SUSTAINABLE DIMENSIONS OF SEAFOOD CONSUMER PURCHASING BEHAVIOUR: A REVIEW

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ABSTRACT
This study attempts to gather understanding on consumer purchasing behaviour around the notion of sustainable seafood products, considering a number of attributes concerned in the academic literature on this topic. In order to examine about the effectiveness of sustainable seafood labels, the research question is concentrate on the relations between sustainable labelled seafood with consumer' buying behaviour.
A review has been conducted with the objective of seeking a full, meaningful description of the findings presented in a collection of studies. The analysis of existing literature reveals a changing attitude of consumers towards seafood products.
The results show how consumers have positive perceptions regarding sustainable seafood and a willingness to pay a price premium. It reflects new trajectories of today lifestyles and the society interests on environment and health aspects related to the issues.
Finally, it discusses the main elements of consumer purchasing behaviour that needs to be further studied in order to sustain a competitive business environment for seafood products.

KEY WORDS
Sustainability, seafood, consumer, purchasing behaviour, credence attributes, review

INTRODUCTION

Sustainable seafood consumption is gaining increasing attention by consumers and the EU fishery policy to address it is being implemented widely. 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).
In fact, 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).
Although public interest in sustainability increases and consumer attitudes are mainly positive, behavioural patterns are not univocally consistent with interests, preferences, or attitudes. Sustainability is an abstract concept, a credence characteristic of food products and has to be communicated on the food label (Grunert, 2011).
In reaction to increasing government regulation and partly due to an increased awareness of the agriculture industry's social and environmental responsibility, there has been movement toward more sustainable practices.
Given the well-recognised health benefits of seafood, understanding the causes of product-related consumption advantages and barriers from a consumer perspective is a critical step to explore 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 communities, and workers' rights (Brecard et al., 2009).
Various factors that can influence fish consumption behaviour have been investigated but evidence is highly variable. Despite a growing number of studies regarding consumers' behaviour towards fish and seafood has been produced recently, this knowledge remains highly fragmented and heterogeneous. 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.
Consumers' perception of quality is increasingly influenced by extrinsic indicators (Caswell, Noelke, and Mojduszka 2002) and new types of certification on both a public and a private basis have increased in the food market (Bellia and Safonte, 2015).
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 heterogeneous. First of all, the words fish and seafood are often used to encompass a variety of products such as wild and farmed fish, finfish, crustaceans and shellfish. 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 buying behaviour without analysing the results of these studies with a wide-ranging methodological approach.

1. EVIDENCE FROM CONSUMER BEHAVIOUR TOWARDS SUSTAINABLE SEAFOOD

Consumer's attitudes, preferences, and perceptions towards sustainable seafood and also consumer's knowledge and information, which determine their decision of purchase, have been highlighted in several studies. This section focuses on the presentation of a qualitative review of studies and provides a synthesis of distinctive features in seafood consumer behaviour.

A systematic review based on common themes from literature was carried out in the present investigation. 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, et al 2008).

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

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. The studies were carried out worldwide, in European countries, in China and Japan.

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 of selected studies are based on multivariate research methods, econometric models and, in some cases, original research designs combining different analytical tools.

1.1. 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 (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. Stable scientific evidences exist regarding consumer preferences towards origin label of agrifood products (Scuderi et al., 2015). In the same way, there is evidence that consumers prefer domestic to imported seafood 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 are issues mentioned in literature because the 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 influences 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 are also similar to 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 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 has 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 are less attractive to Spanish consumers, the utility value of fish imported from developed countries, 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).

1.2. 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 et al (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 et al (2008) study. Consumers only trust a label when it 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 interested 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.

1.3. 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.
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.

1.4. 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.

1.5. 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 2012; 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 et al (2001), in a comparative study carried out in the USA and Norway, performed a price sensitivity analysis. They found that 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.

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.

Jaffry et al. (2001) 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 for a price premium and buy more of hypothetically labelled products. Fifteen years on, drawing on the experience of the fisheries that have already 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 through 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.

CONCLUSION

There are different results regarding consumers' behaviour toward sustainable seafood dimensions. According to results, in recent years, consumers are increasingly interested to all dimensions of sustainability in the seafood sector, empathizing the affirmation of a sustainable-centrism vision. Seafood consumers, overall, are increasingly sensitive to sustainable attributes, that include a wide range of intangible and interconnected characteristics (Brecard et al., 2009). However, there is still confusion on the definition and interconnection of the concept of sustainability.

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 dimension of fisheries and aquaculture.

From industry point of view, labels that are well perceived and understood by consumers are likely to increase the profitability, while labels that are not valued and understood by consumers will incur costs to producers.

Market based initiatives such as sustainable labelling differentiates seafood products in an increasingly worldwide and competitive seafood market. However, nowadays, the benefits of sustainable products are still often poorly communicated to consumers, so they are not able to make informed purchasing decisions. The coexistence of several seafood labels covering similar dimension of sustainability may confuse consumers, especially if they do not use the same standards or come to different countries (Roheim, 2009). The confusion resulting from different standards can affect consumers' trust in labels.

Since the labelling information impact on consumer' choice, improving information could affect consumer behaviour toward sustainable seafood products. In this context, it is important improve consumer awareness on sustainable labels. Furthermore, consumers often have limited awareness and information of production processes and a lack of understanding into the implications of their buying choices on the food supply chain (Verbeke, 2005).

In order to influence consumer behaviour to affect fisheries, consumers must be able to understand the connection between sustainable fisheries and seafood purchase decisions

For some attributes, governments should consider creating voluntary certification schemes across different countries in order to increase consumers' trust and awareness in sustainable seafood labels. In addition, building trust may be result in higher willingness to pay a premium price toward sustainable seafood products.

To the best of our knowledge, most of the research studies has been on the effects of a single label on consumer behaviour and willingness to pay for sustainable seafood products (Chen, Alfnes, & Rickertsen, 2016; Roheim et al., 2012).

In the marketplace, actually, multiple labels are commonly offered at the same time to consumer, which is likely to create complex trade- offs. Interactions between several label types and between labels and other types of information available to consumers are an essential issue for future research.

ACKNOWLEDGEMENTS

This research was conducted within the framework of the research project "Valutazione della sostenibilità dei sistemi agroalimentari locali" WP4, financially supported by the University of Catania and the Department of Fishery of the Regional Sicilian Council. We thank all the stakeholders and workshop participants for their active collaboration.

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