers in Japan perceive wild salmon from Alaska and the US and farmed salmon from Norway to be of higher quality and provide better food safety than farmed salmon

from Chile. Japanese consumers are used to seeing Alaska and Norway to possess good seafood safety standards, but salmon from Alaska is wild-caught while that from Norway is farmed. All salmon imported from Chile is also farmed, however, Japanese consumers' perceptions on quality and food safety may not be on par with Alaska and Norway (Uchida et al. 2014).

2.4.2. Traceability

Benefits of traceability in the reviewed literature have appeared in many forms. Several papers reference that traceability may contribute to only economic dimension of sustainability, while some other papers advert that traceability contributes to both economic and social dimensions and even all the three dimensions (economic, environment, and social). It has been generally shown that information on traceability influences consumer choices, which are ever more geared to food safety (Soler et al. 2002; Krystallis and Ness, 2005).

Pieniak and Verbeke (2008) carried out a survey in five European countries. They found that consumers were less interested in labels with a batch number that can be used for tracing than in the other labels included in the study and in batch number for product identification used for traceability, considering labelling as an essential guarantee for safe seafood. They found that consumers with a high trust in fish information also had higher interest in traceability information, and identified two segments of consumers who were more interested in traceability: those that had a high level of trust in fish information and those that found ethical issues more important.

There is a clear discrepancy between consumers' interest

in other fish information and the lack of interest in traceability in Pieniak and Verbeke's (2008) study.

Consumers should only trust a label, when the label is supported by plausible controls and guaranteed by a good traceability system (Pieniak and Verbeke, 2008).

Wang et al. (2009) in a cross-sectional study, conducted in Beijing (China), found that surveyed consumers were anxious about fishery products safety and diseases. They indicate that about 60.1% of respondents expressed WTP an average premium of 0-10% for traceable fish products; the young and middle-aged consumers (20–35 years old) expressed higher WTP. As a whole, respondents indicate a WTP a 6% premium.

As far concerned the level of education was not significantly related to food safety knowledge and WTP, although consumers with college education or above have higher WTP for traceable fishery products. The results of a chi-square test showed that there is not significant relationship between consumers' education level and willingness to pay.

However, the significant relationship was found between level of education and the attention that consumers paid to the quality and safety incidents of seafood products.

2.4.3. Organic labels

All the studies that compared the WTP for organic food and local production found that people are willing to pay more for the local production than for the organic product (Costanigro, et al, 2010; Loureiro & Hine, 2002). In a way it may be difficult to understand the motivations that lead to such a marked difference in the willingness to pay a

premium price for the country of origin rather than for organic products. It is probably due to the factors underlying the choice to purchase organic products and goods that come from the same region or country of residence as the buyer.

Defrancesco (2003) valued the potential demand in Italy and consumers' WTP for organic marine fish. The results of that study showed that potential consumers of organically - farmed marine fish are willing to pay 2.25 €/kg as a mean premium price. In particular, respondents behave according to economic theory: as the percentage price premium increases, their likelihood to accept the proposed amount decreases and the latter is positively related to income level.

Disegna, et al. (2009), using contingent valuation method showed that potential buyers of organic trout in Italy are willing to pay an average premium price of 2.55 €/kg for the product (+46% compared to conventional trout). Results reveal that the premium price is influenced by the part of the country in which the family lives, the presence of youngsters under 14, the occupational status of the interviewee and by the dummies pertaining to the habit of eating organic food and the willingness to purchase organic fish.

Olesen, Alfnes, Røra, and Kolstad (2010), using a non-hypothetical choice experiment to elicit Norwegian consumers' WTP for organic and animal-welfare-labelled salmon, found that the average Norwegian consumers are willing to pay a premium price of approximately 2 €/kg (+15% compared to conventional salmon).

Through a contingent valuation survey, Xu et al. (2012) show that Chinese consumers are willing to pay a 7–9%

premium for organic labeled seafood products.

Mauracher et al. (2013) highlighted the presence of remarkable market segmentation considering that 55% of the analysed sample was willing to pay a moderate premium price (2.03 €/kg) for organic sea bass, while 45% was not interested in organic certification. Similarly, Stefani et al. (2012) estimated a median value of WTP for organic sea Bream equal to 2.76 €/kg and they also noted high heterogeneity across the sample. In addition, this study shows that consumers with the highest willingness to pay for organic fish were characterized by high interest in health-related issues and pronounced concerns for environmental issues.

In 2015, Isaac et al. using the hedonic price, indicated the potential buyers of organic salmon, of which Denmark is the leading producer. They found that in Danish there is an approximately 20% price premium for organic salmon compared to the conventional alternative. Comparison of the size of the price premium to eco-labels in the fisheries sector (i.e. MSC) and the agricultural sector (i.e. mainly organic) shows it is higher than the former. This implies that Danish consumers consider organic farmed salmon as agriculture rather than fisheries product. Danish consumers have a long tradition for buying organic food products.

2.4.4. Animal welfare

Studies have shown that consumers are willing to pay for improved fish welfare. However, consumers do not perceive animal welfare as their own responsibility (Kjørstad, 2005), and point to producers' and retailers' responsibility to secure animal friendly production and to government duties with regards the adoption of appropriate animal welfare laws (Te

Velde et al., 2002).

Other studies conclude that most consumers do not perceive animal welfare as their own responsibility (Te Velde, Aarts, & Van Woerkum, 2002). Instead, consumers considered it the responsibility of the retailers to secure animal-friendly production of their foods and that of governments to adopt appropriate animal welfare laws (Te Velde et al., 2002).

Olesen et al. (2010), using a non-hypothetical choice experiment, examined Norwegian consumers' willingness to pay for Freedom Food labelled salmon in an experimental market. They found that consumers were, on average, willing to pay approximately 2 €/kg (+15% compared to conventional salmon) for organic and Freedom Food salmon compared with conventional salmon of similar appearance. Consequently, eco-labelling of farmed seafood, such as animal welfare-labelled salmon and organic certified salmon might become an important differentiation strategy in the future.

In a Danish study, Stubble Solgaard and Yang (2011) found that, of the sample, 48% of the participants were willing to pay a premium of 25% extra for the welfare-farmed rainbow trout with animal welfare traits. The data show that gender has a positive and significant effect on the willingness to pay for welfare trout. Females are more willing to pay extra for fish welfare. Education also has a positive and significant effect, as those with higher education appear to be more willing to pay extra for welfare. Both age and household income also have a positive and significant effect, as respondents with higher age and higher income are more willing to pay extra for fish welfare.

Household size, user status and urbanization appear to have no influence on consumers' willingness to pay extra for fish welfare. Consumers who emphasize eco-friendly production of welfare fish, freshness, and animal welfare also tend to be willing to pay extra for welfare of the rainbow trout.

Consumer attitudes towards animal welfare were also studied by Grimsrud et al. (2013). They found that Norwegian households are willing to accept tax increases for animal welfare improvements in farmed seafood. This study provides evidence that there is a high WTP among all Norwegian households to improve the welfare of farmed Atlantic salmon through increased resistance to diseases and salmon lice, which may imply less use of medicines and chemicals in the production process. WTP is the same expressed per meal and per kg by Olesen et al. (2010) in Norway. However, the results of these two studies cannot be compared directly because of the differences in the goods valued. Olesen et al. (2010) collected data in a shopping scenario to estimate the WTP a price premium for an overall label (organic or freedom food), with a focus on the WTP an increased tax for a number of separate breeding traits. Using a tax as payment vehicle permitted them to capture the WTP of non-consumers of farmed salmon who still valued improved fish welfare. The estimation results for the full sample indicate that the households that do not purchase farmed salmon may be less willing to pay for improved fish welfare.

2.4.5. Eco-labelling

Research finds that consumers are willing to pay a premium for ecolabeled fish products (Jaffry et al 2004; Olesen et al 2010; Roheim et al 2011; Mauracher et al

2013).

Some socio-demographic characteristics of consumers could also explain behaviours regarding environment-friendly products. For instance, Brécard et al. (2009) found that European consumers supporting eco-labels tended to be women, young, low-income and highly educated consumers are more prone to be environmentally oriented. Support for eco-labelling was also found to be associated with other product attributes such as freshness, origin, and production method (i.e., wild-caught versus farmed).

Concerning the use of choice experiment models in studies about traceability of seafood, we can refer to Jaffry et al. (2004). They found that in UK eco-labelled seafood from a sustainably managed fishery had up to a 7% higher probability of being chosen by participants.

Whitmarsh and Wattage (2006) show that consumers in the U.K. are ready to pay an average premium of 22% for environment-friendly farmed salmon. Results indicate that the public opinion attach a relatively high importance to minimizing environmental damage from aquaculture.

A survey carried out in 2007 in five European countries (Belgium, Denmark, France, Italy and The Netherlands) revealed that 82% of respondents agreed that environment-friendly fish caught practices should be differentiated with a specific eco-label and supported by the introduction of a specific eco-labelling policy in the seafood sector (Brécard et al., 2009).

Johnston, Wessells, Donath, and Asche (2001), in a comparative study carried out in the USA and Norway, performed a price sensitivity analysis and found that at a 0% price premium the probability of choosing eco-labelled

seafood was 74% for Norwegian consumers and 88% for U.S. consumers, while at a 50% price premium, the probability of selecting eco-labelled seafood de- creases to 32% for Norwegians but only to 68% for U.S. respondents. These studies also tried to identify a socio-demographic profile of "green fish consumers" but the results showed a great heterogeneity in terms of gender, age, education and income. Conversely, a convergent pattern regarding consumers who were more oriented to choose eco-labelled fish was characterized by high ecological consciousness and general tendency to follow "green" purchasing behaviour (Brécard et al., 2009, 2012; Johnston et al., 2001).

A study of French consumers by Salladarre et al. (2010) found that production process attributes such as origin, production method, and the level of natural fish stocks were more strongly associated with demand for eco-labels than product attributes such as freshness and product form. Their results show a significant relationship between the acceptability of eco-labelling and certain purchase criteria. The production process characteristics (origin, wild vs. farmed, level of natural stocks) impact more strongly on the demand for eco-labelling than product attributes (form, visual appeal, freshness). Finally, the analysis confirms a higher demand for eco-labelling from young, educated consumers, particularly those living in non-coastal areas.

In 2011 Jaffry et al. conducted another study to elicit the potential consumers' response from the United Kingdom and Denmark to the introduction of certification for the sustainability and quality of seafood products. They found that consumers were willing to pay a price premium for and buy more of hypothetically labelled products. Fifteen years on, drawing on the experience of the fisheries that have

already actually been certified, the paper evaluates the effectiveness of certification and conclude that consumers are still willing to pay premiums for certified seafood products but few fisheries have in fact achieved the size of price premiums or have increased in sale volumes predicted and that the product and geographic variation is particularly marked (Jaffry et al. 2016).

Using conjoint methods, Roheim, Sudhakaran, and Durham (2012) found that a sample of Rhode Island consumers typically chose wild- caught seafood products over farmed seafood, even when the farmed seafood products were certified for sustainability attributes. Strong eco-labelling preferences also were found to be associated with younger, more-educated consumers who live in non-coastal areas.

Brécard, et al., (2012) conducted a survey in France and show that 31% of participants declared to prefer eco-labelled fish products at the same price amongst fish products with other labels or unlabelled. In addition, they found that strong eco-label preferences were correlated with young, well- educated males concerned with fishing conditions.

Through a contingent valuation survey, Xu et al. (2012) show that Chinese consumers are willing to pay more a green-labelled seafood for the protection of individual benefits and societal benefits. They pay a 4–6% premium for eco-labelled seafood products. Gender, shopping venues, education, seafood expenditure and knowledge of the labelled products affected purchase intention and willingness to pay. The results show that Chinese consumers consider the seafood label a more important information

source than previous consumption experience.

Uchida et al., (2014) show that the eco-label coefficient is significant and positive, as eco-labelled products are preferred over unlabelled products, ceteris paribus.

Furthermore, Feucht and Zander (2014), in Germany, found that their participants could not distinguish between the eco-labels that are used for wild and farmed seafood.

Recent studies find a retail price premium for the MSC label in the UK (Roheim et al., 2012; Asche et al., 2015). Using scanner data, Roheim et al. (2012) examined whether a price premium actually is being paid for seafood eco-labels using a hedonic pricing model for pollock products constructed with market data from the United Kingdom. They analysed MSC-certified frozen processed Alaskan Pollock products and showed that a premium of 14.2% was paid for an MSC eco-label.

Sogn-Grundvåg et al. (2014) using the hedonic price model, examine in seven UK supermarket chains the price premiums for three credence attributes that have received little or no attention in the hedonic literature, i.e. a substantial price premium for fishing method; a premium for a non-home country origin (Icelandic); and a premium for the MSC eco-label. The attribute line-caught gained a substantial 24.6% price premium compared to products based on fish captured by other types of gear (mainly trawl). They found that the premium is similar to which founded in the same country in the only two previous studies estimating its retail premium (Roheim et al., 2012; Sogn-Grundvag et al. 2013).

Asche et al. (2015) found that for all the eco-labels, there is a statistically significant premium. The MSC eco-label

commands an average price premium of 13.1% which is very close to the findings from two earlier studies that found very similar premiums: 14.2% reported for Alaska Pollock (Roheim et al., 2012) and the 10% and 12% reported for respectively haddock and whitefish (Sogn-Grundvåg et al., 2013, 2014) in the UK retail market. These three studies, which cover two different regions in the UK (Glasgow and London) and three different species (salmon, Alaska pollock and haddock), suggest that in the UK, the MSC label captures some willingness to pay for public goods associated with this label.

Salladarré et al. (2016) in France offer an example about the use and findings attained for this topic trough the contingent evaluation. Results show that WTP for eco-label seafood is positively related to income level, in accordance with microeconomic theory. Socio-demographic characteristics play a crucial role in the demand for eco-labelled products. In particular, there is a wide consensus on the role of gender, women being more prone to prefer eco-labelled products than their conventional equivalents, and of educational level, as higher educational level favours an environment friendly orientation. Surprisingly, a high education level does not favour WTP, despite the education level was meant to impact on consumer awareness of environmental issues. Indeed, while the most highly educated individuals state a preference for eco-labelled seafood products over unlabelled ones, this is not translated into a price premium for such products (Salladarré et al., 2010).

Chen, Alfnes and Rickertsen (2016) conducted a stated choice experiment in France with eight fish products that were either eco-labelled or unlabelled. They found that there

are positive eco-labelling effects on the willingness to pay (WTP) for fish. There is a statistically significant WTP premium for eco-labelled wild and farmed cod and eco-labelled farmed salmon. The average French participant is willing to pay a premium of about 4% for MSC-labelled wild cod and a premium of about 11% for organic-labelled farmed cod. These premia are somewhat below the premia found for labelled Alaskan pollock in the UK (Roheim et al., 2012) and labelled salmon in Norway (Olesen et al., 2010). However, they also find that negative environmental information reduces the WTP with a larger amount than the premiums of the eco-labels regardless of whether the fish is eco-labelled or not. This suggests that when participants receive negative environmental information on farmed fish or harvesting wild species, willingness to pay falls by more than the positive effect of eco-labelling. This implies that the eco-labelling organizations need to improve consumers' trust in their labels.

2.5. Discussion

As regard to Country of origin label, the EU schemes for geographical indications and traditional specialties, known as "protected designation of origin" (PDO), "protected geographical indication" (PGI), and "traditional specialties guaranteed" (TSG), promote and protect names of quality food products including fish, molluscs, crustaceans, and derivative products. The EU schemes come on the top of similar national schemes in several European countries.

Already before Marennes-Oléron oysters received the PGI status in 2009, Charles and Paquotte (1999) found that French consumers were willing to pay a price premium for oysters certified with a Marennes-Oléron label.

Another example of a geographic indicator is the "Seafood from Norway" label, which is owned by the Norwegian Seafood Council (NSC), and can be used on seafood from Norway. According to the NSC, "The country of origin mark 'Seafood from Norway' is a collective label that adds value across the Norwegian seafood industry" (Norwegian Seafood Council, 2017). However, no published research is available on consumers' perception of quality for seafood certified with the "Seafood from Norway" label.

Traceability label is implemented in the value chain of many seafood products (e.g., Norwegian and Scottish salmon), but it is seldom used as labels on consumer products. Some quality labels, such as the French Label Rouge (2017), guarantee that seafood with their label is traceable, but they do not offer consumers an easy way of tracing the products.

An example of a well-developed consumer label on traceability is the Canadian "ThisFish" label for wild fish (ThisFish, 2017). By entering a code on their webpage, the consumers can trace the seafood back to its origin.

Traceability label gained even more attention by consumers. This is not surprising because fish are sometimes sold with misleading information about country or water of origin in the Chinese market. Chen and Garcia (2016) reported that salmon from other countries were typically marketed as Norwegian salmon in Chinese markets. Fish is also sometimes sold with misleading species information. For example, Chinese farmed trout has been sold as imported salmon (Chinese Food Technology Net, 2014).

Organic farming has received increased attention from consumers in the last years, and has already become important in both the production and consumption of food products. However, organic aquaculture is still struggling to develop from its early stages. The main reason for this relatively slow initial growth can be traced to the absence of internationally recognized and universally accepted regulations and standards for producing and handling organic aquaculture products. While the principles of organic production are relatively straightforward for arable production, the application of these principles to sea production environments is more problematical (Aarset et al., 2004). The same authors reported that focus group participants in several European countries said they would buy organic seafood if available to avoid the negative aspects of conventional seafood. Indeed the organic aquaculture sector is complex and present unresolved questions concerning feed, chemical inputs and sustainability. The objective of replicating natural systems in organic production also concerns the rearing systems and environments.

Furthermore, Olesen et al (2010) found that most consumers are willing to pay significantly less for organic salmon than conventional salmon because of the paler colour of the organic salmon. Hence, it is very important for the success of organic salmon that the organic feed producers will be able to produce an organic feed with good pigmentation ability.

Organic regulations on feed and production processes make organic production considerably more expensive than conventional aquaculture or wild harvest for many species. In addition, the price premiums consumers are willing to

pay for organic seafood seems to be relatively modest compared to other attributes. Therefore, organic seafood will face tough competition from eco-labelled wild and farmed seafood, and will likely be a small niche product for most species (Alfens et al., 2017).

More recently concerns about animal welfare in animal husbandry are gaining weight in public opinion and also in consumers' food demand (Salamon, & Zander, 2016). However, despite many consumers are concerned about animal welfare in food production, farmed seafood is not among the animals that most consumers worry about. In the special Eurobarometer survey on animal welfare in 2005, respondents in the EU ranked farmed seafood as the third least important of 12 farmed animal groups to receive improved welfare or protection (Eurobarometer, 2005).

Aquaculture is an important animal farming activity, and fish welfare has recently become an important issue in the EU. Driving forces behind the promotion of fish welfare are demands from retailers and consumers. The growing public concern about fish welfare is a relevant consideration for aquaculture breeding programs.

In consideration of the current sustainability world concern for the fish sector, eco-labels are becoming an important attribute of fish choice. There is a growing interest on the potential use of product differentiation through eco-type labelling as a means of promoting and rewarding the sustainable management and exploitation of fish stocks. These labels provide important information about ecological, environmental, and sustainability aspects that consumers can use in their decision-making process.

Nowadays, the most successful voluntary seafood label is

the MSC label for sustainable wild seafood. Because the MSC label is used only for wild fisheries, aquaculture stakeholders have created their own sustainability labels. The MSC label is given to fish from specific origins such as cod from the Barents Sea. Two of the most widespread sustainability labels for farmed seafood are the Best Aquaculture Practices Certification (Best Aquaculture Practices, 2017) and ASC Certification (Aquaculture Stewardship Council, 2017).

A few eco-labels, such as Friend of the Sea (Friend of the Sea, 2017), also certify both aquaculture and capture fisheries. In addition to these labels, a number of guides to responsible seafood are available, such as the consumer guide from the Monterey Bay Aquarium Seafood Watch program (Seafood Watch, 2017).

2.6. Concluding remarks

Seafood consumers are increasingly sensitive to more articulated credence attributes that include a wide range of intangible and interconnected characteristics, such as environmental and ecosystem conservation, product origin, creation of employment, support for small-scale enterprises, preservation of local rural communities, and workers' rights (Brecard et al., 2009).

From industry point of view, labels that are well perceived by the consumers are likely to increase the profitability of the labelled seafood, while labels that are not appreciated by the consumers will incur costs to producers that cannot be recompensed in monetary terms.

According to literature, the average consumer is willing to pay a price premium for sustainable-labelled seafood. Such premiums encourage producers and retailers to

implement and seek eco-labelling of their products and thereby improve the ecological, environmental, and sustainability aspects of fisheries and aquaculture

However, the coexistence of multiple seafood guides and labels covering more or less the same attributes may confuse consumers if they do not use identical standards or come to different conclusions (Roheim, 2009). The confusion resulting from different standards can affect consumers' trust in labels.

Government-supported industry-wide standards would reduce this confusion, and would likely increases consumers' trust in farmed seafood labels. Eco-labelling organizations need to improve consumers' trust in their eco-labelled products. Increased trust will be beneficial for consumers and fishery industry.

In addition, if market based initiatives such as eco-labelling are to encourage sustainable fisheries, it is imperative that consumers be aware of and have a demand for these certifications. In order to influence consumer behaviour to affect fisheries, consumers must be able to understand the connection between sustainable fisheries and seafood purchase decisions.

Consumers can trust that they have sustainable, ecological, and environmentally friendly products to choose from, even after receiving negative information about wild fisheries or aquaculture. Building trust may be result in higher WTP for toward sustainable fish and increased sales.

Furthermore, consumers often have limited knowledge of production processes and a lack of insight into the implications of their food purchase decisions on the food supply chain (Verbeke, 2005).

Finally, for some attributes, governments should also consider establishing credible voluntary certification schemes and labels across several countries. Examples of such schemes are the European organic label and the EU–US agreement to accept each other's organic products (United States Mission to the European Union, 2015).

To the best of our knowledge, most of the research has been on the effects of a single label on consumer demand and WTP (Chen, Alfnes, & Rickertsen, 2016; Roheim et al., 2012).

In the marketplace, multiple labels are frequently presented simultaneously, which is likely to create complex trade- offs for consumers. Interactions between various label types and between labels and other types of information available to the consumers are an important topic for future research.

Table 1. Article selected

References	Year	Focus	Country	Research design, data collection and period	Sample size	Type of data analysis	Products analyzed
Asche, et al.	2015	Consumer Interest on Eco label fish	United Kingdom	Unique data set of salmon prices in eight different retail chains (2012-2013)	6511	Log-linear functional form	Salmon
Brécard et al.	2009	Consumers' preferences for fish attributes	Belgium, Italy, France Denmark, the Netherland	Cross-section, face-to-face interview (2007)	4748	Ordered Probit model; bivariate ordered Probit model	Fish and seafood in general
Brécard et al.	2012	Consumers' preferences for fish attributes	France	Cross-section, face-to-face interview (2010)	911	Rank-ordered multinomial; Logit model	Fish and seafood
Claret, et al.	2012	Consumers' preferences for fish attributes	Spain	Focus groups and Face-to-face interview (2008–2009)	81 focus groups + 914 survey	Focus group; conjoint analysis; multiple regression analysis; cluster analysis; logistic regression.	Fish and seafood

Chen, et al.	2016	Consumers' preferences for ecolabel fish	France	Experimental auction (2008)	116	Stated choice experiment; mixed logit model	Salmon, Cod, Pangasius, Monkfish
Defrancesco	2003	Consumers' preferences for organic fish	Italy	Cross-section, face-to-face interview (2001)	6877	Binary dependent variable, Logit model	Fish and seafood
Disegna, et al.	2009	Consumers' perception toward organic trout	Italy	Cross-section, face-to-face interview (2007)	321	Contingent valuation method, Tobit model	Trout
Feucht and Zander	2014	Consumer Interest on sustainable Fish	Germany	Focus group	30 retail stores	Focus group	Fish and seafood
Grimsrud et al.	2013	Consumer Interest on fish welfare	Norway	Focus group and web-based questionnaire (2009)	771	Additive random utility model	Salmon
Isaac et al.	2015	Consumers' preferences for organic fish	Denmark	Consumer panel scanner data (2011-2013)	Over 2000	Hedonic Price Model	Salmon

Jaffry, et al.	2011	Consumer choices for quality and sustainable label	United Kingdom, Denmark	Face-to-face interview (2011)	2000	Discrete choice method	Fish and seafood
Jaffry, et al.	2004	Consumer choices for sustainable label	United Kingdom	Face-to-face interview (2001)	600	Conditional logit model	Fish and seafood
Johnston et al.	2001	Consumers' preferences for fish attributes	USA, Norway	Cross-section, telephone-based interview (1998–1999)	3679	Factor analysis; logit model	Cod, shrimp
Lawley et al.	2012	Consumers' preferences for fish attributes	Australia	Focus groups and sensory test	26 focus group + 145 sensory test	ANOVA, qualitative analysis	Barramundi gold band snapper, cobia, Nile perch, yellow tail king fish
Mauracher, et al.	2013	Consumers' preferences organic products.	Italy	Cross-section, face-to-face interview (2010 2011)	366	Multinomial logit model; Latent class model	Bass
Olesen, et al.	2010	Consumers' preferences for organic fish	Norway	Survey (2004)	115	Logit model	Salmon

Pieniak and Verbeke	2008	Consumer Interest on Fish Labels	Belgium, Denmark, The Netherlands, Poland, Spain	Quantitative cross sectional survey (2004)	4786	Factor analysis; Bivariate analyses; independent samples t-tests	Fish and seafood
Salladarré et al.	2010	Consumer Interest on fish Labels	France	Cross-section, face-to-face interview (2001)	911	Probit model	Fish and seafood
Stefani, et al.	2012	Consumers' preferences for farmed sea bream.	Italy	Cross-section, face-to-face interview (2009)	366	Factor analysis; mixed logit model	Bream
Stubbe and Yang	2011	Consumers' preferences for fish welfare	Denmark	Online survey- self-administrated questionnaires (2009)	1000	Contingent valuation approach, open-ended elicitation technique; binomial logit model	Rainbow trout
Uchida, et al.	2014	Demand for ecolabeled seafood	Japan	Focus group, and web-based questionnaire (2009)	3370	Conjoint analysis, Random utility model	Fish and seafood
Xu et al	2012	Consumers preferences for ecolabeled seafood	China	Face-to-face interview 2009	386	Multivariate probit regression	Fish and seafood

3. Who is responsible for making seafood production and consumption sustainable? A survey on European consumer 'perspectives (Article).

3.1. Introduction

The rise in seafood production and consumption together with the vulnerability of marine resources and the complexity of seafood value chains, calls for development of a shared responsibility to sustain the capacity of marine ecosystems to provide food (UNEP, 2016; Olson, Clay, & da Silva, 2014). Development of a sustainable seafood system requires common understanding and coordination among policy makers and other actors in the seafood value chain. The coordination of actors is referred to as one of the main challenges in creating a sustainable seafood system in the European Union (EEA, 2016).

Consumers are among the key actors in the food system, and the concept of responsibility for sustainable seafood production and consumption is strictly linked with the increased engagement with consumers and integration of their concerns into both public and private policies and programs. This paper investigates the European consumers' perceptions on various stakeholders' responsibility for sustainable seafood.

The focus on sustainable has been introduced into the market by consumer concerns and pressure of NGO's on stakeholders in the supply chain (Kalshoven & Meijboom, 2013). The international sustainable seafood movement has together with stakeholders in the seafood value chain, initiated non-state market-driven solutions like voluntary

labelling and sustainable seafood guides. This has resulted in a transfer of responsibility from the public to the private sector (Gutiérrez & Morgan, 2015), and led to increased involvement of the consumers in the enhancement of the public well-being (Soper, 2007).

With sustainability labels, responsibility for sustainable seafood is being transferred to the consumers. Instead of governments regulating the sales of sustainable seafood or retailers implementing sustainable seafood policies (Alfnes, 2017), the use of labels means that governments, retailers and NGO provide information to the consumers. They are expected to be aware of their responsibility and act responsibly through their decision-making at the point of purchase (Thøgersen, 2005).

Ascribing environmental responsibility to the individual consumer has become part of mainstream policy-making and use of labels is regarded as an essential policy tool in this regard. For this to be a successful strategy, consumers need to be aware of the impact of their seafood consumption and willing to take responsibility for sustainable seafood choices.

Consumers' viewpoint is deemed a critical point for effective leverage over the seafood supply chain. However, research evidences suggest that consumers may not be ready to be the key actors in the transformation to sustainable seafood. Frewer et al. (2005) argue that consumers often take a semi-utilitarian view, in which mainly private costs and benefits are weighed. Their changes in behaviour related to public good attributes of food have usually been modest, showing difficulties of taking on environmental or ethical behaviours, despite positive attitudes to change

(Gutiérrez & Thornton, 2014; Vermeir & Verbeke, 2006). For example, studies of consumer attitudes toward animal welfare has shown that many consumers do not perceiving public goods such as animal welfare their responsibility (Kjørstad, 2005), and point to producers' and retailers' responsibility to secure animal friendly production and to government with regards to the adoption of appropriate animal welfare laws (Te Velde et al., 2002).

A review of the perceived responsibility of consumers for pig welfare concluded that most consumers ignore a tangible responsibility for welfare and conditions of farm animals, while assigning this responsibility to several other stakeholders, whereby there is not a clear indication on which group has a leading role (Thorslund, Aaslyng & Lassen, 2017).

Knowledge of consumers' perceived responsibility is important to better understand the potential for a sustainable food system, and to better explore its complex interactions. Consumers are expected to act as citizens and exert societal or political influence via their seafood purchases. Much of the current consumer literature on credence attributes such as sustainability reflects this neoliberal view and focus on labelling strategies (Alfnes, Chen & Rickertsen, 2018).

However, there has been limited attention to consumer perception and attitudes on how responsibility about sustainability is shared among actors along the seafood supply chain and in the broader environment of food systems.

Stakeholders in the food value chain and in the broader food environment compete for legitimacy, influence and recognition in regards to sustainability. They work with a

variety of tools and approaches (Lawley & Birch, 2014). Governments have a special role, since they are the only entities with the authority to regulate and enforce industry practice. They also have the possibility to affect the sustainability of production and consumption through financial and informational approaches. NGOs have an influencing and knowledge dissemination role, with objectives primarily related to creating a common understanding of the need for action and tools needed for creating sustainable practices throughout the value chain.

The NGOs are involved in the development and implementation of policy, regulation, communication campaigns, and educational programs. The seafood industry is making choices of where, when, what and how to fish or farm, and therefore has a direct influence on the sustainability of the seafood production. NGOs and the seafood industry have together developed several transnational certification and labelling scheme to foster sustainable fisheries and to inform consumers and key stakeholders of the value chain. Large retailers also have a central position in the food chain. They can set conditions for the fish offered in their stores and thereby promote sustainable seafood practices by ensuring their products are sourced from sustainable fisheries and fish farms (Alfnes, 2017). Furthermore, they can influence the choices of consumers through in store marketing like information campaigns and labelling.

This paper seeks to contribute to the debate by examining the consumers' perception of to what degree private and public entities are responsible for implementing seafood sustainability.

3.2. Data and Methods

3.2.1 Survey

Data were collected through a Web-based survey on consumer attitudes toward sustainable seafood in Germany, England, France, Spain, Italy, Poland and Norway.

TNS Gallup performed data collection simultaneously in each country in February 2016. One of the topics in the survey was consumer perspective on the responsibility for sustainable seafood. To what degree do they see it as their own responsibility, and to what degree do they point to other stakeholders.

3.2.2. Sample

A total of 3542 respondents from seven European countries participated in a web survey conducted. Initially, the total sample ranged from 18 to 92 years. Of the total sample, 3368 respondents, between 18 and 70 years old, completed the question used in this paper.

After, excluding people who had not been able to respond consistently to the question, those who were outside the age range to normalize the sample, and the 1% fastest respondents, there were between 465 and 492 respondents per country.

The selection of countries takes into consideration represent heterogeneity in terms of fish production and consumption levels (see Table 2), habits and traditions.

Table 2. Total production (tonnes live weight/year) and consumption (kg/inhabitant/year) of seafood products in the seven European countries investigates (2014).

Note: Total production includes catches and aquaculture.

	Production**	Consumption*
Norway***	3.788	43.0
Spain	1.394	46.2
UK	967	24.9
France	744	34.4
Italy	326	28.9
Germany	242	13.3
Poland	206	13.0

*Source: EUMOFA. ** Source: Eurostat. *** Source: FAO

Within the European countries investigated, Norway is the largest producer, followed at some distance by Spain; UK and France are in mid positions; Italy, Germany and Poland are in the lowest positions. We can see that the overall picture prevail when it comes to fish consumption per capita. Spain and Norway have the highest consumption with 46.2 and 43.0 kg/capita, respectively, Germany and Poland has the lowest consumption with 13.2 and 13.0 kg/capita, with France, UK and Italy between.

The main socio-demographic characteristics of the respondents in each of the seven European countries are presented in Table 2. It shows that 52% of the respondents included in this paper were female and that there were no

significant differences between the seven countries with respect to gender (Wald chi2=0.82; p=0.99).

For age, the mean age was 42.79 years old, and Norway stands out with more respondents above 50 years and mean age 46.30 years. The distribution of age groups in the total sample was 36% of respondents between 18 and 34 years, 33% between 35-50 years, and 31% of respondents were 50 years and older. A Wald test of equality of the seven group means for age is rejected (Wald chi2=37.78; p=0.00).

With regard to the income there are the most marked difference. The 28% of the respondents report to have an income below the average, with the lowest percentage in Norway (13%), and the highest in UK (35%).

The majority of the sample (55%) is in the average income category, with the main position of Norway and the lowest percentage UK. The 18% of respondents is above to the average income, with the lowest percentage for Italy and the highest for Norway. A Wald test of equality of the seven group means for Income is rejected (Wald chi2=70.80; p=0.00).

Table 3. The Sample

	UK	Germany	Poland	Italy	Spain	France	Norway	Total
Male	227 48.82	239 49.59	243 49.80	239 48.88	241 48.98	240 49.38	220 47.21	1649 48.96
Female	238 51.18	243 50.41	245 50.20	250 51.12	251 51.12	246 50.62	246 52.79	1719 51.04
Age mean	42.00	43.17	41.57	42.55	41.23	42.86	46.30	42.79
Age 18-35	185 39.78	167 34.65	194 39.75	159 32.52	171 34.76	183 37.65	140 30.04	1199 35.60
Age 36-50	141 30.32	153 31.74	146 29.92	196 40.08	205 41.67	148 30.45	117 25.11	1106 32.84
Age 51-70	139 29.89	162 33.61	148 30.33	134 27.40	116 23.58	155 31.89	209 44.85	1063 31.56
Income below average	165 35.48	146 30.29	114 23.36	138 28.22	142 28.86	169 34.77	61 13.09	935 27.76
Income average	202 43.44	237 49.17	286 58.61	306 62.58	272 55.28	234 48.15	303 62.05	1840 54.63
Income above average	98 21.08	99 20.54	88 18.03	45 9.2	78 15.85	83 17.08	102 21.88	593 17.06
Total	465	482	488	489	492	486	466	3368

Note: total gross annual income of the household (before tax and deductions) is self-reported into three groups.

3.2.3. The Questionnaire

A section of the questionnaire was designed to collect information on the perception of responsibility of European citizens toward sustainable seafood products and consumption, and to rank each entity from a list of eight entities including individual consumers, stores and others selling, seafood industry, national governments, the European Union, international organizations as UN, consumer NGOs, and environmental NGOs. The survey offers questions about how the responsibility in the seafood sector is perceived by European consumers as well as to the degree of knowledge and awareness about label indicating sustainability and seafood in general.

The key question analysed in this paper is shown in Fig. 2. As part of the survey, the respondents evaluated the various seafood stakeholder related to their role into the sustainability. Respondents were shown the list of entities and were asked to click on each entity and to indicate the extent to which the respondent believed the entity was responsible for the sustainability into the seafood value chain. The ranking question has a 7-point scale ranking from "Not all responsible" to "completely responsible". In addition "Do not know" choice is included. Respondents were asked to express themselves for the following entities: 1) Individual consumers; 2) Stores and others selling the seafood to consumers, 3) Seafood industry that is fishing, farming and producing the seafood; 4) National governments; 5) The European Union; 6) International organizations like the UN; 7) Non-governmental consumer organizations; 8) Non-governmental environmental organizations.

Figure 2. Questionnaire

How responsible is the following for making our seafood production and consumption sustainable?

- Individual consumers?

- Stores and others selling the seafood to consumers?
- Seafood industry that is fishing, farming and producing the seafood?
- National governments?
- The European Union?
- International organizations like the UN?
- Non-governmental consumer organizations?
- Non-governmental environmental organizations?

SCALE: (1) Not all responsible; (7) Completely responsible; Don't know

Q.1 Consumer
Q.2 Stores
Q.3 Industry
Q.4 NatGov
Q.5 EU
Q.6 IntOrg
Q.7 NGOC.
Q.8 NGOE.

Source: our elaboration.

As in Lusk and Briggeman (2009), each question was described by a short sentence. However, the method in this paper differs from Lusk and Briggeman, in that they used best-worst scaling, while in this paper a seven-point importance scale was used. In addition to this question, respondents were queried about their gender, age, income and nationality.

3.2.4.The ordered logit model

Statistical analyses were performed using the statistical software Stata. In order to analyse the data, we used the ordered logit model, which is a regression model for an ordinal response variable, based on the cumulative probabilities of the response variable (McKelvey and Zavoina 1975). As for most of studies concerning regression models, which analyze the relationship between satisfaction and various explanatory variables, Aitchison and Silvey (1957) proposed the ordered logit model to analyses experiments in which the responses of subjects to "various doses of stimulus" are divided into ordinally ranked classes. In particular, the logit of each cumulative probability is assumed to be a linear function of covariates with regression coefficients constant across response categories. When the response variable of interest is ordinal, it is advisable to use a specific model such as the ordered logit model. Ordered logit models are used to estimate relationships between an ordinal dependent variable and a set of independent variables. However, as Mckelvey and Zavoina (1975) demonstrate, regression models are problematic when the dependent variables are ordinal responses, because the usual assumptions for regression are generally not met. The regression technique often fails to model phenomenon with nonlinear relationship because it is likely to underestimate

the relative impact of certain explanatory variables on satisfaction.

Since the coding of the ordinal level dependent variable is arbitrary, the estimated coefficients in the regression model will depend on the particular coding that is chosen (Mckelvey and Zavoina 1975). For this reason, the appropriate model is the ordered logit or probit model, which take the ceiling and floor effects into account and avoids the use of subjectively chosen scores assigned to the categories (Hanushek and Jackson, 2013). In addition, with this kind of ordinal variable, we might say that someone scored "not responsible" but we cannot say precisely how much more. Thus, ordered logit regression seems more desirable to accommodate this lower measurement level (Borooah, V. K., 2002).

The respondents scaled their level of importance of responsibility for each stakeholder with the scale value of one being the lowest level of responsibility and seven indicating the strongest responsible expression. As the dependent variable is categorical with a natural ordering and each respondent answered 8 questions, the data were analysed using a random effect ordered logit model. Respondents scaled their level of importance of entities into the sustainable seafood chain, with the scale value of one being the lowest level of responsibility/agree and seven indicating the strongest favourable expression. We specify the following model:

$$Y_{ij}^{*}=\beta_{j}^{\prime} X_{i}+\gamma_{j}^{\prime} Z_{i}+u_{i}+e_{ij} \quad (1)$$

Where Y_ij^* is a latent variable representing individual i's perception of responsibility of stakeholders for sustainable seafood products, j, X_i is a dummy vector indicating i's country, Z_i is a vector with effect coded demographic variables, β_j^'and γ_j^' are coefficient vectors for responsibility j, and u and e are the random effect and error term.

3.3. Results

The consumer/citizen opinion on the responsibility of the eight stakeholders in each of the seven countries is evidenced in box plots presented in Figure 2. We first note that all eight stakeholders have a median score of 4 or more in all seven countries, indicating that the respondents think they all share responsibility. However, some scores are higher than others. Seafood industry, National government and European Union have a median score of 6 (on a 1 to 7 scale) in each country, placing them as the most responsible for sustainable seafood in the public view. The top three are followed by International organisations as the UN, which has median scores of 5 and 6. Individual consumers, stores and the NGOs have median scores of 4 or 5 in all countries, placing them as the least responsible in the public opinion.

Starting with the demographic effects, as resulting from the ordered logit model, reported in Table 3., we first note that women give always a significant higher score than men on all eight stakeholders in each question, but less for consumers and more marked for governments (in general) and NGOs. They appear to be very consistent with previous studies in literature (Wessells et al. 1999, Whitmarsh et al. 2006). In particular, the sensitiveness of women to sustainable issues was already found in the Wessells et al.

study (1999).

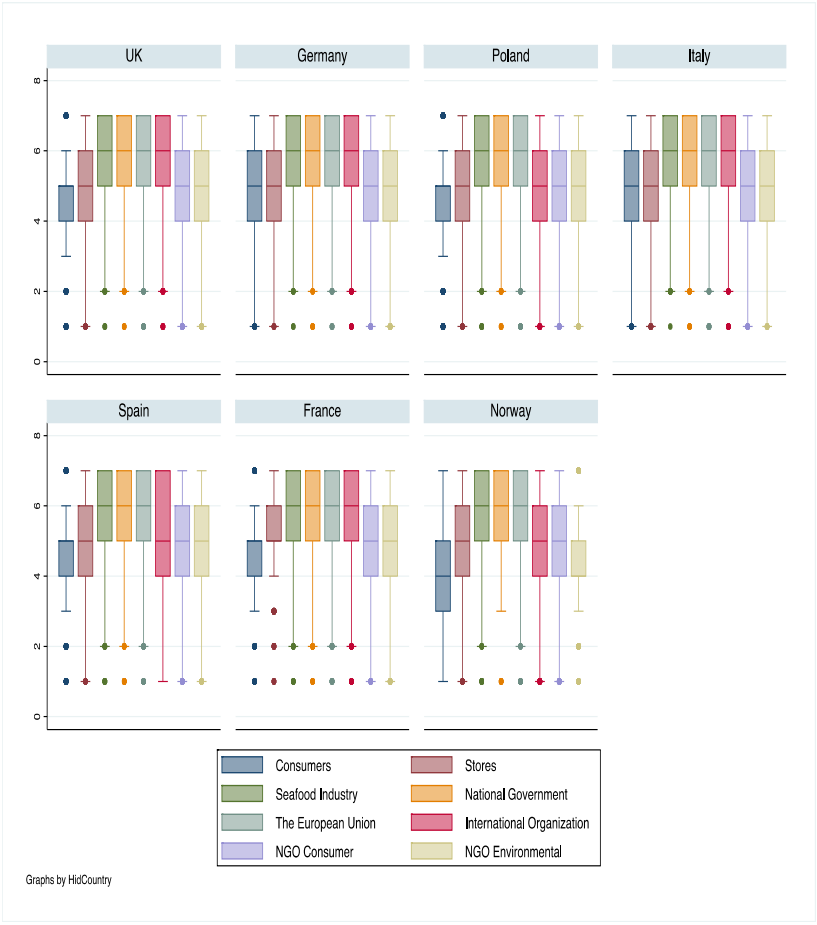
The younger age group (age 18-35 years old) attributes greater responsibility to Consumer and slightly to Stores than older respondents. On the other hand, the older age group (age 51-70 years old) attributes greater responsibility to National Government and Industry. With regard to Income, there are no significant differences.

Investigating the significance of the country differences of value chain participants, we find that Germany assign significant higher responsibility to Industry, Stores and Consumers. Largest differences between countries were for Consumers, to which Germany attributes the highest degree of responsibility than other countries do (Wald=69.90, p=0.00). Also for Stores (Wald= 138.87, p=0.00) and Industry (Wald=181.47, p=0.00), Germany attributes the highest degree of responsibility.

The perception of responsibility of "Government (in general)" was more marked in Spain and Italy, which attribute the highest responsibility (National government Wald=134.94, p=0.00; Wald=123.83, p=0.00, and the EU Wald=169.98, p=0.00; Wald=123.31, p=0.00, respectively). Even for International Organization these countries are at the fore-front (Wald=137.78, p=0.00; Wald=90.21, p=0.00; respectively).

As regards NGOs, France, Italy and Spain have given the highest responsibility albeit with slight differences between countries and NGO groups.

Figure 3. Box plot of public opinion of stakeholder responsibility



Source: our elaboration

Table 4. Estimation results ordered logit

Stakeholder	Country							Demographics				
	UK	GE	PO	IT	SP	FR	NO	Female	A40	A60	Income2	Income 3
Consumer		1.02	-0.82	0.16	0.37	0.66	-1.12	0.22	0.03	-0.19	0.01	0.15
SE		*0.18*	*0.18*	*0.18*	*0.18*	*0.18*	*0.19*	*0.09*	*0.11*	*0.11*	*0.11*	*0.14*
Stores	1.38	2.10	0.20	0.99	1.19	1.56	0.52	0.48	0.05	-0.06	-0.23	-0.10
SE	0.17	0.21	0.21	0.21	0.21	0.21	0.22	0.09	0.11	0.11	0.11	0.14
Industry	2.29	2.60	1.63	2.28	2.25	1.81	2.01	0.46	0.22	0.66	-0.29	*-0.34*
SE	*0.17*	*0.22*	*0.22*	*0.22*	*0.22*	*0.22*	*0.23*	*0.09*	*0.11*	*0.11*	*0.11*	*0.14*
National Government	1.59	1.71	1.50	2.20	2.25	1.46	1.86	0.64	0.49	0.86	-0.37	*-0.46*
SE	*0.17*	*0.22*	*0.22*	*0.22*	*0.22*	*0.21*	*0.22*	*0.09*	*0.11*	*0.11*	*0.11*	*0.14*
European Union	1.24	1.56	1.48	2.13	2.44	1.44	1.20	0.55	0.48	0.91	-0.24	*-0.32*
SE	*0.17*	*0.22*	*0.21*	*0.22*	*0.22*	*0.21*	*0.22*	*0.09*	*0.11*	*0.11*	*0.11*	*0.14*
International Organization	0.94	1.06	1.16	1.80	2.15	1.28	0.45	0.64	0.22	0.52	-0.24	*-0.33*
SE	*0.17*	*0.21*	*0.22*	*0.22*	*0.22*	*0.21*	*0.22*	*0.09*	*0.11*	*0.11*	*0.11*	*0.14*

NGO Consumer	0.11	0.45	0.61	0.83	0.88	0.95	0.05	0.63	-0.02	0.19	-0.95	*-0.17*
SE	*0.17*	*0.21*	*0.21*	*0.21*	*0.21*	*0.16*	*0.22*	*0.09*	*0.11*	*0.11*	*0.11*	*0.14*
NGO Environment	0.29	0.41	0.70	0.89	0.84	0.87	-0.31	0.69	-0.05	0.18	-0.16	*-0.14*
SE	*0.17*	*0.21*	*0.21*	*0.21*	*0.21*	*0.21*	*0.22*	*0.09*	*0.11*	*0.11*	*0.11*	*0.14*

Source: our elaboration

To ease the comparison of the ordered logit parameters between countries, Table 5 presents a ranking of the eight stakeholders for each country.

The first column presents an overall ranking combining the parameters from the seven countries.

Seafood industry, National government and the EU have the three highest overall scores.

The industry is considered the most responsible stakeholder, and has a significant higher overall score than Government, which is second on the list (Wald=6.52, p=0.01).

Even though Government has a higher parameter than EU in six of the seven countries, the overall difference between Government and EU is not significant (Wald= 1.44 p= 0.22).

The EU is considered more responsible than International Organizations, which are fourth on the overall responsibility list (Wald= 17.01 p= 0.00).

Stores are number five and seen as significantly less responsible that International Organizations (Wald=1.00, p= 0.31), and more responsible than the NGO consumer and NGO environment (Wald=21.33, p=0.00; Wald= 23.44, p=0.00, respectively).

Finally, Consumers are seen as the least responsible, and the differences to NGOC and NGOE is significant (Wald=16.16 p= 0.00, Wald=14.41, p=0.00, respectively).

Table 5. Public opinion about stakeholder responsibility ranked within each country

Ranking	Overall	UK	Germany	Poland	Italy	Spain	France	Norway
1	Industry	Industry	Industry	Industry	Industry	EU	Industry	Industry
2	NatGov	NatGov	Stores	NatGov	NatGov	Industry	Stores	NatGov
3	EU	Stores	NatGov	EU	EU	NatGov	NatGov	EU
4	IntOrg	EU	EU	IntOrg	IntOrg	IntOrg	EU	Stores
5	Stores	IntOrg	IntOrg	NGOE	Stores	Stores	IntOrg	IntOrg
6	NGOC	NGOE	Consumer	NGOC	NGOE	NGOC	NGOC	NGOC
7	NGOE	NGOC	NGOC	Stores	NGOC	NGOE	NGOE	NGOE
8	Consumer	Consumer	NGOE	Consumer	Consumer	Consumer	Consumer	Consumer

Source: our elaboration

Looking at the individual countries, we can see that the rankings deviate some from the overall ranking in six of the seven countries. Underlined are the stakeholders that have a ranking in the individual countries that are more than one number different than the overall ranking.

There are three differences worth noting. First, the opinion on the responsibility of Stores differs quite a lot between countries. The overall ranking of Stores is five, but both Germany and France have them on second place, and UK has them on third; in Poland, on the other hand, the opinion is that Stores are the second least responsible, only with Consumer as less responsible. Second, we note that both Stores and Consumer are ranked higher in Germany, indicating that the German public opinion assign more responsibility to value chain participants than what is found in other countries. Third, Spain distinguishes itself from the other by having EU ranked higher than both Industry and National government.

3.4. Discussion

The results of the study reveal that, in contrast to the emerging understanding in public debate - "the market" and its players can be trusted with the greater public well-being - quite the opposite ideology seems to persist among respondents, whose attitudes accept just leave it to the government to implement national and global regulation about sustainability, while industry is considered piloting the seafood chain. Within the supply chain, less responsibility is assigned to Stores, possibly because they stand in almost a mirror-reflection position from consumers (Thorslund et al. 2017), and environmental responsiveness of retailers is still far from to be effective (Chkanikova &

Mont, 2015).

Some apparent contradictions arise from the study as for the low ranking for consumers' responsibility found in Poland indicates that they see their role less active towards sustainability and have a long way to go before sustainability becomes an important attribute. On the other hand, in Norway there is a long tradition of sustainable seafood and sustainability is a key criterion for seafood consumers, where the low ranking for consumers' responsibility indicates that they see the public entities more responsible than value chain in the sustainability issue. It is clear that respondents tend towards a more shared responsibility, but they do not to feel primary responsible. This judgement occurs independently of buying sustainable seafood product as well as being positive towards sustainability. This means that most of people cannot deal with this overall obligation because they do not clearly understand what it actually entails and the extent of their efforts and commitments (Gutierrez & Thornton, 2014; Verbeke et al., 2007).

Furthermore, when it comes to assigning responsibility for sustainable seafood, consumers follows the "rules of thumb" as they are not fully aware of commitments provided by stakeholders involved in seafood governance system. The assignment is influenced by the comprehension of the governance, where multiple actors both public and private are involved in defining policies and strategies, making harder for consumers to assign responsibility (Wilkinson, 2006).

3.5. Concluding remarks

There are three important learning points about public

opinion on the responsibility of sustainable seafood in this study.

First, the overall trend is that "Industry" and "Government (in general)" are important. On the other hand, "Consumer" sees its role less responsible about sustainability of seafood products than the other stakeholders. Second, respondents state that public sector is considered more responsible than private sector; according to a traditional view, the value chain is less responsible than government: more close to the fishers you are, less responsible you are. Third, there are important country differences in perception of responsibility of different stakeholders into the seafood chain, so it is not straightforward to transfer results from one country to another. Not even within the European Union. Although data from a cross-section of countries enables us to look at heterogeneity across countries, in general, it does not allow identifying specific features of the national contexts that influence the outcome.

In summary, the view on responsibility for sustainable seafood expressed by respondents highlights a structural rather than an individual conception of responsibility, which calls in question, on one hand, the limits to individual capacities and, on the other hand, the opportunities around them. These limits of individual responsibilities and the interactions between individual and societal responsibilities are explored in the more recent literature on sustainable consumption, which takes into account structural influences on individuals (Middlemiss, 2010; Shove, 2003; Spaargaren, 2003, Southerton et al., 2004), emphasizing the role of social context in allowing individuals to choice sustainable consumption. Therefore, the responsibility of the individual

as consciousness remains limited if there is not empowering structures available.

A slightly different approach is expressed by Devinney and Auger (2010), which argue that consumers supporting environmental and social aims do not provide evidence that a better understanding of sustainable seafood might be transferred to majority of consumers. Consumer willingness to take on this responsibility seems misaligned with the leading movement toward policies and practices based on the demand-driven culture. Gutiérrez & Morgan (2015) stress that it should motivate consumers in their purchasing choices, but sustainability issues should not become a complex matter for them, while they should have a default buying specification concerning the sustainable seafood, in whom can trust.

Following this vision, for implementing the sustainable food system approach - capacities for change - it is critical to put in place, within a coherent policy framework, concerted actions of governmental and market-based providers and innovative groups of citizen-consumers (Middlemiss, 2010). These policy interventions include information-based instruments, market-based initiatives, and direct regulations.

The survey findings support the idea that the European sustainable food system approach is a relevant policy framework to deal with seafood sustainability concerns. It may result in a clearer image of the action that will help individuals and organizations to take a better-profiled position in the seafood market. Government policy, for its part, has a crucial role in empowering and facilitating a faster change to achieve higher levels of sustainability

(Gulbrandsen, 2006), as the question shifts from what suits the industry interests best to what complies with on how to ensure marine ecosystem health in line with human well-being and equity (EPSC, 2016; Kalshoven & Meijboom, 2013). They suggest also that a path of change through the seafood supply chain is appropriate (Gutierrez and Morgan, 2015; Sutton and Wimpee, 2008). As regard the expectations that consumers have of legitimacy and authority in both the supply chain and public governance processes, additional research might explore how collective action rather than individual ethical understanding might directly help citizens to respond to public concerns on sustainability.

4. How do consumers perceive sustainable wine? (Article)

4.1. Introduction

Since wineries are increasingly competing in the area of product differentiation, during last decades, the concept of sustainability has created great interest in the wine industry (Remaud et al., 2008). Several wineries have included environmental, social and economic aspects of sustainability at different stages in their management strategy to respond to consumer demand and to reinforce their brand and market positioning (Forbes and De Silva, 2012; Remaud et al., 2008).

The objective of label is to reduce information asymmetry between the producer and consumers by providing credible information related to the attributes of the product and to signal that the product is superior to a non-labeled product (Crespi and Marett, 2005). The assumption behind sustainable-labels is that responsible consumers can make informed purchasing choices based on product-related sustainable information (Leire and Thidell, 2005). However, research shows that several elements need to be combined for an effective sustainable-label (Winters Lynch, 1994; Leire, 2004). These include consumer awareness, consumer acceptance and consumer behaviour change.

According to literature, consumers have positive perceptions regarding sustainable wine and report a willingness to pay a premium, but consumer' awareness about the broad concept of sustainability is still vague (Zucca et al., 2009). Consumers appear to have mixed opinions about sustainability, as the circumstances under which these strategies can affect price premiums are not

fully understood.

One of the conditions for effective sustainable management practices is that consumers are willing to pay a price premium to defray the higher cost of improved management practice, especially those related with the environment. This price premium could be justified by the higher utility that these products have for consumers perceiving them as having a higher quality, being healthier and environmentally friendly (Brugarolas et al., 2005).

Some authors argue that sustainability is very likely to become a major competitive advantage, especially at an international level (Forbes et al., 2009), showing that consumers consider sustainable practices an important feature of wine production and would buy the products from such wineries and vineyards, paying a price premium for this type of wine.

Because of the lack of clarity on the value added by wine eco-labels, some wineries currently follow organic and biodynamic practices without being certified. Others become certified but do not provide the information on their bottle label (Rauber, 2006). One reason is that growers want to have the flexibility to change their inputs if it becomes necessary to save a crop during bad weather conditions or other pestilence (Wine Institute of California, 2006). The other reason is that most of these wineries think that there is a negative image associated with organic wine.

The future of sustainable agriculture will depend, to a large extent, on consumer demand. Thus, a consumer-oriented approach to understanding sustainable wine is important not only in its own right, but also in terms of shifting market dynamics. This could also vary depending

on the region of the world. Thus, a clear understanding of consumer attitudes, and the motivations underlying actions in responding to organically grown products is important.

In order to better understand wine consumers' interest in sustainable wines, this paper investigates the influence that several consumer characteristics have on these decisions, perceptions, and preferences. The aim of this review article is to identify the state of the art and research gaps on consumers' wine behaviour in order to assess the consumer demand for wines sustainable-labelled.

In an effort to give an overview on the current state of the art and research gaps in consumer behaviour and buyer motivation towards wine with characteristics of sustainable production, a systematic review of all relevant scientific literature from 2003 until 2018 was conducted.

4.2. Theoretical background

Issues related to sustainable products can be addressed from different perspectives. With respect to consumer purchasing motives, Hughner et al. (2007) identified several themes, including health and nutritional concerns, sensory attributes, environmental concerns, support of local economy, low confidence in the conventional food industry.

In order to investigate about the effectiveness of sustainable label, the research question is concentrate on the relations between sustainable wines labelled with consumer characteristics. As indicated by previous studies (Fotopoulos et al., 2003) the purchasing behaviour of sustainable wine consumers can be described taking into account different perspectives extrinsic and intrinsic consumer' attribute: attitude, expertise, knowledge, awareness, habit, belief, concern (extrinsic) and socio-demographic factors

(intrinsic).

Food-related behaviour is also called as food habits, which is defined as ―the way in which individuals or groups of individuals, in response to social and cultural pressures, select, consume, and utilize portions of the available food supply (Axelson, 1986, p.345). The food-related behaviours are complex, and have different kinds of determinants (Axelson, 1986, p.347) The investigation on these determinants of food-related behaviour lead green marketing being effective to affect food-related consumer behaviour (Straughan & Roberts, 1999, p.559).

According to Axelson (1986, p.347.), these determinants are divided into two categories: Socio-demographic determinants and psychosocial determinants. In specific to ecologically conscious consumer behaviour (ECCB), these determinants are also taken as indicators of consumers‘ propensity of purchasing ecological food by certain studies (Straughan & Roberts, 1999, p559; Shrum, MaCarty, & Lowerey, 1999, p.72; Mainieri et al., 1997, p.191; Diamantopoulos, 2003, p.467; Gilg, Barr, & Ford, 2005, p.482).

4.3. Method: Literature searching criteria

The systematic literature review was performed to select studies from a large body of research and to summarize the literature about consumer preferences and consumer purchasing behaviour towards sustainable wine. The systematic review followed a detailed protocol, consisting of organized, transparent and replicable procedures (Littell, Corcoran, & Pillai, 2008).

Data were collected using the main scientific/economic electronic research databases and reference lists from

identified studies. We also searched the websites of authors who have an established history of conducting consumers' behaviour studies.

The literature searching was conducted using a combination of keywords in the four most powerful on-line scientific search engines: Google Scholar, Web of Science, Scopus, and Science Direct. We have also selected some academic journals specialised in wine economics, and we have checked the presence of articles that examine the issue of sustainability in wine.

The keywords used, combined with the word "wine" and "sustainable", "green", "organic", "biodynamic", "environment", are: "consumers", "consumption", "attitudes", "preferences", "behaviour", "willingness to pay", "choices", "attributes", "label".

The first keywords was used to limit the search to studies that consider sustainable wine, while the second group to identify the studies based on consumer behaviour analysis. The search was carried out in February and March 2018 and it was limited to the post 2000 period, which was considered satisfactory to capture the most relevant recent trends on the topic of interest and to exclude outdate studies. Only research papers written in English and published in scientific journals were included in order to process information and to delimit the literature characterized by high visibility within the scientific community. Because of the problems of availability and readability for some related literature, it is hard to include all studies in this field. However, this research does have collected a reasonable large and representative bundle of studies from which some fundamental conclusions could be drawn.

Articles were initially selected on the basis of information contained in the title and after that were excluded duplicated articles extracted from different databases. Each of the remaining articles were further reviewed on the basis of information contained, first, in the abstract, and, after, in the full text. The examination of the abstracts led to the exclusion of some articles not focused on consumers' behaviour analysis, or not dealing with sustainable wine. Finally, only 44 papers were selected for the systematic review.

4.4. Overview of selected studies

The articles selected for this systematic review are summarized in Table 6, which contain information in relation to author(s), year of publication, topic, country(s) where the study was carried out, data collection method, sample size, type of data analysis.

Table 6 shows that 44 studies were conducted in: Italy (11), USA (12), France (7), Germany (6), United Kingdom (4) Spain (4), Canada (4), Greece (2), Switzerland (2), Sweden (1), Australia (1), New Zealand (1), Ireland (1), South Africa (1).

The majority of these studies are based on primary data collected by means of a questionnaire administered face to face or electronically, while some studies used focus groups, hedonic price, or non-hypothetical choice.

Data analysis was mostly based on multivariate research methods, econometric models and, in some cases, original research designs combining different analytical tools.

In an effort to get an overview of the research area, the articles were read systematically and information regarding

motivation, methodology, sample size, survey country and the key findings were extracted. After having verified their contents, the articles have been included in a database that has been created for sorting and analysing results (See Table 7). The studies were conducted in several countries as shown in Table 6.

Since two of the studies used a cross-national approach, the sum of countries is larger than the number of articles.

Table 6. Study countries

Country of study	Number of articles
Italy	11
USA	12
France	7
Germany	6
UK	4
Spain	4
Canada	4
Greece	2
Australia	1
New Zeeland	1
South Africa	1
Switzerland	2
Ireland	1
Sweden	1

Note: Several articles were conducted in more than one country.
Source: our elaboration

From 2000 to 2007, nearly half of the period under research, just 3 articles were published. From 2008 to 2012, 15 papers were published. In the period from 2013 to 2018, were published 26 articles. Most of the studies, applied a quantitative market research approach; three studies were qualitative, while only one used a mixed approach.

Table 7. Articles selected

References	Year	Focus	Country	Sample size	Method	Methodology
Abraben et al.	2017	Organic	Italy	444 wines	Hedonic price model	Quantitative
Ay et al.	2014	Organic and local	France	111	Auction	Quantitative
Barber et al.	2010	Environmentally friendly	USA	315	Email-survey	Quantitative
Bazoche et al.	2008	Environmentally friendly	France	139	Sensory evaluation	Quantitative
Bazoche et al.	2015	Sustainable	France	111	Choice experiment	Quantitative
Bernabeu et al.	2008	Organic and local	Spain	400	Conjoint analysis	Quantitative
Berghoef and Dodds	2011	Eco-label	Canada	401	Face to face survey	Quantitative

Bonn et al.	2016	Organic and environmentally sustainable	USA	471	Face to face survey	Quantitative
Brugarolas et al.	2010	Organic	Spain	800	Face-to-face survey,	Quantitative
Chiodo et al.	2011	Organic	Italy	207	Conjoint analysis	Quantitative
D'Amico et al.	2014	Local	Italy	853	Face to face interview	Quantitative
D'Amico et al.	2016	Organic	Italy	201	Face to face interview	Quantitative
Delmas and Grant	2014	Eco labelling	USA	13,426 wines	Hedonic price	Quantitative
Delmas and Grant	2008	Environmentally friendly	USA	13426 wines	Hedonic price	Quantitative

Forbes et al.	2009	Environmentally sustainable	New Zealand	109	Face to face interview	Quantitative
Fotopoulos et al.	2003	Organic	Greece	49	Means end chains analysis	Qualitative
Ginon et al.	2014	Environmentally sustainable	France	127	Survey with open-ended question	Qualitative
Grebitus et al.	2013	Local	Germany	47	Non-hypothetical Vickrey auctions	Quantitative
Kim and Bonn	2015	Organic	USA	1362	Online survey	Quantitative
Krystallis et al.	2006	Organic	Greece	1612	Conjoint analysis	Quantitative
Kwong et al.	2011	Environmentally sustainable	Canada	373 wines	Hedonic price	Quantitative
Loureiro	2003	Environmentally friendly and local	USA	406	Face to face interview,	Quantitative

Mann et al.	2012	Organic and local	Switzerland	404	Conjoint analysis	Quantitative
Mueller at al	2011	Sustainable wine	UK, France, Germany, USA, Canada	11.300	scale adjusted latent class mode	Quantitative
Mueller Loose and Lockshin	2013	Environmentally sustainable	UK, Ireland, USA, Canada, Sweden	2500	Best-worst scaling	Quantitative
Mueller Loose and Remaud	2013	Corporate social responsibility (CSR)	UK, France, Germany, USA, Canada	11322	Choice experiment	Quantitative
Olsen et al	2012	Organic	USA	321	Least- squared analysis	Quantitative
Pagliarini et al.	2013	Organic	Italy	100	Sensory evaluation in conjunction with survey	Quantitative

Pomarici et al.	2016	Environmentally friendly	Italy	301	Telephone interview	Quantitative
Pomarici et al.	2018	Environmentally friendly	Italy	200	Non-hypothetical Vickrey 5th price auction	Quantitative
Pomarici and Vecchio	2014	Sustainable	Italy	500	Online survey	Quantitative
Rahman et al.	2014	Organic	USA	224	Sensory evaluation and survey	Quantitative
Remaud et al	2010	Environmentally sustainable	Australia	756	Discrete choice experiment	Quantitative
Schäufele et al.	2018	Organic	Germany	219,672	Household panel dataset	Quantitative
Schmit et al	2013	Environmentally friendly	USA	169	Sensory evaluation & sealed bid first price auction	Quantitative

Sellers- rubio & Nicolau- Gonzalbez	2016	Sustainable wine	Spain	553	Online survey, contingent valuation	Quantitative
Sellers	2016	Environmental, Economics and Social aspects	Spain	553	Online survey including contingent valuation	Quantitative
Sogari et al.	2016	Environmental, Economics and Social aspects	Italy	495	Online survey including quantitative contingent valuation	Quantitative
Soosay et al.	2012	Environmentally sustainable	UK	1100 survey	Focus group discussion and online survey	Mixed
Stolz and Schmid	2008	Organic	Italy, France, Germany, Switzerland	158	Focus group	Qualitative
van Tonder and	2015	Organic	South Africa	10	Email-survey	Qualitative

Mulder						
Vecchio	2013	Environmental, social; social responsibility	Italy	80	Vickrey fifth-price full bidding auctions.	Quantitative
Wiedmann et al.,	2014	EU regulation on organic production	Germany	66	Sensory evaluation in conjunction with a survey	Quantitative
Woods et al.	2013	Local	USA	1609	Online survey	Quantitative

4.5. Results

4.5.1. Socio-demographic determinants

Some of the studies on consumer preferences for sustainable wine find significant correlation between demographics and behavioural intentions. Demographic variables, which correlate with sustainable attitudes and behaviours, are classified by Straughan & Roberts (1999, pp.559-560) as age, gender, education, and income.

Gender. Previous research shows that women have higher level of sustainable attitude than male (Straughan & Roberts, 1999, p.560). Laroche et al. (2001) investigate the demographic, psychological and behavioural profiles of consumers who are willing to pay more for environmentally friendly products, finding that this segment of consumers is more likely to be female. Being female significantly increase the probability of buying sustainable wines. In fact, high WTP may be due to a gender status: women tend to pay more attention to such products compared to men (Remaud et al., 2010; Barber et al., 2010; Pomarici and Vecchio, 2014; Sellers, 2016; Vecchio, 2013).

Education. Level of education is another demographic variable effectively works on consumers‘ sustainable attitude and behaviour. Base on the investigation about large number of previous studies, which did by Diamoantopoulos et al. (2003, p.472), a vast majority results tell that there is a significant relationship ―the better educated tend to score higher on all components of the environmental domain. Therefore, consumers with high level of education are expected to have much clearer and full perspective understanding on ecological issues. In addition, a high level of information regarding wine in general, but also specific

claim for the sustainability of the wine, led consumers to prefer sustainable wine (Mann et. al., 2012).

Income. Income is another social-demographic variable of affecting sustainable attitudes and behaviours described by Straughan & Roberts (1999, p.560). Further, they pointed a common belief: the higher income level the person has, the more he or she is likely to support sustainable food purchasing. Besides, as one of social-demographic factors, income is usually taken as a predictor of sustainable behaviour (Straughan & Roberts, 1999, p.560). According to these findings, even for willingness to a pay a price premium, a high WTP may be due to a higher household income (Loureiro, 2003; Sellers, 2016; Schäufele et al 2018).

Age. There are lots of early studies on the age influence consumers 'ecological attitude and behaviour by different researchers. Most of them are likely to support the statement that ―younger individuals are likely to be more sensitive to environmental issues (Straughan & Roberts, 1999, p559). Being youth seems to be much more acceptable for reforming their minds than elders. According to Bernabeu et al (2008), young consumers concerned with environmental issues and had a more positive attitude towards wine with sustainability characteristics. However, despite being interested in eco-friendly practices might not have a financial budget to buy organic products, which are considered more expensive (Sogari et al., 2016). Mann et al. (2012) suggest no correlation with their age. Conversely, other research shows that being older significantly increases the probability of buying sustainable wines and a high WTP (Sellers, 2016; Vecchio, 2013; Pomarici and Vecchio, 2014).

4.5.2. Consumer 'psychosocial determinants.

Environmental concerns. Many authors have identified environmental consciousness of consumers as one of the most important drivers in their buying behaviour towards organic products (Chang and Zepeda, 2005; Mondelaers et al., 2009; Forbes et al., 2009). Regarding environmentally friendly wines, most papers show a positive willingness to pay.

Zepeda and Deal (2009) showed, that environmentalist values lead to the belief that an environmentalist norm can be supported through the purchase of organic food. Regarding attitudes towards the environment, the results of the reviewed studies on organic wine did not paint a clear picture: US consumers' perceptions of environmental benefits of the product and of sustainable practices of organic wine producers had a positive effect on behavioural intentions towards organic wine (Bonn et al., 2016). In this connection, trust was important in efforts to enhance perceptions of sustainability practices of retailers and the impact of organic wine's health-related benefits (Bonn et al., 2016). This suggests that consumers are more likely to purchase organic wine if they trust the retailer selling the product.

Olsen et al. (2012) published about the role that environmental protection and hedonistic values have in determining consumer acceptance of organic wines. The study found a clear linkage between environmental values and the purchase of organic wines. Some consumers adopt risk reduction strategies to purchase organic wines, but are also willing to pay a premium price, make self-sacrifices and do not associate organic wine consumption with

enjoyment.

Consumers with a high understanding of sustainability issues and high WTP for sustainable wines give importance to traditional wine attribute like locality (Loureiro, 2003) and to the value for the environmental protection which is needed to motivate the purchasing decision (Olsen et al., 2012). They believe that organic products are safer and healthier compared to conventional ones because of the absence of synthetic products like pesticides (McEachern and McClean, 2002). All these reasons, along with the wish to support organic producers (Worner and Meier-Ploeger, 1999), contribute to pay a premium price for environmentally friendly wines.

Moreover, D'Amico et al. (2016) showed that environmental consciousness and curiosity led consumers to pay a higher price for organic wines without added sulphites. They founded that environmental consciousness and curiosity led consumers to pay a higher price for organic wines without added sulphites. The outcomes confirm that consumers who are sensitive to environmental and quality issues are willing to pay a premium for quality food, and that wider information about wine with no added sulphites is required for effective price differentiation. However, in some studies, consumers' perception of environmental friendliness had neither an effect on the purchase of organic wine (Kim and Bonn, 2015; Mann et al., 2012) nor on the consumption of organic wine (Mann et al., 2012), nor on the preference for organic wine (Rahman et al., 2014). The authors explain these results with an absence of trust in the organic label or a lack of information (knowledge) regarding organic certification. Further reasons might be high prices, poor availability (context) or being stuck in a routine

(habits).

Controversy, in a study conducted by Bazoche et al. (2008) it seems that some consumers are not willing to pay any price points for eco wines even when they are informed about the possible negative effects of pesticides used in the winegrowing process. Some of them may think that sustainability issues do not concern the wine industry. However, studies show that some consumers have a low involvement and interest in sustainability issues and very low WTP for eco wine. They consider price the only important attribute for their purchasing decision (Bernabéu et al., 2008). They do not consider an eco-label as a strong element of differentiation and they identify these wines with a low overall quality (Loureiro, 2003). They do not look for sustainable wines because they believe such products have no environmental benefits compared to conventional products (Olsen et al., 2012).

Pomarici et al. (2016) confirmed that consumers with a higher interest in environmentally friendly wines spent more for wines consumed at home and the consumer segment with a low involvement in environmentally friendly wines was mainly focused on the price when it comes to wine choice.

Barber et al. (2010) shows that the importance of being environmentally friendly, considering environmental issues when making a purchase, and collectivism are all very good predictors of consumers' intention to pay a premium price for green wine packaging. They find that consumer environmental knowledge influences willingness to buy environmentally friendly wines. They found that the choice of these products is made because consumers are more

interested in helping producers, who adopt these innovations and they believe these wines are more environmentally friendly. Barber (2012) looked at the influence of environmentally safe wines on the attitude towards purchasing. He found there is a small segment of an environmentally knowledgeable consumer willing to purchase wines with such a designation, though he points out this is merely an intention to purchase and he did not measure actual purchase behaviour. Kwong et al. (2011) found that organic wines command significantly higher prices in a hedonic price analysis on all wines produced in Ontario (Canada) and released for sale. They concluded that Canadian consumers care about viticulture techniques used in the cultivation of the grapes. Sogari et al. (2016) showed that Italian consumers with a positive attitude towards sustainable wine and a higher value of environmental protection were willing to pay higher price premiums for sustainable-labelled wine.

Healthy concern. Consumer attitudes to healthy food have become an important issue in agrifood economics. Health effects were found to be an important motivator for organic wine purchases. The health attributes of organic wine had a positive effect on US consumers' behavioural intentions (Bonn et al., 2016). Wiedmann et al. (2014) found that consumers prefer organic viniculture because means stands for healthy, safe, and environmentally friendly products without any qualitative disadvantages. Mann et al. (2012) presented that perceiving organic wine as healthier than other wines was the best predictor for Swiss consumers' choice of organic wine. Fotopoulos et al. (2003) indicated that for Greek organic food buyers, the organic label had a health-related aspect while the non-buyers

associated it with the control-attention paid during the production process. However, both groups found the organic label very important when it comes to purchasing wine.

Brugarolas et al. (2005), used a contingent evaluation analysis, show the average price premium for an organic wine is 17%, although it ranges from 12% for respondents worried about other factors to 21% for those who care about environmental issues. Consumers with a healthy life style are willing to pay a higher price for an organic wine. In addition, the level of knowledge about organic products was directly related to the acceptance of organic wine for Spanish consumers.

In a study performed by Stolz and Schmid (2008), organic wine was perceived to be healthier than conventional wine, mainly due to the absence of synthetic pesticides and additives in the winemaking process. Stolz and Schmid used sixteen focus groups conducted in four different countries (Italy, France, Germany and Switzerland) to study consumers' attitudes and expectations towards organic wines. The authors found that organic wines still face some problems in terms of sensory perception, but they benefit from a positive image with regard to grape production, wine processing and healthiness. Due to this, the use of sulphites, other additives and processing aids in organic wine processing is still not completely understood.

Another research, carried out by Sirieix and Remaud (2010), indicated that even if organic wines are viewed as healthier than conventional wines, most consumers still perceive environmentally-friendly products as too expensive and with a lower sensorial quality image.

Trust. The study of Kim and Bonn (2015) revealed that

trust in the winery was, besides taste, the main factor influencing consumers' behavioural intentions to purchase organic wine. In the US, the trust in and the awareness of social and environmentally sustainable labels were higher than in Canada and Europe (Mueller Loose and Remaud, 2013). Trust was important in efforts to enhance perceptions of sustainability practices of retailers and the impact of organic wine's health-related benefits (Bonn et al., 2016). This suggests that consumers are more likely to purchase organic wine if they trust the retailer selling the product. Bonn et al. (2016) revealed that trust (beliefs) in either the producer or retailer may completely reverse the impact of price on the purchase of organic wine from negative to positive. This points to the importance of consumers' attitudes when looking at the influence of context on purchase behaviour.

Belief and Value. Values and beliefs shape consumers' attitudes towards the purchase of organic and local food. Zepeda and Deal (2009) showed, that environmentalist values lead to the belief that an environmentalist norm can be supported through the purchase of organic food. The formation of attitudes through values and beliefs and their impact on the purchase behaviour for wine with sustainability characteristics was a major subject in the investigated articles.

Sogari et al. (2016) shed light on the causal relationship of beliefs, attitudes and the purchase of sustainable wine. The belief that sustainable products provide benefits for the environment and the belief that certified sustainability labels will guarantee high quality standards were significantly and positively related to the attitude towards wine with a sustainability label and the importance of sustainability

aspects when purchasing wine. Moreover, the belief that labelling wine as sustainable gives producers economic support was not related to the attitude towards sustainable wine. The authors showed that Italian consumers with a positive attitude towards sustainable wine and a higher value of environmental protection were willing to pay higher price premiums for sustainable-labelled wine.

Schäufele et al 2018 explores the attitude-behaviour-gap for organic wine with household panel data in Germany by means of a cluster analysis. Consumer surveys revealed positive attitudes towards organic wine in large consumer segments. Health, environmental and quality benefits were stated most often as drivers for purchase decisions. Consumers who had the highest expenditure share for organic wine showed strong pro-environmental attitudes and a preference for sustainable products. Therefore, comprehensive communication about sustainability issues, which also includes social aspects, could help to further develop the organic wine market and lead to higher market shares.

In a cross-national study, Mueller Loose and Remaud (2013) found that both environmental and social fairness benefits were associated with organic labels. However, consumers' perception of environmental friendliness had neither an effect on the purchase of organic wine (Kim and Bonn, 2015; Mann et al., 2012) nor on the consumption of organic wine (Mann et al., 2012), nor on the preference for organic wine (Rahman et al., 2014).

In a study on Colorado wines, Loureiro (2003) elicited a higher WTP for environmentally friendly and local wines by consumers who cared more about the local attribute when

purchasing wine. Most of the participants stated they bought Colorado wines in order to support the local wineries and the local economy. Additionally, participants who perceived the image or reputation of Colorado wines at a low level showed a lower WTP for environmentally friendly wines.

Grebitus et al (2013) examined the influence of different beliefs regarding local wine on the WTP. Against expectation, the belief that buying local wine supports the local economy had no positive impact on the WTP.

Knowledge and awareness. Zepeda and Deal (2009) illustrated that higher levels of knowledge regarding organic farming practices may lead to the purchase of organic food. The review provides evidence for this relationship. Regarding the influence of information, the studies of Wiedmann et al. (2014) and Ay et al. (2014) provided empirical evidence that a higher level of information was related to a more positive perception or a higher preference for organic wine. In the study of Wiedmann et al. (2014), consumers were informed that organic viniculture stands for healthy, safe, and environ- mentally friendly products without any qualitative disadvantages. This information increased consumers' evaluation of organic wine in a wine tasting test procedure. In their experiment, Ay et al. (2014) first gave a general definition of organic agriculture and then gradually provided participants with further information on the negative effects of conventional (wine) production (greenhouse gas emission, health, and water consumption). Different results were reported by Bazoche et al. (2008) who conducted an experimental study including a tasting and an auction mechanism. Information on the harmful consequences of pesticide use did not have a significant effect on consumers' WTP for organic and

environmentally friendly wine. However, adding visual information (labels, no tasting) compared to blind tasting significantly increased consumers' WTP. Bazoche et al. (2015) studied the impact of labels with three pesticide levels: integrated/sustainable label, organic label and biodynamic label. Only the biodynamic wine was chosen significantly more often when logos were shown. This effect increased when in- formation on the labels was available.

In the study of Kim and Bonn (2015), US consumers indicating a greater knowledge of organic wine stated a significantly higher willingness to purchase and to recommend organic wines. On the other hand, people with a higher overall wine knowledge only had a higher behavioural intention to recommend organic wine. The motivation behind these intentions differed across the two consumer groups. Consumers with a higher organic wine knowledge were encouraged to buy organic wine because of the perceived environmental friendliness. In contrast, people with higher overall wine knowledge were driven by trust (reputation, awareness) in the winery/wine.

A high level of information regarding wine in general led consumers to prefer organic wine. Two further studies confirmed that the level of knowledge about organic products was directly related to the acceptance of organic wine for Spanish consumers (Brugarolas et al., 2010) and the probability of paying a premium price for organic wine with no added sulphites for Italian consumers (D'Amico et al., 2016).

In a qualitative study on South African consumers' affective responses to visual images and words on the front labels of organic wines, van Tonder and Mulder (2015)

revealed the importance of images when buying organic wine in a retail environment. Organic labels should contain 'natural' images. Forbes et al. (2009) found that the majority of New Zealand consumers desired wine labels, which indicate environmentally sustainable production practices and in- formation about these production practices on them. Zepeda and Deal (2009) showed that the motivation behind searching for in- formation about sustainable production methods depends on the attitudes towards this issue, which are, in turn, reinforced by consumers' information levels.

Consumers' awareness of social and environmentally sustainable labels was quite poor in an Italian study (Pomarici and Vecchio, 2014) and even lower compared to the organic label in a cross-national study (Mueller Loose and Remaud, 2013).

Indeed, participants only displayed mild interest and considerable scepticism with regard to information on sustainability on the back label (Soosay et al., 2012). Similarly, the study of Ginon et al. (2014) revealed that French consumers knew little about labels indicating environmental sustainability. However, organic labels seemed to be well known and correctly understood (Ginon et al., 2014). Pomarici and Vecchio (2014) showed that previous awareness of the precise meaning of the environmental and the social sustainability label of Italian consumers was significantly related to the probability of buying. Likewise, purchase penetration and label awareness correlated significantly (Mueller Loose and Remaud, 2013) and knowledge of the environmental label increased Italian consumers' WTP premiums for the environmental labelled wine (Vecchio, 2013). Sellers (2016) showed that Spanish consumers with a higher level of knowledge about

sustainable products had higher WTP values, while the level of knowledge about wine culture had a negative impact on the willingness-to-pay a price premium. However, Pomarici et al. (2016) showed that the consumer segment found to be highly interested in environmentally friendly wines was characterised by individuals who considered themselves more experienced regarding wine, paid more attention to the information on the back-label and were more affected by grape variety when choosing wine.

With regard to local wine, one study on consumers of the Northern Appalachian states examined the influence of overall wine knowledge on local wine consumption. Woods et al. (2013) found that average and above average wine knowledge positively influenced the probability of local wine consumption.

Context. Contextual factors are external conditions, which can be constraints or incentives for the purchase of wine with sustainability characteristics. For example, a slightly higher price for organic wine is not a purchase obstacle for people who are very committed to these products while for others it would be a financial barrier (Stern, 2000). The analysed articles evaluated the importance of sustainability characteristics among other wine features (context), e.g. price, origin and wine style. Soosay et al. (2012) revealed that, the purchase of sustainable wine was motivated by sales promotion; sustainability was not highly valued when buying wine in the supermarket. In a constitutive survey, the most important wine attributes for consumers were price, followed by type of wine (e.g. sweet/dry), colour, grape variety and promotional activity; environmentally sustainable production process was much further back in the order.

Habits. Habits play a major role in food purchasing decisions. They are affected by contextual variables and the formation of attitudes and thus conciliate between behaviour and attitudes/context (Zepeda and Deal, 2009).

Pomarici and Vecchio (2014) found that being responsible for food shopping, wine purchasing frequency and interest in sustainable food shopping significantly increased the purchase probability for social, environmental or ethical labelled wine. Vecchio (2013) found wine consumption frequency and caring about environmental sustainability in wine shopping to be significant factors influencing the WTP premiums for wines with an environmental and an ethical feature. Additionally, Pomarici et al. (2016) showed that the consumer segment, which was highly interested in environmentally friendly wines, was characterised by individuals who drink wine more frequently. These findings emphasize the influence of attitude of interest in sustainability issues on the formation of habits. For organic wine, the total amount of wine consumed had no influence on organic wine purchases (Mann et al., 2012).

Important drivers of local wine consumption for consumers from the Northern Appalachian states were a weekly or monthly frequency of wine purchases, and high frequency of local food purchase (Woods et al., 2013). Likewise, Italian consumers who bought wine directly from a wine producer revealed a monthly shopping frequency (D'Amico et al., 2014). Another study (Loureiro, 2003) on US consumers from Colorado revealed similar results. Consumers who bought wine at least once a week showed a higher WTP for local wines. This was attributed to the higher information level of frequent wine drinkers regarding

the quality of local wine and their advanced ability to differentiate between good and bad Colorado wines. Interestingly, behaviour may lead to the strengthening or the creation of new habits (Zepeda and Deal, 2009).

4.6. Conclusion

The multidisciplinary study of consumer' science, in the last decade, has highlighted how many different factors can motivate behaviour towards a more sustainable consumption: among these are relevant cognitive aspects, such as values, attitudes and intentions - but also external factors - such as incentives, norms and public policies.

Demographic data are useful in developing consumer profiles, which are of high practical relevance for targeted marketing activities. However, spontaneous purchase situations also need to be taken into consideration.

Most wine consumers purchase organic wine for the perceived health and environmental benefits (Mann, Ferjani, & Reissig, 2012). There are some consumers whose primary reason for purchase is for prestige and social image (Mann, Ferjani, & Reissig, 2012; Ogbeide, 2013).

Nowadays, new types of certification on both a public and a private basis and various sustainable winegrowing programs implemented by the government, retailers or wine industry associations have evolved in the global wine industry (Forbes and De Silva, 2012). Since the outlined market developments, in particular, with the EU regulation on organic wine in 2012, academic interest towards consumers' perceptions and preferences of wine with characteristics of sustainable production has grown. In several countries, such as Germany, France, Britain, Spain, Italy, the United States, Australia and New Zealand, organic

production is growing.

Regarding the studied countries, Europe and the US are generally well examined, although there is need for further research on New World wine producing nations as well as on Asian consumers. Both Asia and North America are growing wine consumption markets while most of the traditional wine consumer countries in the EU recorded a reduction in their share of the global market (OIV International Organisation of Vine and Wine, 2015).

The review also indicated that, due to the low awareness of the broad concept of 'sustainability', marketers, retailers and producers should disseminate relevant information on environmental as well as on social and economic aspects of wine production to raise consumers' knowledge of sustainable wine production so as to create preferences and influence purchase behaviour.

Depending on the strength of consumers' attitudes towards sustainability issues, various wine characteristics, like taste, influence the decision-making process. The results highlight that, in addition to a great interest in sustainable wine, there is still prejudice and misinformation, especially concerning the sensory characteristics related to these products. Many consumers still have the idea that organic wine is good for the environment but not for those who drink it. This prejudice has its roots in early attempts, made about thirty years ago, to produce organic wine, often by operators who were not specialised wine growers, who obtained poor organoleptic results. In more recent times, organic wines have frequently won major awards in conventional wine competitions, giving clear evidence of the high quality that can be achieved with organic

techniques.

In recent years, moreover, consumers are increasingly attentive to all natural, authentic wines, and the attention of the media has grown as well. The situation could be absolutely conducive to the further development of the sector, but there is still a great degree of confusion between statements and the actual content they convey. On these aspects, perhaps, the implementation of the recent EU regulation will help to provide useful clarifications.

Most of the studies reviewed focused on the environmental aspects of sustainability and examined organic wines. Future research should, therefore, additionally focus on social and economic aspects of sustainability. Large research gaps about the impact of context (e.g. price and availability) on consumers' purchase behaviour exist, particularly in the field of local production.

5. Do organic wine taste better? Evidence on consumer demand on taste of organic wine (Article).

5.1. Introduction

Consumer demands for safer, better quality, and healthier foods has led to an increased demand for organic products (D'Souza, et al. 2006; Lyons et al. 2004). However, the effects of these products and the support for the benefits claim are not yet fully understood and at times doubtful.

In wine consumption, considering the hedonic elements of wine (Neely et al., 2010), the organic characteristic is subordinate to sensory characteristics, which were found very influential in determining wine purchasing decisions (Cohen, 2009). Olsen et al. (2006) show that wine is primarily associated with sensory quality, which is the main feature underlying wine consumption (Stolz and Schmid, 2009). Among sensory qualities, taste has been found to be both a key driver and barrier to wine consumption (Lockshin et al., 2006).

Stolz and Schmid (2009) studyed consumers' attitudes and expectations towards organic wines in Italy, France, Germany and Switzerland and found that organic wines still face some problems in terms of sensory perception.

Møller Sørensen (2011) points out that in the 1970s organic wines had a poor sensory quality, which caused a negative image. Nowadays, even if there is a general improvement of the image of organic wines, an important obstacle to its consumption is the bad reputation linked to the wine taste (Stolz and Schmidt, 2008; Delmas and Grant,

2014). Nevertheless, the taste of wine constitutes one of the major perceived risks, as outlined by Mitchell and Greatorex (1988). The authors state that the taste of wine is the kind of risk that consumers are fretting mainly about. It is hard to minimise the risk due to the fact that almost all wine purchase situations do not include the opportunity to taste the wine before purchase.

A concern among consumers is that organic wine might entail a trade-off between sensory quality and organic features (Lockshin and Corsi, 2012). While consumers wish to protect the environment, they are not willing to do this under the conditions of a product of inferior sensory quality (Hoffmann, 2010; Krystallis, 2010). In other words, in order to achieve low environmental impact, green products would have to be of lower sensory quality (Delmas and Grant, 2014).

From producer's point of view, because of the lack of clarity on the value added by organic method production and relative label, some wineries currently follow organic practices without being certified. According to Delmas and Grant (2014) some American organically wine-makers do not use organic label on the bottle. Others become certified but do not provide the information on their bottle label (Rauber, 2006). One reason is that growers would have the flexibility to change their inputs if it becomes necessary to save a crop during bad weather conditions or other pestilence (Wine Institute of California, 2006). The other reason could be that most of these wineries think that there is a negative image linked to lower sensory quality, associated with organic wine. Also in Australian market the organic attribute receives a low value by the so-called "average Australian wine consumer" (Remaud et al., 2008;

Sirieix and Remaud, 2010). According to Remaud et al. (2008), also Australian consumers do not especially value organic wine and are not willing to pay premiums for it.

Since organic wines need to fulfil the same requirements as conventional wines and based on the previously outlined considerations, this study will investigate the following research question: do consumers perceive the organic wine as lower sensory quality than conventional one? In this study, we investigate the link between organic wine and its sensory quality perception in the literature. The objectives of the study therefore are: (1) to identify the characteristics of consumer of organic wine; and (2) to determine consumer perception of taste of organic wine when evaluating organic wine quality and in shaping consumers' attitudes.

The study is structured as follows. In the first section a background of consumer quality assessment is carried out. In second section the method is described. The third section comprises the narrative systematic review, summarizing the main result of literature on organic wine consumer profile. Fourth section discusses the taste perception toward organic wine in the literature. Finally, five section explains the results and the six section discuss concluding remarks.

5.2. Background

Consumers' perceptions of quality are influenced by intrinsic cues, such as appearance, smell, tenderness and taste (Grunert, 1997; Myrland et al., 2000; Olsen, 2004; Trondsen et al., 2003), and extrinsic cues, such as price, outlets, country of origin, packaging, labelling, branding, and nutritional information (Brunsø et al., 2009; Nielsen et al., 2002; Trondsen et al., 2003). While extrinsic cues relate to the expected quality, intrinsic cues relate to both expected

as well as experienced quality (Jover, Montes, & Fuentes, 2004). Intrinsic cues generally have higher predictive value than extrinsic cues, but often, intrinsic cues cannot be judged until the point of consumption (Zeithaml, 1988), increasing the consumer's reliance on extrinsic cues at point of purchase.

As indicated by previous studies (Fotopoulos et al., 2003; Onyango et al., 2007), the purchasing behaviour of organic wine consumers can be described taking into account different perspectives of extrinsic and intrinsic cues. While consumers often use intrinsic and extrinsic cues simultaneously (Srinivasan et al., 2004), the relative roles and impacts of intrinsic and extrinsic cues can vary (Liefield et al., 1996), depending on a range of factors including the level of perceived risk (Liefield et al., 1996; Zeithaml, 1988).

The studies by Celsi and Olson (1988); Espejel, Fandos and Flavian (2009) have proposed the use of product intrinsic and extrinsic signals as being relevant in the alleviation of perceived risk. The choice of intrinsic risk reduction strategy, however, is assumed to be dependent on the level of consumer' knowledge about the product. Hershey and Walsh (2001) found that the more knowledgeable the consumer is about the whole acquisition processes, the more decisive and confident the consumer is, and less the perceived risk. Consumers, particularly those inexperienced in wine acquisition, may not have the knowledge about the intrinsic attributes of wine. Instead they use knowledge of peripheral cues.

Past experience and familiarity with a product category influences the extent to which people search for, recall and

use intrinsic and extrinsic information when evaluating product quality and making purchasing decisions (Howard and Sheth, 1969), with the use of intrinsic cues becoming relatively stronger as product familiarity increases (Rao and Monroe, 1988). Where less experienced consumers may have less confidence in their ability to judge quality intrinsically, extrinsic cues could take on much greater importance as they are easier for consumers to interpret and use. The more familiar a consumer is with a product category, the more confident they are in making decisions with respect to that product category (Verbeke et al., 2007b).

As Thach and Olsen (2010) state, organic wine consumers are more likely than conventional wine consumers to seek for advice, ask for recommendations as well as try new brands. For example, consumers intending to purchase products that they are not familiar with or have not purchased previously have many questions that beg for answers. All the many questions can constitute uncertainty to consumers and must be answered before the decision to buy or not to buy is made. Therefore, the greater the consumer's perceived risk in organic wine purchases, the lesser the willingness to pay for the benefit of organic wine.

In order to investigate about the effectiveness of organic wine, the research question is concentrate on the relations between intrinsic cues, such as taste, and consumer 'preferences.

5.3. Method: Literature searching criteria

The systematic review followed a detailed protocol, consisting of organized, transparent and replicable procedures (Littell, Corcoran, & Pillai, 2008). The literature

review was performed to select studies from a large body of research and to summarize the literature about consumer preferences and consumer purchasing behaviour towards organic wine.

Data were collected using the main scientific/economic electronic research databases and reference lists from identified studies. We also searched the websites of authors who have an established history of conducting consumers' behaviour studies.

The literature searching was conducted using a combination of keywords in the four most powerful on-line scientific search engines: Google Scholar, Web of Science, Scopus, and Science Direct. We have also selected some academic journals specialised in wine economics, and we have checked the presence of articles that examine the issue of sustainability in wine.

The keywords used, combined with the word "wine" and "organic", "sustainable", "green", are: "consumers", "consumption", "taste", "attitudes", "preferences", "behaviour", "willingness to pay", "choices", "attributes", "label". The first keywords was used to limit the search to studies that consider organic wine, while the second group to identify the studies based on consumer behaviour analysis. The search was carried out in February and March 2018. Only research papers written in English and published in scientific journals were included in order to process information and to delimit the literature characterized by high visibility within the scientific community. Because of the problems of availability and readability for some related literature, it is hard to include all studies in this field. Articles were initially selected on the basis of information

contained in the title and after that were excluded duplicated articles extracted from different databases. Each of the remaining articles were further reviewed on the basis of information contained, first, in the abstract, and, after, in the full text. The examination of the abstracts led to the exclusion of some articles not focused on consumers' behaviour analysis, or not dealing with organic wine.

5.4. Profile of organic wine consumer

5.4.1. Socio-demographic characteristics

Most studies on consumer preferences for organic wine find significant correlation between behavioural intentions and socio-demographic characteristics (Thompson, 1998). Demographic variables correlate with sustainable attitudes and behaviours, are classified by Straughan & Roberts (1999, pp.559-560) as age, gender, education, and income.

Age. There are lots of early studies on the age influence consumer's organic attitude and behaviour by different researchers. Most of them are likely to support the statement that ―younger individuals are likely to be more sensitive to environmental issues (Straughan & Roberts, 1999, p559). Being youth seems to be much more acceptable for reforming their minds than elders. According to Bernabeu et al (2008), young consumers concerned with environmental issues had a more positive attitude towards organic wine. However, despite being interested in eco-friendly practices might not have a financial budget to buy organic products, which are considered more expensive (Sogari et al., 2016; Mann et al., 2012). Conversely, other research shows that being older significantly increases the probability of buying organic wines and a high WTP (Sellers, 2016; Vecchio,

2013; Pomarici and Vecchio, 2014, Pomarici et al., 2018).

Gender. Previous research shows that women have higher level of organic attitude than male (Straughan & Roberts, 1999, p.560). Laroche et al. (2001) investigate the demographic, psychological and behavioral profiles of consumers willing to pay more for organic products, finding that this segment of consumers is more likely to be female. Being female significantly increase the probability of buying organic wines. In addition, also a high WTP may be due to a gender status: women tend to pay more attention to such products compared to men (Remaud et al., 2010; Barber et al., 2010; Heyns, et al., 2014 Loureiro, 2003; Mann et al., 2012; Pomarici and Vecchio, 2014; Sellers, 2016; Vecchio, 2013, Pomarici et al. 2018).

Education. Level of education is another demographic variable that influence organic purchases behavior. The variable is positively correlating with organic attitudes. The positive relationship has been identified by large amount of previous studies (Anderson et al., 1974; Leonard-Barton, 1981; McEvoy, 1972; Murphy et al., 1978; Roberts, 1996b; Roper, 1990; 1992; Schwartz and Miller, 1991; Tognacci et al., 1972; Van Liere and Dunlap, 1981; Zimmer et al., 1994). Base on the investigation about large number of previous studies, which did by Diamoantopoulos et al. (2003, p.472), a vast majority results tell that there is a significant relationship ―the better educated tend to score higher on all components of the environmental domain. Therefore, consumers with high level of education are expected to have much clearer and full perspective understanding on ecological issues. In addition, a high level of information regarding wine in general, but also specific claim for the sustainability of the wine, led consumers to

prefer organic wine (Mann et. al., 2012).

Income. Income is another social-demographic variable affecting organic attitudes and behaviours described by Straughan & Roberts (1999, p.560). They pointed a common belief: the higher income level the person has, the more he/she is likely to support organic food purchasing. Besides, as one of social-demographic factors, income is usually taken as a predictor of sustainable behavior (Straughan & Roberts, 1999, p.560). Moreover, Axelson (1986, p.348) also proved income is one social-demographic determinant highly correlates with food-related behavior. Accordind to these findings, high WTP may be due to a higher household income (Loureiro, 2003; Pomarici et al., 2016; Sellers, 2016; Schäufele et al 2018; Woods et al., 2013).

5.4.2. Psychosocial characteristics

Belief and Value. Values and beliefs shape consumers' attitudes towards the purchase of organic food (Stern et al., 1999). Zepeda and Deal (2009) showed, that environmentalist values lead to the belief that an environmentalist norm can be supported through the purchase of organic food. The formation of attitudes through values and beliefs and their impact on the purchase behaviour for wine with organic characteristics was a major subject in the investigated articles. Sogari et al. (2016) shed light on the causal relationship of beliefs, attitudes and the purchase of organic wine. The belief that organic products provide benefits for the environment and the high quality standards were significantly and positively related to the attitude towards organic wine.

Schäufele et al. (2018) explores the attitude-behaviour-

gap for organic wine in Germany. Health, environmental and quality benefits were stated most often as drivers for purchase decisions. Overall, consumers believe that organic products are safer and healthier compared to conventional ones because of the absence of synthetic products like pesticides (Brennan et al., 2003; McEachern and McClean, 2002). Therefore, comprehensive communication about sustainability issues could help to further develop the organic wine market and lead to higher market shares.

Environmental concerns. Many authors have identified environmental consciousness of consumers as one of the most important drivers in their buying behaviour towards organic products (Chang and Zepeda, 2005; Mondelaers et al., 2009; Forbes et al., 2009). Regarding attitudes towards the environment, US consumers' perceptions of environmental benefits of the product and of sustainable practices of organic wine producers had a positive effect on behavioural intentions towards organic wine (Bonn et al., 2016). Olsen et al. (2012) published about the role that environmental protection and hedonistic values have in determining consumer acceptance of organic wines. The study found a clear linkage between environmental values and the purchase of organic wines. Consumers with a high understanding of sustainability issues and high WTP for sustainable wines give importance to the value for the environmental protection which is needed to motivate the purchasing decision (Olsen et al., 2012). Moreover, D'Amico et al. (2016) showed that environmental consciousness and curiosity led consumers to pay a higher price for organic wines without added sulphites. The outcomes confirm that consumers who are sensitive to environmental and quality issues are willing to pay a

premium. However, studies show that some consumers have a low involvement and interest in sustainability issues and very low WTP for eco wine. According to the results of tghese studies, consumers' perception of environmental friendliness had neither an effect on the purchase of organic wine (Kim and Bonn, 2015; Mann et al., 2012) neither on the consumption of organic wine (Mann et al., 2012), neither on the preference for organic wine (Rahman et al., 2014). The authors explain these results with an absence of trust in the organic label or a lack of information (knowledge) regarding organic certification (Zepeda and Deal, 2009). In a study conducted by Bazoche et al. (2008) some consumers are not willing to pay any price premium for organic wines, even when they are informed about the possible negative effects of pesticides used in the winegrowing process. They do not look for sustainable wines because they believe such products have no environmental benefits compared to conventional products (Olsen et al., 2012). Pomarici et al. (2016) confirmed that consumers with a higher interest in environmentally friendly wines spent more for wines consumed at home and the consumer segment with a low involvement in environmentally friendly wines was mainly focused on the price when it comes to wine choice. Barber et al. (2010) shows that the importance of being environmentally friendly, considering environmental issues when making a purchase, and collectivism are all very good predictors of consumers' intention to pay a premium price for organic wine. They find that consumer environmental knowledge influences willingness to buy organic wines. Barber (2012) looked at the influence of environmentally safe wines on the attitude towards purchasing and found there is a small

segment of an environmentally knowledgeable consumer willing to purchase wines with such a designation.

Healthy concern. Health effect was found to be an important motivator for organic wine purchases and consumers with a healthy life style are willing to pay a higher price for an organic wine. The health attributes of organic wine had a positive effect on US consumers' behavioural intentions (Bonn et al., 2016). Wiedmann et al. (2014) found that consumers prefer organic viniculture because means stands for healthy, safe, and environmentally friendly products without any qualitative disadvantages. Mann et al. (2012) presented that perceiving organic wine as healthier than other wines was the best predictor for Swiss consumers' choice of organic wine. Fotopoulos et al. (2003) indicated that for Greek organic food buyers, the organic label had a health-related aspect while the non-buyers associated it with the control-attention paid during the production process.

In a study performed by Stolz and Schmid (2008), organic wine was perceived to be healthier than conventional wine, mainly due to the absence of synthetic pesticides and additives in the winemaking process. The authors found that organic wines still face some problems in terms of sensory perception, but they benefit from a positive image with regard to grape production, wine processing and healthiness. Sirieix and Remaud (2010) indicated that even if organic wines are viewed as healthier than conventional wines, most consumers still perceive organic wine as too expensive and with a lower sensorial quality image.

Knowledge and awareness. Zepeda and Deal (2009) illustrated that higher levels of knowledge regarding organic

practices may lead to the purchase of organic food. The review provides evidence for this relationship. Regarding the influence of information, the studies of Wiedmann et al. (2014) and Ay et al. (2014) provided empirical evidence that a higher level of information was related to a more positive perception or a higher preference for organic wine. In the study of Wiedmann et al. (2014), consumers were informed that organic viniculture stands for healthy, safe, and environmentally friendly products without any qualitative disadvantages. This information increased consumers' evaluation of organic wine in a wine tasting test procedure. In their experiment, Ay et al. (2014) first gave a general definition of organic agriculture and then gradually provided participants with further information on the negative effects of conventional wine production. Different results were reported by Bazoche et al. (2008) who conducted an experimental study including a tasting and an auction mechanism. Information on the harmful consequences of pesticide use did not have a significant effect on consumers' WTP for organic and environmentally friendly wine. However, adding visual information (labels, no tasting) compared to blind tasting significantly increased consumers' WTP.

The level of knowledge about organic products was directly related to the acceptance of organic wine for Spanish consumers (Brugarolas et al., 2010) and the probability of paying a premium price for organic wine with no added sulphites for Italian consumers (D'Amico et al., 2016). In a qualitative study on South African consumers' affective responses to visual images and words on the front labels of organic wines, van Tonder and Mulder (2015) revealed the importance of images when buying organic

wine in a retail environment. Forbes et al. (2009) found that the majority of New Zealand consumers desired wine labels, which indicate environmentally sustainable production practices and information about these production practices on them. Zepeda and Deal (2009) showed that the motivation behind searching for information about sustainable production methods depends on the attitudes towards this issue, which are reinforced by consumers' information levels. Pomarici and Vecchio (2014) showed that previous awareness of the precise meaning of the environmental and the social sustainability label of Italian consumers was significantly related to the probability of buying. Likewise, purchase penetration and label awareness correlated significantly (Mueller Loose and Remaud, 2013) and knowledge of the environmental label increased Italian consumers' WTP premiums for the environmental labelled wine (Vecchio, 2013). Sellers (2016) showed that Spanish consumers with a higher level of knowledge about sustainable products had higher WTP values, while the level of knowledge about wine culture had a negative impact on the willingness-to-pay a price premium. However, Pomarici et al. (2016) showed that the consumer segment found to be highly interested in environmentally friendly wines was characterised by individuals who considered themselves more experienced regarding wine, paid more attention to the information on the back-label and were more affected by grape variety when choosing wine. In the study of Kim and Bonn (2015), US consumers indicating a greater knowledge of organic wine stated a significantly higher willingness to purchase and to recommend organic wines. On the other hand, people with a higher overall wine knowledge only had a higher behavioural intention to recommend organic wine.

The motivation behind these intentions differed across the two consumer groups. Consumers with a higher organic wine knowledge were encouraged to buy organic wine because of the perceived environmental friendliness. In contrast, people with higher overall wine knowledge were driven by trust (reputation, awareness) in the winery/wine.

Trust. The study of Kim and Bonn (2015) revealed that trust in the winery was, besides taste, the main factor influencing consumers' behavioural intentions to purchase organic wine. In the US, the trust in and the awareness of sustainable labels were higher than in Canada and Europe (Mueller Loose and Remaud, 2013). Trust was important in efforts to enhance perceptions of sustainability practices of retailers and the impact of organic wine's health-related benefits (Bonn et al., 2016). This suggests that consumers are more likely to purchase organic wine if they trust the retailer selling the product. Bonn et al. (2016) revealed that trust in either the producer or retailer may completely reverse the impact of price on the purchase of organic wine from negative to positive. This points to the importance of consumers' attitudes when looking at the influence of context on purchase behaviour.

Habits. Habits play a major role in food purchasing decisions. They are affected by contextual variables and the formation of attitudes and thus conciliate between behaviour and attitudes/context (Zepeda and Deal, 2009). Pomarici and Vecchio (2014) found that being responsible for food shopping, wine purchasing frequency and interest in sustainable food shopping significantly increased the purchase probability for social, environmental or ethical labelled wine. Vecchio (2013) found wine consumption frequency and caring about environmental sustainability in

wine shopping to be significant factors influencing the WTP premiums for wines with an environmental and an ethical feature. Additionally, Pomarici et al. (2016) showed that the consumer segment, which was highly interested in environmentally friendly wines, was characterised by individuals who drink wine more frequently. These findings emphasize the influence of attitude of interest in sustainability issues on the formation of habits. For organic wine, the total amount of wine consumed had no influence on organic wine purchases (Mann et al., 2012).

5.5. Taste perception.

The taste attribute of organic wine received some criticism and has been a source of perceived risk. Møller Sørensen (2011) points out that in the 1970s organic wines had a poor sensory quality, which caused a negative image. Nowadays, even if there is a general improvement of the image of organic wines, an important obstacle to its consumption is the bad reputation linked to the wine taste (Stolz and Schmidt, 2008; Delmas and Grant, 2014). This is enhanced by the literature and it appears widespread, mostly in Italy among the other EU producers. According to consumers' judgments "organic wine is good for the environment but not for those who drink it". This may be affected by several factors, e.g. the inexperience of the winemakers (National Rural Network 2007–2013, 2012; Delmas and Grant, 2014).

In the study of Kim and Bonn (2015), taste perception was, besides trust in the winery, the main factor influencing US consumers' behavioural intentions to purchase organic wine. Mueller Loose and Lockshin (2013) found that environmental sustainability is of much less importance than

the taste of the wine, reputable region, quality control and brand name. Trioli and Hofmann (2009) argue that the negative perception of the taste of organic wine stems from the early stages of organic wine production, when production know-how was inadequate. The perception is not true anymore but its poor image remains. According to Stolz and Schmid (2009), consumers regard organic wine criticizes the poor image regarding taste. Some respondents express disappointment as they see no additional benefits regarding the taste and think that organic wine tastes worse than conventional wines, mainly due to too much acidity. Only very few respondents stated that they appreciate the taste of organic wine. Loureiro (2003) by testing Colorado wines found that consumers were not willing to pay more for the environmentally friendly wine when quality was a perceived difference.

In contrast with these results, Thøgersen (2007) reported Danish consumers' attitudes toward organic product consumption was consequent on the beliefs that organic products are better for the environment, taste better and are healthier. Mann et al. (2012) showed that few Swiss consumers detected any advantages in terms of the taste of organic wine. Wiedmann et al. (2014) showed that appearance and taste of organic wine was judged to be better than that of conventional wine regardless of their knowledge and attitude towards organic products in general. Also New Zealand consumers believed sustainable wines to be of equal or better quality than conventional wines and were prepared to pay a higher price for these wines (Forbes et al., 2009). Furthermore, Pagliarini et al. (2013) found that consumers were not able to distinguish between organic and conventional wines in a blind tasting. This indicates that the

willingness-to-pay a premium for organic wine may be due to consumers' specific attitudes and involvement in sustainability issues. Thus, consumers may allege to be "green", but uncertainty exists if they are truly willing to purchase goods based solely on environmental grounds, particularly if quality is an issue. Sirieix and Remaud conducted a survey in Adelaide (Australia), about the perceptions of a number of eco-friendly claims (i.e., organic, preservative free and biodynamic) compared to conventional wines, finding that these wines have a genuine taste. They suggested trying to incorporate terms such as trendy and distinctive taste in the communication strategy of these wines.

These conflicting outcomes constitute perceived risk for consumers and impact on WTP (Grewal, Gotlieb & Marmorstein 1994).

5.6. Discussion

The results obtained from literature studies on consumer perceptions of organic wine cannot automatically be translated or applied to the perceptions of consumers regarding wine in general and organic wine in particular.

Demographic data are useful in developing consumer profiles, which are of high practical relevance for targeted marketing activities. According to Schmidt (2010) and Hoffmann (2010), the organic wine consumer is most likely to be found among highly involved organic food consumers. In addition to that, the stereotypical organic wine consumer resides in major cities (Hoffmann, 2010; Møller Sørensen, 2011), and has by trend a comparatively high level of education and income. Most wine consumers purchase organic wine for the perceived health and environmental

benefits (Mann, Ferjani, & Reissig, 2012). As Barber et al. (2009) highlight consumers' willingness to purchase organic wine is highly influenced by their general eco-friendly attitude. However, as Sirieix and Remaud (2010) suggest, the buying intentions and positive attitudes displayed by consumers regarding organic food in general does not seem to translate to organic wine.

The results highlight that, in addition to a great interest in organic wine, there is still prejudice and misinformation, especially concerning the sensory characteristics related to these products. In fact, many consumers still have the idea that organic wine is good for the environment but not for those who drink it. This prejudice has its roots in early attempts, made about thirty years ago, to produce organic wine with poor organoleptic results, often by wine-maker who were not specialised wine growers. In more recent times, organic wines have won better reputation, giving clear evidence of the good quality that can be achieved with organic techniques.

Regarding the studied countries, Europe and the US are generally well examined, although there is need for further research on New World wine producing nations as well as on Asian consumers. Both Asia and North America are growing wine consumption markets while most of the traditional wine consumer countries in the EU recorded a reduction in their share of the global market (OIV International Organisation of Vine and Wine, 2015).

5.7. Conclusion

Understanding what drives consumers wine choice, as well as their individual motives and perception has always been crucial for successfully marketing wine, especially as

the consumption patterns and preferences for wine have changed significantly since the late 1980s (Fotopoulos et al., 2003; Smith & Solgaard, 1996).

The future of organic wine will depend, to a large extent, on consumer demand. Thus, a consumer-oriented approach to understanding organic wine preferences is important not only in its own right, but also in terms of shifting market dynamics. This could also vary depending on the region of the world. A clear understanding of consumer attitudes, and the motivations underlying actions in responding to organically grown products is important. The organic wine characteristics such as health and environmental benefits should be reinforced into the mind of health and environment conscious wine consumers when marketing to them. To influence non-organic wine consumers' attitudes, organic wines should be extended to them as a package of product that have health and environmental benefits, better taste, create enjoyment and positive experience. Apart from the health and environmental benefits, marketing effort should be tailored towards promoting the taste value of organic wine. This will end the perceived low quality image held by consumers sooner and appeal to them to try the product.

Therefore, regular organic wine tasting events should be conducted with the wine makers and the major sales outlets taking the lead. This study opine that marketing organic wine by its taste attribute will refine or remodel it into people's sub consciousness as taste can be instantly assessed by the consumers through simple sensory evaluation by mouth. Environmental and health benefits can require scientific analyses to determine; this is above the scope of most consumers thus creating difficulty in convincing

individuals about these benefits. Therefore, taste must be promoted just as vigorously as environmental and health benefits in the organic equation in order to attract a premium. Overall, this study would contribute to further understanding of wine consumers in relation to their sensory perception of organic wine.

6. Enhancing organizational performance through strategy, innovation and leadership: the case of a F&V producer organization. (Article)

6.1. Introduction

Good quality and a strong link to the territory characterize the fruit and vegetables sector in Italy. However, despite these positive features, some inefficiencies hamper its competitiveness. The main critical issues are the prevalence of small enterprises and the weak organization of the producers, who face the dominating position of both the agro-food industry and the large retail sector (Camanzi et al., 2011; Dell'Aquila and Petriccione, 2012; Bono, 2014; Nomisma, 2015).

Organizational aspects are considered key elements of the agri-food markets with reference both to commodities and high-quality products (Bellia et al., 2015; Platania et al., 2015). Indeed, high-quality agricultural products are no less vulnerable to the market pressures, thereby pursuing supply grouping have received much attention from scholars and inspired agricultural policies, from European to regional level, in order to strengthen the position of farmers in the value chain and to counter imbalances in the power relations between these and the other contracting parties in the food supply chain.

The common agricultural policy (CAP) encourage action by producer organisations (POs) and their associations (APOs) to facilitate the adjustment of fruit & vegetable supply to market requirements, to lower production costs, to provide their members with technical assistance in using environmentally-sound cultivation practices. Various studies, however, have highlighted a low capacity of these

organizations to provide their members with technical support services to improve on-farm production methods and effectively to promote their produce (Camanzi et al., 2011; Bijman et al., 2012; Belletti and Marescotti, 2010; Duponcel, 2006). The emphasis is on the important role of POs, which must be able their rightful role as providers not only of commercial services but also of other services as, for example, the collection and dissemination of market information, the innovation and technology transfer, the implementation of a quality system, guarantee schemes that facilitate access to credit, contracting with suppliers of farm inputs (Hueth and Marcoul, 2006; Bogetoft and Olesen, 2004).

The initiatives supported by the producers and other operators along the supply chain reflect growing interest in organized forms of hybrid exchanges between market and hierarchy. These cover a wide range of relationship structures, ranging from strategic alliances between enterprises, to collective labels, producer cooperatives and POs. The almost stable relationships have a complementary, competitive, mutual and negotiation character (Mènard, 2004; Rama, 2010; Carrà, 2010). The hybrid forms are seen as organizational solutions for the governance of exchanges, which take advantage of the potential synergies between the agents involved and result in economies of scale and other competitive advantages.

Theoretically, an approach that relies on the concept of "dynamic capabilities" is proposed. These are defined as the ability of an enterprise to integrate, build and reconfigure the skills to respond to a rapidly changing environment, (Teece, et al., 1997). Dynamic capabilities are a potential key to understanding the heterogeneity of the performances

and therefore of the organizations, the various ways to respond to changes.

Responsiveness and adaptation to evolving external circumstances as well as agility in conducing internal operations are based on a reflexive activity and a cognitive effort in more or less explicit way. In other words, the strategic choices are intentional acts, based on a learning process that lead the organization to modify the routine for acheiving a better efficiency. Learning mechanisms include both experience accumulation and intentional cognitive process (Zollo & Winter, 2002; Winter, 2003).

This paper is directed to examining the organizational experience of a producer organization of fruit & vegetables from organic farming in Sicily, looking closely at successful factors, which helped to meet more creatively, and effectively to the problems and opportunities it faced.

The case study chosen is appropriate to highlight that: i) successful alternative practices in the quality produce marketing are accompanied by the capacity to develop organizational and technological innovations; ii) the competitiveness gains are usually based on the capacity to respond to opportunities in terms of behaviour not only adaptive, but also creative; iii) the strategies put in place involve relational resources, as well as the capacity to transform, integrate, build and reconfigure the skills. We below review those evidences, first, with an overview of the OP governance, summarizing some key factors involved in bringing about significant change, then with the results of the Strategic Orientation Round (SOR) Analysis, in which strategies for guiding the change process deployed were explicated.

6.2. Method

The case study was carried out from January to June 2015 following three phases. In the first phase, a preliminary survey was carried out at regional level through personal interviews with the various stakeholders of the organic F&V supply chain. These interviews enabled us to better understand the context within which the case study has been identified.

In the second phase, a semi-structured questionnaire was administered to the president and sales manager of the PO to identify the key aspects of the organizational model. Organizational aspects considered in the analysis are: competitive position, products, marketing, resources, partnerships, and internal governance.

In the last phase, the identification of marketing strategies was achieved using two focus groups, with managers and staff to examine firstly opportunities and threats in the external environment, then strengths and weaknesses in the internal context (SWOT analysis). The SWOT analysis was aimed at identifying and highlights the organizational and the business aspects in order to compose an operational framework for the Strategic Orientation Round (SOR) analysis. This analysis tool has been adopted to make explicit strategic options of PO in order to support the process of change and the adaptation (Frambach and Nijssen, 1995; Carrà et al., 2011; Januszewska, et al., 2010). The SOR method is based on the SWOT method and allows to prioritize the alternatives generated (Shrestha, et al., 2004; Vandermeulen, et al., 2009). In the SOR analysis the same stakeholders are asked to compare the SWOT factors and recognize priorities (Kajanus, et al., 2004;. Kangas and

Kangas, 2005).

The SOR analysis was carried out through the following procedure:

- Audit activities and comparison with the results of the SWOT matrix;

- Brainstorming to weigh priorities and define the issues of strategic importance (SOR);

- Definition of strategic options.

6.3. The case study

The PO "Agrinova 2000", is a leading cooperative at regional level (Sicily) operating in the organic F&V sector. Characteristic of this organization is the long experience and the organizational and commercial dynamism, which make it an interesting case for the purpose of the study.

First example in Sicily operating exclusively on the channel of the organic farming, the cooperative Agrinova 2000 was founded in 1988 by a group of agronomists with the main purpose of providing technical assistance to farms with organic crops. In 1999, the cooperative became PO, focusing on growth targets. Within a few years the number of members tripled and today remains constant. In fact, the OP coordinates the activities of 55 small producers that operate in eastern Sicily and whose holdings cultivated with fruit, citrus fruit and vegetables cover an area of almost 500 hectares. The incentives for the establishment of the OP were mainly economic: financial aid, growing opportunities for placing the products on national and foreign markets, increasing market demand from he large retail sector. Moreover, in the market the cooperative had gained a good reputation related to the quality and traceability of the

products, and internal governance rules designed to preserve their value.

Competitive position. The aim is to improve and safeguard product quality in a logic of attention to the consumer, based on shared rules in relationships with partners and customers. The coordination and management of the OP pursues a strategy of differentiation in order to provide quality of products whose specific value may be perceived by consumers and for which they are willing to pay more, but without neglecting the aim of containing costs and therefore the prices of products. The products marketed are from selected farms that use only organic farming techniques. All stages of manufacture, handling, labelling are checked and certified by Inspection. The quality and traceability of the products are guaranteed through numerous certifications.

Products. Among the fresh products marketed, the main role is occupied by citrus fruit (71%), followed by vegetables (26%), and by table grapes and other fruit (2%). In recent years some lines of processed products (frozen citrus juice, pasteurized orange juice, tomato puree, marmalade) were launched on the market. Traceability ensures compliance with the law and mandatory regulations, as well as voluntary certification, with procedures that provide specific information for each lot. The identification of each individual lot is done on arrival in the warehouse and traceability is managed by a specific code on the packaging, which provide a number of information. The products are marked, therefore, with the trademark called "TERRAVIVA", the hallmark AIAB, the company code number and the identification code of the quality standard.

Marketing. The commercial channels have evolved over time, with a gradual downsizing of the large retail share (Tesco, Sainsbury's), which were initially very high (70%), but recently years did not renew the contracts due to the global crisis. Short supply chain has gradually increased (currently 15%) and includes different types:

- Solidarity purchasing groups in Milan and Ascoli Piceno;
- Direct market at the packing plant of Acireale;
- Bio market "Le Marché Bio" in Bruxelles;
- Online store with home delivery.

The direct sale of PO has its strength in the confidence that buyers have in producers. Within the markets cultural activities, communication and information, such as tastings, training courses aimed at strengthening the relationship with consumers are planned. Markets are also intended as educational and cultural areas. The local markets, as specializied retail in organic, Ho.re.ca channel (hotels, restaurants, catering, etc.) has a low weight (3% of total marketed production), due to the difficulties in managing the distribution. Other direct channels refer to school, canteens, with shares around 2%.

Resources. The investments relate to facilities and equipment to improve efficiency and to reduce costs of production (storage warehouse and distribution, cooling cells, automated processing lines). However, in the pool of common resources, investments are not just material resources, but also investment in human resources, generating and pooling specific managerial skills and competencies. In this context we consider the services provided to members as the following:

- Technical assistance on-farm production methods and quality control of the production;

- Logistic services through the organization and management of the flow of goods and related information from member holdings (and those not associated) until delivery to customers and consumers;

- Contracts with large retailers; collaboration agreements, partnerships;

- Marketing and communication services as participation in fairs (Biofach, the world's leading trade fair for organic food in Nuremberg and other national and European trade fairs, such as SANA in Bologna and SIAL in Paris), cultural events and information in the direct selling markets.

All these services contribute to achieve competitive advantages, such as technology transfer, increasing market share, economies of scale in some functions (e.g. innovation, certification, marketing), reduction of transaction costs, access to scarce resources, and ensuring the quality and food safety.

Partnerships. The market-oriented perspective and marketing in the short chain is also supported by collaborative initiatives with other producer's organizations operating in the organic market, which have been undertaken in order to increase the success rate of this process. These collaborations within the commercial channel, in addition to developing the governance capacity and sensitivity to the market, enable new connections with consumers and improve the bargaining power of producers.

The partnerships include mainly:

- the network Mandala Organic Growers, a group of

European producers of organic fruits and vegetables based in Brussels;

- the agreements with groups of organic producers in other regions by the Consortium Warranty BIO for export to non-EU countries;

the partnerships with other organizations ASAB and ATABIO, operating in the market of organic products.

Internal governance. The staff consists of 8 units, equally divided in different functional areas: administrative, agronomic, commercial and logistics. The internal governance shows management skills and supervision with a good balance between centralized decision-making and members' autonomy. The professional structure influences the performance of the PO. The planning of production activities at the enterprise level is centrally managed: every year they organize meetings with producers to plan products, surfaces and varieties. Members have an obligation to give the whole product to the cooperative organization. It is significant that the PO comes from a cooperative of professionals with policies and patterns of management behaviour based on a steady leadership that established production rules and control measures while relying on information and technical support to the members of the cooperative.

6.4. Identification of management strategies

The analysis of the acquired information has been useful to understand the needs and to define the strategies to address them. First, unfavourable aspects and opportunities of the external environment were examined and then the criticism and the advantages of the internal context. The analysis of external factors must consider the trends, threats

and opportunities little or not exploited; they should be clearly expressed and realistic. The opportunities should be understood as factors of development that can bring real benefit to achieving the goals of the company. Conversely threats are trends and factors that may hinder or make difficult to achieve the objectives (Table 11).

Table 7. External factors: opportunities and threats

Opportunities	Threats
O1. Increasing demand for organic products	T1. The supermarkets offer organic products and develop short supply chains
O2. Supporting of public policies	T2. Reduction in spending capacity of consumers
O3. Consumer interest in local products	T3. bureaucratic and administrative constraints

(Source: our elaboration, 2015)

Strengths and weaknesses are those factors present at the time of the analysis and that impact on the performance of PO. The strengths help to seize the opportunities as well as to address threats; weaknesses adversely affect the operation of the PO consuming the privileged positions gained and hampering the exploitation of opportunities (Table 12).

Table 8. Internal factors: strengths and weaknesses

Strengths	Weaknesses
S1. Diversification of the sales channels	W1. Failure in satisfying market requirements.
S2. Traceability of products and information of consumers.	W2. Limited ability to grow
S3. Proximity to a large urban center.	W3. High costs of production
S4. Wide variety of certified quality products.	

Source: our elaboration, 2015

Subsequently, SOR analysis was used to quantify and translate the indications of the SWOT analysis in strategic options more practices, as suggested by Rutsaert et al. (2014). The strategic options are defined by combining the external and internal parameters of the SWOT matrix (Table 9). The crossings of the SWOT parameters correspond to the four sets of options that identify four different strategies: maxi-maxi (attack), maxi-mini (defence), mini-maxi (adaptation), and mini-mini (crisis) (Januszewska, et al., 2010).

Table 9. SWOT matrix for the identification of strategic options

	Opportunities	Threats
Strengths	Maxi-maxi strategy ATTACK	Maxi-mini strategy DEFENCE
Weaknesses	Mini-maxi strategy CLEAN SHIP	Mini-mini strategy CRISIS

Source: our elaboration, 2015

The results of the crossings have been ordained according to their priorities or strategic importance, and to each of them giving a score from 1 to 3 (low, medium, high), up to a total of 12 points, distributed to each of the columns of the matrix SOR.

Table 10. Matrix Analysis SOR

	SO1	SO2	SO3	ST1	ST2	ST3
	O1	O2	O3	T1	T2	T3
S1	3	2	3	0	3	1
S2	3	0	3	0	3	3
S3	0	0	0	0	3	0
S4	3	3	3	2	3	0
total	9	5	9	2	12	4
media	2,25	1,25	2,25	0,5	3	1
dev. standard	1,50	1,50	1,50	1,00	0,00	1,41
W1	3	2	2	3	1	1
W2	0	2	2	0	0	0
W3	2	1	0	3	2	0
total	5	5	4	6	3	1
media	1,67	1,67	1,33	2,00	1,00	0,33
dev. standard	1,53	0,58	1,15	1,73	1,00	0,58
	WO1	WO2	WO3	WT1	WT2	WT3

Source: our elaboration, 2015

In the present work the respondents were asked to define the factors SWOT and list the strategic actions that are most suitable to take advantage from opportunities and to face the challenges. Subsequently the values assigned have been reported in the matrix, as shown in the Table 10. The results obtained were developed in strategies that are most suitable to fulfil the intended purposes.

6.5. Results of the SOR analysis

The evaluations summarized in the matrix of the SOR Analysis allowed to spell out the different strategies: attack, defence, clean ship and crisis, shown in Table 11.

Based on the results of the analysis of the reference framework, and taking account of the strengths and weaknesses, opportunities and threats in the SWOT, supply chain diversification is the key strategy of Agrinova 2000, especially since the option of short food supply chains emerged in recent years. Indeed, some innovative forms of marketing included in the "short supply chain" concept have gained a growing space as valid alternatives to traditional business. Therefore, aggregated initiatives taken by producer organizations are desirable not only for achieving economies of scale but also to setting up supply chain diversification strategies, thereby including the short supply chain without excluding retail supermarket chain and other traditional chains.

The strategic options that have received the highest evaluation, with a total of 23 points, are those of Attack, also known as strategies Maxi-maxi. Attack strategies register the current situation, which is considered positive. From strategy of attack it appeared that the use of modern smart technologies for the traceability of product should be

encouraged.

A strength of the OP lies in the quality policy and in the traceability of products, guaranteed by many certifications. This aspect must be communicated to the consumer, through the development of smart systems (such as the Quick Response Code), allowing consumer to go back in a practical way to information, process parameters, and quality characteristics of every single product.

Regarding the Defence strategies, the integrated development of the territory with the local market in the peri-urban areas and the improvement of communication through the creation of a corporate brand, could be useful actions to improve the consumer information and knowledge of food products purchased from short channel, as well as to increase the consumer loyalty to products from short supply chain.

The business strategy emerged refers to the creation of a territorial label linked to Sicilian organic products, through the development of specific projects of valorisation shared between production and distribution industries, which could increase the recognition and the presence of Sicilian organic products in the markets.

Adaptation strategies, or Mini-maxi, show the improvement of member number, by facilitating the relationship with them and establishing a more simple organization, in order to encourage greater presence of small farmers. This strategy aims to enhancing the processes of coordination and aggregation. Other initiatives concern a stronger orientation to the development of services related to the product adapted to common patterns of consumption and automation of manufacturing processes to reduce production

costs. In the context of the strategies Mini-mini, also called crisis, the need to adhere to public-private development programme emerged.

Table 11. The strategic options identified

Maxi-maxi strategy ATTACK Total point = 23
SO1: Developing a more efficient logistics organization to create direct market in the urban area. SO2: Developing traceability of products through the use of smart technologies. SO3: Making innovative partnerships and collaborations to connect with consumers.
Maxi-mini strategy DEFENCE Total point = 20
ST1: Making an internet platform that will facilitate, through a dedicated HUB, the sale of products and access to local products to be included in the menu. ST2: Improving visibility by creating a corporate brand. Improve labeling process (label of small farms, other ethical labels). ST3: Strengthening e-commerce channel.
Mini-maxi strategy CLEAN SHIP Total point = 13
WO1: Improving the associative, facilitating the relationship with the members, by pointing to a simpler organization, so as to increase the number of members. WO2: Increasing specialization in the production "immediate consumption", through increased investment for processing and storage products of fourth and fifth range. WO3: Investing in increased automation of operations in order to reduce the production costs.

Mini-mini strategy CRISIS Total point = 15
WT1: Develop sales in the local market. WT2: Take part in public-private partnerships and network allowing for new and additional financial resources.

Source: our elaboration, 2015

6.6. Concluding remarks

The case study presents a niche producer organization, strengths of which are the local know-how, strong professionalism of management, market orientation, evidenced by a company policy based on the quality and traceability of products, guaranteed by many certifications.

The services provided to the members must be considered as they contribute to obtain competitive advantages, encouraging at the same time economies of scale.

The processes undertaken in the organization of new organization models within the short supply chain show dynamism and ability to adapt to external changes. In recent years the supply chain diversification represents the right response in light of the economic crisis. Hence the use of platforms and digital networks, implementation of the new ITC.

Some of the critical points concern the limited number of members and therefore low capacity of aggregation. However, in response to the problem of optimal size in the number of members and the marketed volumes, strategies envisaged aim to acquire bargaining power by shifting the emphasis from growth in volumes sold to the creation of partnerships and collaboration. From the focus groups emerged also possible future developments supported by rural development policy.

More in general, agricultural cooperatives that are based on the model that has been focused in this report is, as previously highlighted, rather peculiar. These are networks of small and medium-sized enterprises that have as their main reason, if not the one only, to allow their members to

stay on the market. They attenuate (but not eliminate) the competitive disadvantages of these companies and in turn the competitive disadvantages compared to capital companies.

The PO Agrinova 2000 has expanded its activities downstream of the agri-food chain, thus strengthening relationships with customers and improving the marketing with process and product innovations. The strategic choices are oriented towards both the geographic expansion (internationalization) of existing commercial channels and towards the use of new channels. However, it must be considered that the power of small cooperatives/organizations remains limited. Hence the need to strengthen the bargaining power through mergers or cooperation with other national and international cooperative/organizations, which help to achieve the economies of scope in R & S and brand. The growth of scale and the different forms of cooperation are considered important because many of the current POs are quite small and with limited bargaining power (Bijman, et al., 2012).

In conclusion organizational models for the development of new forms of commercialization in the food system should be interpreted not as alternatives or as contrasting models even if cohabiting, but rather in key evolutionary. Considering the evolution of modern markets, we need to focus on diversification and on rising of quality levels of the productions, although with different tools depending on the characteristics and opportunities of market (Belletti and Marescotti, 2010).

7. Conclusions of thesis

Labelling differentiates agri-food products in an increasingly international and competitive market. Labels that are well perceived by the consumers are likely to increase the profitability of producers, while labels that are not appreciated by the consumers will incur costs to producers that cannot be recompensed in monetary terms. The benefits of sustainable products are often poorly communicated to consumers, so that they are unable to make informed purchasing decisions. Furthermore, consumers often have limited knowledge of production processes and a lack of insight into the implications of their food purchase decisions on the food supply chain (Dickson, 2001; Verbeke, 2005).

In order to analyse consumer behaviour and its various aspects toward sustainable label different methodologies have been used to capture different aspects and issues of the consumer profile providing interesting results for future research.

In this thesis the fruit and vegetable sector, the seafood sector and the wine sector have been investigated with regard to consumer behaviour and sustainable food policies. These studies can be replicated in various food sectors.

Results concerning consumers' current trust towards labels confirm there is a lack of credibility or a lack of understanding of some labels, that might lead to consumer confusion or even negative reactions toward sustainable-labels (Delmas, 2008; Hamilton & Zimmerman, 2006; Ibanez & Grolleau, 2008; Mason, 2006). In addition, with regard to certification procedure, several European studies have found scepticism of consumers towards the certifying

authorities (Shaw Hughner et al 2007). This shows that many efforts must be made in order to improve the awareness of consumers.

Government-supported industry-wide standards could reduce this confusion, and would likely increases consumers' trust. For some attributes, governments should also consider establishing credible voluntary certification schemes and labels across several countries. Examples of such schemes are the European organic label and the EU–US agreement to accept each other's organic products (United States Mission to the European Union, 2015).

Ascribed responsibility to the individual consumer has become part of mainstream policy-making and use of labels is regarded as an essential policy tool in this regard. Therefore, to be a successful strategy for sustainable food, consumers need to be aware of the impact of their consumption and willing to accept (and pay for) for sustainability attribute. In short, the concept of responsibility for sustainable production and consumption is strictly linked with increased engagement with consumers and integration of their concerns both into public and private policies and programs. In this regard, consumers' viewpoint is deemed to be critical point for effective leverage over the agri-food chain. However, research evidences and reported data in the literature suggest that consumers changes in behaviour have been modest, showing difficulties of taking on environmental or ethical behaviours, despite positive attitudes to change (Gutiérrez & Thornton, 2014; Vermeir & Verbeke, 2006).

The desertion of sole government's responsibility has led to the direct involvement of the consumer–citizen for the

enhancement of public well-being (Soper, 2007), and to a shift away from consumerist lifestyles (Brown & Vergragt, 2016). This prevailing understanding has celebrated the role of consumer in matters of sustainable production.

In the agri-food chain, one of the most widespread products for aspects related to environmental sustainability is the organic product, considered in many studies, the emblem of eco-sustainability. Within the organic supply chain, the EU is a territory strongly committed to incentive policies, production, processing and distribution of organic products, and the market trends continue to be positive. However, despite the evidence of positive attitudes towards the purchase of organic products, in recent world statistics consumption is still very heterogeneous and limited, reflecting a consumer response still not sufficiently reactive to policies on sustainable consumption.

Sustainable development is a dynamic process of profound change, whose realization today seems to require a very long time span. In addition, the socio-economic crisis of the last few years makes the achievement of the social, economic and environmental sustainability goal more complex in the short term.

As Verplanken (2015) emphasizes, sustainability has not yet played an important role, not only in the decision-making process of consumers, but even in the business and government dimension. Further researches are needed in order to encourage sustainable consumption. In order to clarify the definition of sustainability and to make the consumer more aware of the meaning of sustainability and sustainable labels, it would be useful to identify the objective criteria for defining sustainable food products.

Finally, in the light of the different segments of food habits identified, future research could define social marketing and commercial marketing plans: taking into account the different specificities of food choices, it could support policy makers and producers to promote and enhance sustainable food products.

The market of sustainable products worldwide is likely to have a boost since consumers‘ demands on sustainable food have been kept growing. There are mainly causes for taking sustainable as a trend in food industry. Firstly, consumers‘ perceptions on food in terms of both quality and safety increase. Secondly, the issue of environment brings popularity to sustainable food. Consumers have realized the positive environmental effect, which was brought by purchasing and the production of sustainable food. The topic occurs not only at the consumer, but also at the producer in the context of sustainable marketing. It is costly for the companies to implement of being sustainable either for the process and system or for the product. In return, the benefits of being sustainable are mostly in the form of non-excludable positive externalities (Prakash, 2002, pp.289-290).

With regard to the food industry, sustainable food owns large market potential in long terms of running. Sustainability will be one essential competitive edge, which helps the company to win the new turns of competition in the future. In addition, the development of sustainable food has been highly encouraged by government (Vindigni, Janssen, & Jager, 2002, p.624; Siderer, Maquet, & Anklam, 2005, p. 334). For instance, the company‘s marketing strategy may be affected by the regulations or policies on environmental claims (labeling or advertising), which

belongs to the non-market environment.

Whatever are the pressures (consumers, regulation, stakeholders) driving the company to be sustainable, an integrated strategy is needed.

The strategy should combine the company‘s market and nonmarket strategies since both the market environment (company‘s consumers, business partners) and the nonmarket environment (regulators, citizen groups and other stakeholders) impact each other.

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Appendix

UK

Variable	Obs tot.	Mean	Std. Dev.	Min	Max	Percent. 25%	Median	Percent. 75%	Don't know
Consumers	465	4.52	1.38	1	7	4	5	5	31
Stores	465	5.33	1.21	1	7	5	5	6	17
Industry	465	5.84	1.15	1	7	5	6	7	16
Government	465	5.60	1.18	1	7	5	6	7	19
The EU	465	5.42	1.33	1	7	5	6	6	30
Intern. Org.	465	5.16	1.41	1	7	4	5	6	43
NGO cons.	465	4.68	1.41	1	7	4	5	6	47
NGO env.	465	4.80	1.37	1	7	4	5	6	46

Germany

Variable	Obs tot	Mean	Std. Dev.	Min	Max	Percent. 25%	Median	Percent. 75%	Don't know
Consumers	482	5.02	1.50	1	7	4	5	6	11
Stores	482	5.58	1.36	1	7	5	6	7	4

Industry	482	5.89	1.32	1	7	5	6	7	5
Government	482	5.60	1.35	1	7	5	6	7	10
The EU	482	5.54	1.39	1	7	5	6	7	14
Intern. Org.	482	5.20	1.51	1	7	4	5	6	20
NGO cons.	482	4.80	1.53	1	7	4	5	6	31
NGO env.	482	4.81	1.47	1	7	4	5	6	27

Poland

Variable	Obs tot	Mean	Std. Dev.	Min	Max	Percent. 25%	Median	Percent. 75%	Don't know
Consumers	488	3.91	1.57	1	7	3	4	5	23
Stores	488	4.61	1.41	1	7	4	5	6	23
Industry	488	5.49	1.33	1	7	5	6	7	22
Government	488	5.48	1.34	1	7	5	6	7	27
The EU	488	5.55	1.25	1	7	5	6	7	25
Intern. Org.	488	5.26	1.41	1	7	5	5	6	38
NGO cons.	488	4.96	1.34	1	7	4	5	6	34
NGO env.	488	5.03	1.29	1	7	4	5	6	30

Italy

Variable	Obs tot	Mean	Std. Dev.	Min	Max	Percent. 25%	Median	Percent. 75%	Don't know
Consumers	489	4.58	1.40	1	7	4	5	5	22
Stores	489	5.09	1.26	1	7	4	5	6	16
Industry	489	5.79	1.22	1	7	5	6	7	15
Government	489	5.82	1.23	1	7	5	6	7	15
The EU	489	5.83	1.20	1	7	5	6	7	16
Intern. Org.	489	5.55	1.36	1	7	5	6	7	19
NGO cons.	489	5.05	1.34	1	7	4	5	6	21
NGO env.	489	5.07	1.36	1	7	4	5	6	19

Spain

Variable	Obs tot	Mean	Std. Dev.	Min	Max	Percent. 25%	Median	Percent. 75%	Don't know
Consumers	492	4.69	1.41	1	7	4	5	6	17
Stores	492	5.18	1.31	1	7	4	5	6	13
Industry	492	5.77	1.23	1	7	5	6	7	10

Government	492	5.80	1.37	1	7	5	6	7	15
The EU	492	5.91	1.29	1	7	5	6	7	11
Intern. Org.	492	5.73	1.35	1	7	5	6	7	17
NGO cons.	492	5.07	1.40	1	7	4	5	6	24
NGO env.	492	5.06	1.39	1	7	4	5	6	18

France

Variable	Obs tot	Mean	Std. Dev.	Min	Max	Percent. 25%	Median	Percent. 75%	Don't know
Consumers	486	4.81	1.45	1	7	4	5	5	36
Stores	486	5.37	1.32	1	7	5	5	6	28
Industry	486	5.59	1.32	1	7	5	6	7	32
Government	486	5.46	1.44	1	7	5	6	7	34
The EU	486	5.46	1.46	1	7	5	6	7	34
Intern. Org.	486	5.32	1.44	1	7	4	5	7	40
NGO cons.	486	5.12	1.38	1	7	4	5	6	52
NGO env.	486	5.07	1.40	1	7	4	5	6	50

Norway

Variable	Obs	Mean	Std. Dev.	Min	Max	Percent. 25%	Median	Percent. 75%	Don't know
Consumers	465	3.82	1.45	1	7	3	4	5	47
Stores	466	4.82	1.29	1	7	4	5	6	29
Industry	466	5.71	1.24	1	7	5	6	7	26
Government	466	5.74	1.14	1	7	5	6	7	26
The EU	466	5.44	1.35	1	7	5	6	7	41
Intern. Org.	466	4.88	1.50	1	7	4	5	6	52
NGO cons.	466	4.68	1.37	1	7	4	5	6	47
NGO env.	466	4.43	1.52	1	7	4	4	5	46

Consumer		Stores		Industry		Government	
Obs	3171	Obs	3238	Obs	3242	Obs	3222
Missing value	196	Missing value	130	Missing value	126	Missing value	146
Mean	4.49	Mean	5.14	Mean	5.73	Mean	5.64
Std. Dev.	1.51	Std. Dev.	1.34	Std. Dev.	1.27	Std. Dev.	1.30
Percentile		Percentile		Percentile		Percentile	
25%	4	25%	4	25%	5	25%	5
50%	5	50%	5	50%	6	50%	6
75%	5	75%	6	75%	7	75%	7
EU		Internat. Org.		NGO consum.		NGO envir.	
Obs	3197	Obs	3139	Obs	3112	Obs	3131
Missing value	171	Missing value	229	Missing value	256	Missing value	237
Mean	5.60	Mean	5.31	Mean	4.92	Mean	4.90
Std. Dev.	1.34	Std. Dev.	1.45	Std. Dev.	1.41	Std. Dev.	1.42
Percentile		Percentile		Percentile		Percentile	
25%	5	25%	5	25%	4	25%	4
50%	6	50%	7	50%	5	50%	5
75%	7	75%	7	75%	6	75%	6