



Exploring consumer preferences for local food: The case of traditional coastal fishmongers in Costa Brava (Catalonia, Spain)

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ABSTRACT

Fishing is an important source of income on the Costa Brava and it is a meaningful historical and social identity marker that represents an extremely valuable tangible and intangible heritage. The aim of this paper is to determine the profile of consumers who purchase fish in traditional fishmongers in municipalities on the Costa Brava (Catalonia). Between March and May 2021, 420 surveys were conducted on customers of traditional fish shops in fourteen towns in the Costa Brava (Catalonia), in the north-eastern area of the Iberian Peninsula. While a significant bulk of research is based on consumers' purchasing intentions, this research uses information on consumers' 'actual purchasing behaviour', generally recommended as a better predictor of behaviour. Moreover, we rely on geographic location of the fishmongers and type of fish purchased, less used variables, to assess purchasing patterns. Drawing on univariate and multivariate analyses, results also show that fish consumers' purchasing profiles depend on age, gender, motivations, and price. Although the characteristics of the dataset are limiting the generalization of the results, this research contributes to expanding the understanding of local foods consumers. Theoretical and practical implications, and opportunities for future research are described in order to improve the marketing of local food production and consumption.

1. Introduction

The disruptive nature of the pandemic has forced many companies and small businesses to close and, according to the National Statistics Institute [1], by September 2020, 17.2% of businesses had collapsed and 11% of self-employed workers were left without employment. The data also shows that Spain's Gross Domestic Product (GDP) fell by 11% in 2020. While in 2021 the GDP grew by 5.0%, the decline registered in 2020 was only partially recovered [1]. This situation has led to a number of government-backed social ventures promoting zero-kilometre food products. A study carried out by the Centre for Agro-Food Economics and Development [51] found that the pandemic has pushed up the consumption of these types of products in Catalonia by 20%. COVID-19, therefore, has also had an impact on food, as it has prompted people to change their usual food consumption patterns and move towards eating healthier, local products.

Furthermore, environmental awareness among citizens is rising, and a growing number of people are trying to reduce single-use plastics and increase their consumption of fresh produce, especially locally grown,

organic food. A survey conducted in 2021 by the United Nations and Oxford University [2], involving 1.2 million people in 50 countries, found that 64% of the population considers climate change to be a global emergency. In addition, a Food and Agriculture Organization of the United Nations report [3] warns about the effects of climate change, and urges citizens to follow a balanced diet based on locally sourced plants and animals that are produced sustainably in order to reduce CO2 emissions and polluting gases. The local economy provides both an opportunity to preserve the environment and ensure sustainability, and to promote local commerce and safeguard jobs threatened by the health crisis. In addition, the trend towards healthy eating and environmental awareness has made consumers question the origin and history of the products they buy and the processes they go through, especially local products linked to local economies.

The increasing importance of local economies and products also put researchers' focus on the consumers, the so-called "locavores", word coined by Jessica Prentice [4] to encompass the consumption of foods from a given place and its 'sense of place', with the aim of identifying the determinants of consumers' attitude towards local foods, and their

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heterogeneity [57]. In this sense [5], found that health consciousness, environmental and local economy concerns, together with the perceived social pressure to purchase local food, were the main motivators of US consumers attitude towards purchasing local food; the study identified various segments of consumers based on their food-related lifestyles characteristics, proving that local food consumers are not homogeneous (see also [55]); i.e., generational issues marked by the presence of baby boomers, Gen X, and Y, education level, ethnicity and the frequency of buying types of local food, were among the variables characterising segments' profiles together with the motivators (see also [6,7]; to name but a few, on the importance of socioeconomic characteristics).

In addition [8], analyse, for example, the 'local food movement' in Australia, making at the same time a comprehensive overview of the literature analysing consumers' motives of purchasing local food and consumers' concerns related to food production systems' safety, health, sustainability, and societal impacts, among others; the authors analyse the main motivations influencing consumers' local food choices, distinguishing between egoistic motivations – whose main drivers are related to 'health consciousness' and food safety – and altruistic motivations – emerging from environmental and sustainability concerns, ethical self-identity, and personal beliefs (p.223); findings show that although egoistic motivations have a stronger impact on the frequency of buying local food, ethical self-identity has also a positive impact (p. 226). Authors like [9] found evidence supporting German consumers' positive attitude towards sustainable aquaculture products (i.e., trout), generally "associated with natural, traditional, local and small-scale production systems with high animal welfare standards" (p.252); moreover, many consumers manifested their special preference for domestic origin fish products (i.e., Germany or Denmark) when making their purchasing decision. In a recent study [10], also found that country of origin was the most important attribute for the Italian consumers of canned tuna fish while sustainable aspects (i.e., eco-labelling, fishing technique, farming method) were less significant.

Last but not least [11], conducted an extensive review of selected research focused on fish and seafood products consumption in developed countries (mostly from Europe, US and Australia, and published in period 2000–2013) with the purpose of identifying (1) the main motives and barriers of consumers' purchasing behaviour, and (2) their preferred attributes of fish and seafood products. The study is particularly important because is highlighting future lines of research to be undertaken for a better understanding of consumers of fish and seafood products: thus, concerning the motivational aspects (1), the authors stress, for example, the necessity of going beyond the analysis of positive attitude towards fish consumption and healthy issues, to also look into fish eating habits and the role of past fish consumption experiences in the formation of fish consumption habits, consumers' lifestyles, identification of weak and strong fish consumer profiles, the impact of information sources and the role of cultural factors, among others (p. 225); with respect to the main barriers (i.e., price, availability, health concerns, etc.), the study recommends a more in-depth analysis of how the price (i.e., research evidence shows that fish is generally perceived as an expensive food alternative) is affecting the consumers' fish purchasing choice in terms of quantity and variety. In relation to the attributes (2), the study highlights the country of origin, production method, packaging, eco-labelling, and product innovation and preserving methods (p. 226), as the main attributes of fish and seafood products preferred by consumers although, except for country of origin and production method, the remaining attributes need further research. Overall, the study points towards consumers preference for fish of domestic origin, wild and fresh, as prevalent attributes found in many of the studies reviewed (p. 226).

On the Costa Brava (Catalonia, Spain), fishing has traditionally been a very important economic and social activity, and was the main source of income for small coastal towns until the arrival of tourism in the early 1960s [12]. Nowadays, the Catalan fishing industry is underpinned by the blue economy, and resources from the maritime environment are the

main source of employment in the region. The White Paper on the fishing industry in Catalonia, published by the Catalan Fishermen's Guild [13], presents a global perspective of the industry and analyses the role of all stakeholders, from fishermen to fishmongers, involved in the fish value system. Another key player within this value system is the end consumer, who is considered to be pro-active; involved in healthy, environmentally sustainable consumption; and aware that a circular, local economy needs to be promoted. Consumers cannot be merely perceived as passive players in this value system; their focus is not only on valuing the physical and economic attributes of the final product, but also the resources used in its production and the processes behind it. Consumers, therefore, are conscious actors who understand their food consumption as something experiential (see, for example [14,15], and related to their principles and lifestyle [16]. Within the value system, therefore, final consumers need to be taken into account as they give meaning to the final outcome. In particular, this study aims to provide recent insights into the role of the consumer in the fish value chain system on the Costa Brava by analysing local fish purchasing patterns, how consumers value fish, and fishmonger customer profiles.

For this purpose, this research analyses variables related to consumers' main demographics (age, gender), purchasing habits – measured, for example, by the frequency of fish consumption – their most preferred species, quantities purchased, price, and reasons for purchasing in fishmongers. The geographical area, including fourteen coastal municipalities, and the focus on the role of traditional fishmongers, as main selling points of local and fresh fish and seafood products, are meant to expand existing research on local foods, with fresh evidence on Catalan coastal "locavores" and their heterogeneity (i.e., based on location and fish types). Moreover, the analysis is based on consumers' 'actual purchasing behaviour' instead of intentions, thus reducing the uncertainty in predicting purchasing habits (see Refs. [17, 18,52]). Furthermore, as the data were collected during the pandemic, the analysis also reflects the impact of the Covid-19 crisis both on local consumers and fishmongers. This adds texture to current conversations about consumer behaviours regarding food purchase decisions (see, for example [19], also in times of crisis such as the one generated by the Covid-19 pandemic (see Refs. [20,21]; etc.). Findings show that fish shellfish consumers' profiles depend on gender and age, that is, on average, women buy and consume more fresh fish than men and fish consumption is increasing with age, the habit being more rooted among older people. Local fish's variety and attributes such as being fresh, tasty, and good for health, are the main drivers of consumption while cost is the main barrier.

The article is structured as follows. Section 2 presents a literature review of research on fish purchasing and consumption behaviours, and related factors. Section 3 outlines how the database was constructed and describes the methodology used. Section 4 presents the results and is structured in three parts. Firstly, the results of a descriptive analysis of the data (univariate analysis) are explained. Secondly, the results of two multivariate analyses are presented. While the first analysis characterises the differences in fish purchasing profiles by Costa Brava municipalities mainly due to behavioural variables, the second analysis shows differences in purchasing profiles by different categories of fish and reasons for purchasing in Costa Brava fishmongers, among others. Finally, Section 5 presents the discussion and Section 6 the conclusions.

2. Fish purchase and consumption

Many of the previous studies on fish purchasing highlight the role played by the socio-demographic features of the individuals surveyed (see for example [5–7,22]); for example, women are generally more aware than men of the importance of health [23,24] and the need for a good diet, and are therefore more likely to consume fish more often than men, as pointed out by Ref. [25] in a case study in Belgium. However, age also has a significant impact on the frequency of seafood consumption, as frequency tends to increase with age in some countries

such as Norway [26,27], Belgium [25], Greece [6], and Spain [28]. Along the same lines, consumers with a higher level of education generally have higher rates of fish consumption [7,29], although exceptions may apply (i.e., in Greece, Arvanitoyannis et al., 2004, found that the heavy wild fish consumers were the older ones, with average income and lower education level). Furthermore, place of residence is also an important factor in explaining preferences for different types of fresh fish and shellfish. This is closely linked to the seasonal supply of local fresh seafood [28].

Regarding consumers' level of income, existing empirical evidence does not offer clear conclusions. Some authors have shown that price is not a major barrier for consumers with a higher level of education, and that this type of consumer has a clear intention to increase their fish consumption [25]. However, other studies [7,22,28,30,31] have identified price as a barrier to higher fish consumption (see also [10,11]; for a comprehensive literature review of various aspects related to fish consumption) [30], conducted a qualitative study on fish consumers in Belgium and Spain, respectively. The study distinguishes between regular consumers of fish (in the case of Spain, 4–5 times a week; and in Belgium, at least once a week) and occasional consumers (in the case of Spain, 1–2 times a week; for Belgium, once a month or less) and highlights the following results (pp.704-707). In general, all consumers are aware of the importance of eating fish for a healthy balanced diet; all species of fish are perceived as being healthy; if the fish is not fresh, it loses its healthy qualities; in general, people who eat fish regularly enjoy cooking; younger people tend to spend less time cooking than those who are older.

Also [30], found that the main reasons for fish consumption, regardless of the country, are that fish is perceived as being extremely healthy and it tastes good. This is also supported by global research conducted by the [32]; whose recent reports argue that fresh fish and seafood, environmentally friendly and sustainably sourced is risen in importance as a purchase motivator, also to protect the oceans and the seas where the food comes from. The main barrier to fish consumption, on the other hand, is that it is perceived as being very expensive (this applies to all species), as industry reports also show (see Ref. [33]). This perception is amplified by the fact that fish is easier to digest than meat, therefore a larger quantity needs to be eaten in order not to feel hungry afterwards. Therefore, satisfying hunger by consuming fish is seen as more costly, as it requires greater expenditure. Consumers in both countries coincided in highlighting the unpleasant smell of cooking fish was a barrier to fish consumption among children. The taste and the presence of bones (in the case of Belgium, in particular) are additional barriers. Spanish consumers, especially those who can cook more elaborate dishes, also point out that the time and the expertise needed to cook fish limits them from eating it more often.

In Spain, a study published by the Ministry of Agriculture, Fisheries and Food [34] analysing the consumption habits of young people aged 20 to 35 who do not eat fish, found that for them, fish is not a priority. The study states that this consumer profile eats simple dishes that are fast to prepare. Of the participants surveyed, 76% said that they would like to eat more fish, the main reasons being the health benefits and taste. The main disadvantages highlighted were the price and the difficulty of preparing and cooking fish. Also [28], analysed the fresh fish consumption patterns of residents and restaurants in Mallorca (specifically, the city of Palma de Mallorca). The results of the quantitative and qualitative study showed fresh fish buyers (generally people over 55 years old, 67% of cases) preferred to buy fish from fish shops in traditional markets (80.9%), and tend to be frequent consumers of fish, with the majority (68%) consuming fresh fish more than once a week. The study also indicated that many consumers were very satisfied with the quality of fish (43.7%) and availability in fish shops (31.9%) (p.1059). The most popular species with the highest levels of consumption are sole, squid and sardines. The study points out that the main barriers to fresh fish consumption are a) price, although consumers are willing to pay more for local species; b) changes in consumption patterns; c) not

knowing how to cook fish; d) lack of time; e) the distance to points of sale and the opening hours; f) the fact that children do not like fish very much, which has a direct impact on the fish-purchasing behaviour of families (p.1059).

In this sense [35], found that the country of origin and the production method (wild vs. farmed) were determinant for the Spanish consumers, who preferred 'fresh wild sea fish' of domestic origin; the purchasing price had a moderate impact, consumers being in favour of a low-moderate price (6–12€/kg) rather than 18€/kg [36]. explored Norwegian and Spanish consumers' attitudes and intention towards consuming a new fish product (i.e., fish burger produced in Norway) and found generational effects in both countries, with the parents, on average, being more positive and motivated to consume the fish burger than their children; cultural differences played a role too, suggesting that new fish products should be adapted to new markets' preferences. Moreover, the study points to the social norms (i.e., family environment), which although less important than attitudes, could play a significant role in inducing younger generations to consume new fish products (see also [52]), for evidence on the pressure from family and moral obligation when buying sustainable seafood) [37]. elicited consumers from Belgium, Norway and Spain on the interest in fish's origin and production method (wild vs. farmed) and found that, for the large majority, it played only a moderate role (the lowest rank in Spain) in the choice of fish, most of the consumers scoring higher the information related to quality, health, safety and fish preparation, among others (p. 541); only a minor segment, the wild fish consumers, manifested a higher degree of awareness about fish's origin.

Along the same lines, a study by Ref. [38]; analysed fish consumption in several European countries (Czech Republic, Germany, Greece, Italy, Portugal, Romania, Sweden and the United Kingdom) in order to identify the main barriers to consumption. The study also confirms the consumers' perception that fresh fish is the healthiest type fish, followed by frozen, canned and ready-made fish meals. Mediterranean countries are renowned for having high proportion of fresh fish in their diet. Consumers in all countries agree that the main barrier to consuming fresh fish is the lack of availability and that it is more expensive than other fish products. Price is perceived as the strongest barrier in Mediterranean countries with high consumption of fish, compared to other countries in the sample (p.518). Other significant barriers to consumption (with an unequal impact in each country) are risk of pollution (Mediterranean countries and Romania, in particular), environmental risks (Mediterranean countries, especially Portugal), poor taste and difficulty assessing the quality of the fish (Greece and Portugal, in particular). The presence of fish bones is not a significant barrier to fish consumption in any of the countries analysed, particularly Mediterranean countries, which have a high consumption of fish.

Overall, most of the mentioned studies highlight positive perceptions and attitudes to fish consumption, together with personal skills in buying and cooking fish, have a positive influence on intentions to purchase and consume it. They also show the need to continue with active information policies focusing on pointing out the nutritional qualities of fish and shellfish, as well as their beneficial effects on health. These efforts should focus on the younger age segment in particular, as this segment often perceives the price of fresh fish and seafood, and the cooking process as a barrier to consumption. Research evidence on the relationship between consumers' fish preferences, socioeconomic characteristics, and country of origin and production method, didn't offer clear-cut results, inviting to further research. Last but not least, many studies rely on consumers attitudes to predict fish purchases instead of using their 'actual purchasing behaviour'. Therefore, we set here to determine fish consumers profiles using information on 'actual behaviour', measured by the frequency of purchasing fish, and moreover, build the consumers' profiles based on the geographical location of the fishmongers and the type of fish purchased, among others, variables less used in previous research.

3. Materials and methods

The main objective of this research is to determine the profile of individuals who choose to buy fresh fish and shellfish in traditional fishmongers in municipalities on the Costa Brava (Catalonia), a well-known touristic brand in the Mediterranean area. The sample was selected from a target population aged eighteen and over who shop in this type of establishment. A random cluster sample was used (see Refs. [39,40], i.e. the study population, from a given geographical area, was divided into clusters and the population studied according to these groups. In spite of some limitations, i.e. biased sampling, sampling errors [39,41], the method ensures a higher variability of the results, often desirable, as stated by Ref. [41]; it is feasible for large populations, widely spread geographically, and is less costly [42]. In this case, the clusters were made up of fishmongers in the fourteen localities used in the study. A survey was used as a methodological tool to obtain the data. Data were gathered between the months of March and May 2021 on weekdays in order to avoid possible changes in data related to weekend shopping. The clusters are made up of fourteen towns in the counties of Alt Empordà, Baix Empordà and La Selva. The municipalities analysed (see Fig. 1) are El Port de la Selva, Figueres, L'Escala, Llançà, Roses, La Bisbal d'Empordà, Palafrugell, Palamós, Sant Feliu de Guíxols, Torroella de Montgrí, Blanes, Lloret de Mar, Santa Coloma de Farners and Tossa de Mar. Most of these are fishing towns and were selected according to the geographical area delimiting local produce. Also, the capitals of the counties of Alt Empordà (Figueres), Baix Empordà (La Bisbal

d'Empordà) and La Selva (Santa Coloma de Farners) are selected as economic and social centers of the region. Moreover, traditional fishmongers are characterised by the fact that they mainly sell fresh, local fish, unlike other food shops.

Therefore, the traditional fishmongers in these towns were considered ideal to conduct the survey and obtain realistic objective data on the purchase of fresh, local fish by residents who eat it as part of their regular diet. Data were mainly gathered from fish shops in municipal markets. In the case of towns where there was no municipal market, the data were collected from fishmongers located in the town, excluding those located around wholesale fish markets, such as Palamós fish market. Each data collection included a total of 30 observations, i.e. 30 buyers were interviewed in person, using a structured questionnaire, in each of the above-mentioned towns. Therefore, the database is made up of a total of 420 observations (each observation corresponds to one buyer), which is above the 384 observations required based on the population of the Costa Brava, having a 95% level of confidence and a 5% sampling error. The town of Cadaqués was initially considered a site for analysis but was finally excluded as the only fish shops in the town are located inside supermarket chains, and there is no municipal market. Appendix A shows the questionnaire used to gather the data. At each data collection point, participants were selected randomly, and the people who came out of the fish shop were invited to participate. For each town, the sample was obtained by visiting all the fishmongers open at the time of data collection. Data were gathered, therefore, from fishmongers inside the municipal markets of Roses, Palafrugell,



Fig. 1. Map of the Costa Brava, north-eastern Catalonia, north-eastern Spain (source [43]):

Palamós, Blanes, Lloret de Mar and Sant Feliu de Guíxols. In other municipalities with no municipal markets, the data were gathered at traditional fishmongers.

The questionnaire for the survey of buyers at local fishmongers consisted of eight questions. The questions compiled demographic data and identified buying patterns at fishmongers in the three counties. The first five questions in the survey enabled us to identify the profile of the buyer, the reason or motivation for buying from a traditional shop, the frequency of purchase, and whether this has changed since the pandemic began. In addition, in order to gather information on the contents of the shopping, we asked about the types of fish purchased, the quantity of each type of fish (in grams or units) and the total cost. Therefore, in this study are analysed both categorical variables (gender, age, frequency of purchase, variation in consumption, reason for purchase and varieties of purchase) and quantitative variables (overall cost of the purchase and quantities purchased of each type of species). Finally, two additional types of categorical questions were asked in order to find out preferences and preparation habits. First, the buyer was asked whether he or she cooked for children or adolescents and, if so, whether the fish was to their taste, how it was cooked, and what type of fish was most popular with this group. Second, the buyer was asked how they would cook the fish they had bought, the recipes they would use and ways of eating it. The survey was designed, implemented, and executed using ArcGIS Survey 123 [44].

In addition to the descriptive analysis, a multivariate analysis was also conducted. To systematize the analysis in section 4.2.1, and follow a logical pattern, the different fish species were grouped into the following categories: cephalopods (squid, cuttlefish, and, European flying squid, among others), shellfish (langoustines, white and Palamós prawns, mussels and shellfish), oily fish (sardines, salmon, tuna, horse mackerel, anchovies and mackerel), white fish (rockfish, red scorpion fish, monkfish, hake, whiting, spotted flounder, greater forkbeard, megrim, sole and scorpion fish), semi-oily fish (sea bass, sea bream, mullet and brill) and a final category labelled 'others'. The study has not taken into account the data of the one respondent who purchased sea urchins, as it is not representative, and is measured in units rather than grams.

Also, CHAID (Chi-square Automatic Interaction Detection) methodology was used to carry out the analysis in section 4.2.2. This methodology is commonly used to classify objects/individuals into homogeneous groups, taking into account the differences that these objects/individuals present in relation to a given behaviour (in our case, the purchase of each category of fish). The methodology is applied following a sequential process: from the total population, groupings are formed according to whether significant differences in behaviour are detected, taking into account the individuals' different characteristics. The chi-square test is the criterion used to detect these differences (the same type of test used in the previous section to identify significant differences in bivariate analysis). The division process (grouping) ends when the differences within each group cease to be significant and, therefore, it is no longer possible to identify any attribute that differentiates the behaviour of the individuals that form part of the same group.

4. Results

This section presents the aggregated results of the study for the whole sample. The data obtained from the 420 respondents are analysed in two blocks: first, an analysis of the main descriptive statistics and then two multivariate analyses were carried out to classify differences in purchase profiles at municipal level and by type of fish. However, it is important to be aware of the limitations of generalising the results of this analysis, given that the criteria used to establish the number and selection of respondents do not guarantee that the sample included in the study is representative of the entire population surveyed. In any case, the analyses show some evidence which provides an initial overview which can be further explored, enriched and expanded upon in future studies.

4.1. The main descriptive statistics of the database

Firstly, buyers' socio-demographic data were analysed, i.e. those that can be used to classify the characteristics of fish buyers in traditional fishmongers in the counties of Alt Empordà, Baix Empordà and La Selva.

Tables 1 and 2 show the gender and age range of traditional fishmonger customers. Approximately three quarters (307) of the sample are women, a trend which is observed in other studies too (i.e., Honkanen and Young, 2014; [37], and the remainder (113) men. Considering the different age groups, there are also significant differences between groups in the different municipalities. Almost half the customers interviewed in traditional fishmongers were over 65 years of age, (46.67%), whereas the number of customers under 35 years of age was notably low (2.62%). The demographic data shows, therefore, that the group of people who buy the most fresh, local fish and seafood in traditional fishmongers are women, the over 65 age range.

Following this, the contents of the shopping baskets of the 420 people surveyed were analysed to determine what species of fish and shellfish was purchased and consumed most in these three counties, the average quantity of fish and shellfish purchased, and the average expenditure.

Table 3 shows that the 420 people surveyed bought a total of 52 different varieties of fish and seafood. The type of fresh fish most purchased and, therefore, most consumed by the customers interviewed was hake, which was bought by 70 people, i.e. 9.47% of the total sample surveyed. This was followed by mussels, cuttlefish and sardines, with purchase percentages of 8.12%, 7.44% and 7.04% respectively. Table 3 shows the quantity of fish purchased and the percentage of the total amount of fish purchased by customers in traditional fishmongers on the Costa Brava. In this respect, it should be noted that while salmon and cod are included in the category of others, they are not local fish but imported from other seas.

During the surveys, the weight of the purchase was recorded in grams, except in the case of sea urchins, where the number of units purchased was recorded. The 420 people in the sample purchased a total of 461.24 kg of fish and seafood, so each customer in the fishmongers surveyed purchased an average of 1.098 kg.

Finally, if we analyse the total value of the shopping basket, we can say that the 420 customers surveyed in the fourteen selected shops spent a total of €7743.85 that is, each customer spent €18.44 on average. This has a median and mode value of €15.

A closer look at the analysis of customers' shopping baskets shows that 65.5% of customers bought at least one type of fish, while only 34.5% of customers included some type of shellfish (crustaceans or molluscs). Therefore, it can be affirmed that the shopping baskets of the 420 people surveyed mainly contained fish.

As regards purchasing frequency, Table 4 below shows that almost half of the sample surveyed (48.33%) buy fish and seafood at the traditional fishmonger's more than once a week, and just under 43% buy fish and shellfish once a week. On the other hand, only 8.33% said that they do so once every two weeks, and 0.48% buy seafood occasionally. Therefore, it is clear that almost the entire sample surveyed, 383 of the 420 people surveyed (91.19%), buy fresh and local fish and seafood on a weekly basis, thus corroborating the usual profile of the loyal fresh fish buyer identified in other studies.

Regarding the variation in the frequency of purchases in traditional

Table 1
Gender of customers in Costa Brava fishmongers.

Gender	%
Female	73.10%
Male	26.90%
Total	100.00%

Source: own.

Table 2
Age range of customers in Costa Brava fishmongers.

Age	%
from 18 to 35 years old	2.62%
from 36 to 50 years old	16.43%
from 51 to 65 years old	34.29%
over 65 years old	46.67%
Total	100.00%

Source: own.

Table 3
Species in customers' shopping basket at Costa Brava fishmongers.

Species	%
Hake	9.47%
Mussels	8.12%
Cuttlefish	7.44%
Sardines	7.04%
Monkfish	5.28%
Squid	5.14%
Anchovy	4.74%
Dock	4.19%
Pink shrimp	4.06%
Mackerel	4.06%
Others (N = 42)	36.81%
Total	100.00%

Source: own.

Table 4
Frequency of purchases in Costa Brava fishmongers.

Frequency	%
more than once a week	48.33%
once a week	42.86%
once every two weeks	8.33%
once a month	0.48%
Total	100.00%

Source: own.

fishmongers due to the pandemic, around 9 out of 10 respondents stated that their purchases of fresh fish and seafood had not been affected by the COVID-19 pandemic. However, 9.8% (see also Table 8) of the respondents admitted that the frequency of shopping in these particular establishments has decreased. Reasons given by some consumers were that they buy less because they do not go out shopping as often; the coronavirus crisis has affected having family meals together, with one shopper saying “now I buy less fish because since COVID, my son no longer comes to eat at home”; or because they look more closely at prices, “I wish I could buy fresh fish every day, but I cannot because of the price” commented one respondent, while another said “you can find good, cheap fish to buy, but people don't know how to”. The main reasons or incentives for shopping in traditional fishmongers and not in other types of establishments, such as supermarkets or other large supermarkets, they are related to freshness for most respondents, with comments such as “fresh fish is unparalleled. The fish I just bought has just come from there”, said one customer, while pointing towards the sea. The other main motivation is the quality of the product, “the fish is high quality here”. Others pointed to the difference in taste “I like the taste, I don't like supermarket fish” said one consumer, while another said “I don't like supermarket fish, when you smell it ... I don't even like the smell”. Another factor is trust, both in the fish shops and the fishmongers themselves, and the way they can prepare the fish to suit the buyer. Respondents used phrases such as “I like the service, the attention, the treatment, how they attend me when I come”, “we have mutual loyalty, mutual trust. I always come here”, and “they are like family to me, I trust them and in the product a lot”.

As shown in Table 5, 36.19% of those surveyed stressed that the main reason for shopping in a traditional fishmonger's is, as mentioned above, the freshness of the fish and other seafood on offer, followed by its quality, an aspect highlighted by almost 25% of the sample. This was followed by 15% of respondents who pointed out the taste of the products as a major added value. Trust in the competence of both fishermen and fishmongers was mentioned by 14%, and 6.43% of respondents highlighted the fact the product was local was the main reason for buying it.

Therefore, it is clear that most of the answers given by customers to this question are closely related to the fact that fresh, local fish and other seafood is marketed for its quality, taste and confidence in the industry's workers and their fishing techniques.

However, a smaller percentage of respondents stated that they shop in these establishments because of the diversity of products that can be found and because fish is a healthy product that is very much a part of the Mediterranean diet [45]. Only one of the 420 customers selected as a research sample stated that the main reason was the desire to help fishermen (“I don't want the traditional shops, the fishmongers, the fishermen ... to be lost”), a sector that has also been very badly affected by the lockdown measures, especially during the first wave of the COVID-19 pandemic.

Regarding fish consumption by children and adolescents, 42.14% of those surveyed do not cook for under 18s; however, 57.86% do, but principally babies (81.89%) over teenagers (18.11%). Table 6 shows the response to the question by those who cook for under 18s, asking if this segment of the population likes to eat fish or not, and over half of them do like it. Only 15.23% do not like it, and slightly under a third say it depends on the type of fish and the way it is cooked.

Children and teenagers mainly prefer fish and are motivated to eat it if there are no bones, or the fish have bones that are easily removed, such as hake or boneless monkfish fillets. However, 54.32% stated that they eat any type of fish at home and children (42.39%) and teenagers (11.93%) like it.

Among the most frequently mentioned fish to cook are hake, monkfish, salmon, whitebait, sole, anchovies, blue whiting, greater forkbeard, sardines and gilthead bream. Buyers point out that it is important for children to eat fish from an early age, as then “they like any type of fish, they eat them all, they have to get used to it from an early age” and “they eat fish well from an early age, we are a family of fishermen and we have always eaten fish at home”. In addition, those who like fish, also have no preference for how it is cooked and eat it cooked in different ways, “they do like good fish. This is the trick: good, fresh fish. It's that easy”, said one buyer.

At the same, 30.45% of the respondents said that children or adolescents may like it or not, depending on the dish or the type of fish. For example, “they only eat it if it's coated in breadcrumbs and fried” or “they only like it fried, well-fried the way I do it for them”. Fried in breadcrumbs, pan fried or grilled are the most common methods. However, others also claim that they go through phases, “sometimes they only like it one way, sometimes another way ...”. Some of the respondents also cook the fish for them on the barbecue, in a casserole, or

Table 5
Motivations for shopping in traditional fishmongers.

Motivations	%
Freshness	36.19%
Quality	24.52%
Taste	15.00%
Trust	14.05%
Proximity (local)	6.43%
Healthy	2.62%
Variety	0.95%
Help fishermen	0.24%
Total	100.00%

Source: own.

Table 6
Do children and teenagers like fish?

Segment	Yes
Children	42.39%
Teenagers	11.93%
Total	54.32%

Source: own.

oven baked with potatoes, and for the youngest children they boil it.

Respondents who reported that the children or adolescents they cook for do not like fish (15.23%), commented that it is difficult to include fish in their daily meals. Some refuse to even try it, and others, despite having tried it, do not want it again. Some of the buyers stated that “they like meat better than fish, so we try to vary it ...” and “if it makes a ball, they don’t like it at all ...”.

Finally, the survey asked the buyers if they could indicate a recipe they intended use to cook the fish they had bought. Thus, in terms of culinary uses, the most popular cooking methods are oven baking, frying or grilling. Fish with pasta is also very common (spaghetti with cuttlefish) or legumes (chickpeas with sardines), steamed mussels and different rice dishes (with European flying squid, cuttlefish, prawns or langoustines). This would also depend on the day of the week the product is purchased.

Among some of the more elaborate recipes are calamari confit (calamari cooked in oil at a low temperature); fried megrim with garlic vinaigrette and anchovy mayonnaise; and baked hake with baby leeks and boiled artichokes. Vegetable side dishes include spinach, chard, cabbage or grated carrot. Greater forkbeard can be used in a variety of recipes such as fish croquettes or omelette, or simply grilled, boiled or fried. The respondents clearly enjoy being able to cook and eat fresh fish bought from traditional fishmongers, and as one of them said, “it is a privilege to be able to shop here”.

4.2. The multivariate analysis

4.2.1. Purchase profiles by town

The methodological approach in this section enabled differences in purchasing patterns to be assessed at municipality level. To identify the statistical significance of the differences, the chi-square analysis of equality of distributions was used. Table 7 shows the percentage of respondents by municipality who bought each category of fish. In the

Table 7
Percentage of buyers by type of fish in the municipalities of the Costa Brava.

Municipality	Others	Cefalopods	Shellfish	Oily Fish	White Fish	Semi-Oily Fish	Observ.
Blanes	26,7%	13,3%	10,0%	33,3%	46,7%	6,7%	30
Figueres	6,7%	26,7%	30,0%	56,7%	50,0%	13,3%	30
L'Escala	6,7%	26,7%	16,7%	30,0%	56,7%	23,3%	30
La Bisbal de l'Emp.	6,7%	50,0%	33,3%	40,0%	56,7%	6,7%	30
Llançà	33,3%	30,0%	33,3%	36,7%	36,7%	10,0%	30
Lloret de Mar	13,3%	3,3%	6,7%	43,3%	40,0%	16,7%	30
Palafrugell	10,0%	26,7%	30,0%	43,3%	40,0%	10,0%	30
Palamós	23,3%	30,0%	36,7%	36,7%	36,7%	23,3%	30
Port de la Selva	20,0%	20,0%	33,3%	13,3%	46,7%	20,0%	30
Roses	30,0%	10,0%	20,0%	30,0%	23,3%	30,0%	30
Sant Feliu de G.	37,9%	17,2%	17,2%	34,5%	20,7%	24,1%	29
Santa Coloma de F.	10,0%	26,7%	13,3%	30,0%	56,7%	16,7%	30
Torroella de M.	23,3%	20,0%	30,0%	26,7%	46,7%	16,7%	30
Tossa de Mar	20,0%	26,7%	13,3%	40,0%	23,3%	10,0%	30
Total	19,1%	23,4%	23,2%	35,3%	41,5%	16,2%	419
Chi-quadrat	27,61	26,64	22,89	16,80	24,37	14,86	
Degrees of Freedom	13	13	13	13	13	13	
Observations	419	419	419	419	419	419	
Sig. Asimptotic	0,01 ^(a)	0,01 ^(a)	0,04 ^(a)	0,21	0,03 ^(a)	0,32	

^a with a minimum confidence level of 95%, the hypothesis that the percentage of buyers of this type of fish is the same in all municipalities is rejected. Source: own.

categories Others, Cephalopods, Shellfish and White Fish, there are statistically significant differences in the percentage of respondents who buy this type of fish. However, these differences are not statistically significant in the categories Oily Fish and Semi-Oily Fish. In Blanes, Llançà or Sant Feliu de Guíxols, the percentage of buyers who purchase other types of fish is significantly higher than in the rest of the towns, while in Figueres, L'Escala or La Bisbal de l'Empordà, this percentage is significantly lower.

La Bisbal del Empordà has a high percentage of cephalopod buyers, while Lloret de Mar, Roses and Blanes have a low percentage. With regard to shellfish, the percentage of buyers who purchase this type of product is significantly lower in the towns of Lloret de Mar, Blanes and Tossa de Mar than the average percentage for all municipalities. On the other hand, Palamós, La Bisbal del Empordà, Llançà and Port de la Selva have a significantly high percentage of shellfish buyers. In the case of White Fish, L'Escala, La Bisbal del Empordà, Santa Coloma de Farners and Figueres stand out for having a significantly high percentage of buyers, whereas Sant Feliu de Guíxols, Tossa de Mar and Roses have a significantly low number.

Variables on the characteristics, behaviour and motivation of buyers have also been linked at a municipal level in order to identify statistically significant differences. The results are shown in Tables 8 and 9. It should be noted that differences at the municipal level with regard to buyers' age and gender are not statistically significant. However, these differences are significant with regard to the aspects of behaviour and motivation analysed. Regarding behaviour patterns, frequency of purchase is noteworthy in Blanes, Lloret de Mar and Santa Coloma de Farners, where it is significantly high. In contrast, frequency of purchase is significantly low in Palamós, Port de la Selva and Roses.

A second aspect of behaviour studied was the variety of fish purchased (number of different types of fish). In Lloret de Mar and Palafrugell, the variety of fish purchased was significantly lower, and in La Bisbal del Empordà and Palamós, significantly higher. A third aspect analysed, with significant results, is the differences at municipality level in terms of how fish purchasing, and consumption patterns have changed, due to Covid-19 pandemic (Table 8). In this case, although, overall, 90.2% of the shoppers stated that the pandemic didn't affect significantly their purchasing habits, a disclosure by age (below 50 years of age and between 50 and 65 years) shows some significant differences: on average, the shoppers below 50 years of age were significantly more affected by the pandemic (7.4%), compared to the older ones (from 50 to 65 years of age), with some municipalities, like Palamós and Palafrugell,

Table 8
Buyer characteristics and purchase behaviour in municipalities in the Costa Brava.

Municipality	Age			Frequency			Change in consumption due to Covid-19		
	Under 50 years	from 50 to 65 years	Over 65 years	More than once a week	Once a week	Less than once a week	No	Under 50 years	from 50 to 65 years
Blanes	6,7%	20,0%	73,3%	70,0%	23,3%	6,7%	90,0%	3,3%	6,7%
Figueres	10,0%	30,0%	60,0%	33,3%	50,0%	16,7%	90,0%	10,0%	0,0%
L'Escala	26,7%	26,7%	46,7%	40,0%	46,7%	13,3%	93,3%	6,7%	0,0%
La Bisbal de l'Emp.	10,0%	46,7%	43,3%	46,7%	43,3%	10,0%	96,7%	3,3%	0,0%
Llançà	20,0%	40,0%	40,0%	33,3%	56,7%	10,0%	100,0%	0,0%	0,0%
Lloret de Mar	16,7%	26,7%	56,7%	73,3%	20,0%	6,7%	90,0%	6,7%	3,3%
Palafugell	33,3%	40,0%	26,7%	60,0%	33,3%	6,7%	86,7%	13,3%	0,0%
Palamós	20,0%	33,3%	46,7%	30,0%	53,3%	16,7%	80,0%	20,0%	0,0%
Port de la Selva	30,0%	40,0%	30,0%	30,0%	63,3%	6,7%	90,0%	10,0%	0,0%
Roses	20,0%	30,0%	50,0%	30,0%	60,0%	10,0%	93,3%	6,7%	0,0%
Sant Feliu de G.	13,8%	37,9%	48,3%	58,6%	37,9%	3,4%	89,7%	3,4%	6,9%
Santa Coloma de F.	13,3%	40,0%	46,7%	63,3%	33,3%	3,3%	90,0%	0,0%	10,0%
Torroella de M.	26,7%	46,7%	26,7%	66,7%	26,7%	6,7%	93,3%	6,7%	0,0%
Tossa de Mar	16,7%	23,3%	60,0%	43,3%	53,3%	3,3%	80,0%	13,3%	6,7%
Total	18,9%	34,4%	46,8%	48,4%	43,0%	8,6%	90,2%	7,4%	2,4%
Chi-quadrat		36,14			48,25			38,53	
Degrees of Freedom		26			26			26	
Observations		419			419			419	
Sig. Asimptotic		0,09			0,01 (*)			0,05 (*)	

^a with a minimum confidence level of 95%, the hypothesis that the percentage of buyers of this type of fish is the same in all municipalities is rejected.

Source: own.

Table 9
Buyer characteristics, shopping variety, and reasons for buying in municipalities in the Costa Brava.

Municipality	Gender		Shopping variety			Reasons for Buying			
	Woman	Man	One type of fish	Two types of fish	More than two types of fish	Proximity (local) and helps fishermen	Variety, quality and taste	Fresh	Healthy and trustworthy
Blanes	66,67%	33,33%	53,3%	36,7%	10,0%	16,7%	43,3%	36,7%	3,3%
Figueres	73,33%	26,67%	40,0%	36,7%	23,3%	0,0%	50,0%	33,3%	16,7%
L'Escala	73,33%	26,67%	50,0%	23,3%	26,7%	13,3%	23,3%	33,3%	30,0%
La Bisbal de l'Emp.	73,33%	26,67%	36,7%	33,3%	30,0%	6,7%	36,7%	36,7%	20,0%
Llançà	66,67%	33,33%	43,3%	30,0%	26,7%	3,3%	46,7%	43,3%	6,7%
Lloret de Mar	73,33%	26,67%	66,7%	30,0%	3,3%	6,7%	40,0%	33,3%	20,0%
Palafugell	70,00%	30,00%	56,7%	13,3%	30,0%	10,0%	23,3%	50,0%	16,7%
Palamós	86,67%	13,33%	36,7%	26,7%	36,7%	10,0%	50,0%	30,0%	10,0%
Port de la Selva	66,67%	33,33%	53,3%	40,0%	6,7%	0,0%	30,0%	56,7%	13,3%
Roses	76,67%	23,33%	50,0%	46,7%	3,3%	0,0%	23,3%	66,7%	10,0%
Sant Feliu de G.	65,52%	34,48%	41,4%	44,8%	13,8%	10,3%	44,8%	27,6%	17,2%
Santa Coloma de F.	76,67%	23,33%	40,0%	56,7%	3,3%	6,7%	60,0%	10,0%	23,3%
Torroella de M.	76,67%	23,33%	43,3%	43,3%	13,3%	6,7%	36,7%	33,3%	23,3%
Tossa de Mar	76,67%	23,33%	53,3%	36,7%	10,0%	3,3%	56,7%	16,7%	23,3%
Total	73,03%	26,97%	47,5%	35,6%	16,9%	6,7%	40,3%	36,3%	16,7%
Chi-quadrat	6,46			49,89			65,19		
Degrees of Freedom	13			26			39		
Observations	419			419			419		
Sig. Asimptotic	0,93			,00 (*)			0,01 (*)		

^a with a minimum confidence level of 95%, the hypothesis that the percentage of buyers of this type of fish is the same in all municipalities is rejected.

Source: own.

for example, exhibiting a higher percentage of shoppers who stated that they had changed their habits and were buying significantly less fish; as for the older shoppers (50–65 years of age), less affected by the pandemic (2.4% in total), few municipalities like, for example, Santa Coloma de Farners and Sant Feliu de Guíxols, had a significantly higher percentage of buyers who reported that they had changed their habits and were consuming less fish.

The last focus of analysis was differences in reasons for purchasing fish between municipalities (see Table 9). A significant percentage of buyers in the municipalities Blanes, L'Escala and Sant Feliu de Guíxols reported that they were buying for reasons of proximity and to help the local economy (see also [5]). For a high percentage of buyers in Santa Coloma de Farners, Tossa de Mar, Figueres and Palamós, variety, quality

and taste were reasons given for buying fresh seafood. The fact the product was fresh was significant for buyers in Llançà, Palafugell, Roses and Port de la Selva. Finally, a significantly high percentage of buyers highlight fish being good for the health and from a trusted source as a reason for purchasing in L'Escala.

4.2.2. Purchase profiles by type of fish

This section analyses whether differences in purchasing profiles can be identified for each category of fish. This analysis helps clarify how the fish market is segmented in Costa Brava municipalities.

4.2.2.1. Buyer profile: "Other" category. We can identify three types of buyer profiles in the case of the category "other". A significantly low

percentage of buyers buy only one fish variety. The percentage of buyers who buy more than one variety of fish is significantly high in the municipalities Torroella de Montgrí, Llançà, Port de la Selva, Blanes, Palamós, Roses, Lloret de Mar and Sant Feliu de Guíxols. In contrast, this percentage is significantly low in Figueres, La Bisbal del Empordà, Santa Coloma de Farners, L'Escala, Tossa de Mar and Palafrugell.

Therefore, the profile of the buyer most interested in fish category labelled "other" is a buyer who buys a variety of fish and who shops in Torroella de Montgrí, Llançà, Port de la Selva, Blanes, Palamós, Roses, Lloret de Mar and Sant Feliu de Guíxols.

4.2.2.2. Buyer profile: Cephalopod category. In the cephalopod category, we can differentiate between two profile types, depending on age. The profile of the buyer most interested in this category of fish is between 50 and 65 years of age, compared to buyers aged under 50 or over 65, who are significantly less interested.

4.2.2.3. Buyer profile: shellfish category. Shellfish buyers can be categorised into three different profiles. On one hand, the buyer profile that purchases shellfish most is also the least frequent buyer. However, within the most frequent buyer profile, younger buyers (up to 65 years of age) show a significantly stronger preference for this type of fish.

4.2.2.4. Buyer profile: oily fish category. In the case of oily fish, the profile of those who buy oily fish the most is a buyer who buys only one variety of fish, whereas the profile of a buyer who buys a variety of fish is significantly less likely to buy oily fish.

4.2.2.5. Buyer profile: white fish category. In the case of the White Fish category, no differences in the buyer profile were identified. However, when taking the town into account, differences were found in the average quantity of fish purchased. This is mentioned in the section on bivariate analysis. The average amount of white fish purchased per buyer is significantly higher in La Bisbal del Empordà, Torroella de Montgrí, Blanes, Palamós, Puerto de la Selva, Santa Coloma de Farners, Figueres and Palafrugell. In contrast, the quantity is significantly lower in Lloret de Mar, Tossa de Mar, Llançà and Sant Feliu de Guíxols.

4.2.2.6. Buyer profile: semi-oily fish category. The only aspect that stands out in the case of the purchase profile of Semi-Oily Fish is that it is more commonly purchased by the buyer profile "man", and less commonly by the buyer profile "woman".

5. Discussion

The growing interest in healthy, responsible, and sustainable consumption means that consumers need to play an active role in value creation processes. Ultimately, it is the consumer who appreciates the outcome of value creation processes, and show their willingness to participate through their purchasing decisions in the food value chain. Greater social awareness of sustainable consumption which promotes local commerce and fosters respect for the environment requires involvement from local consumers, "locavores" [4] who engage with a local food consumption and contribute to the protection and promotion of the sense of place (see Ref. [46,56], specific attached to fish (see Ref. [47,48]). In this sense, it is essential to have knowledge of the consumers and to understand how their actions are channeled into creating value from the sea to the table. 'Fish' is a defining characteristic of the Costa Brava identity, as well as being linked to a product that is considered to be beneficial for health, as research evidence indicated [30]. The aim of this study was to examine the role of local fish purchases in the municipalities of the Costa Brava and to identify the profile of the consumers and the purchasing behaviour that characterise this type of local shopping.

Thus, while previous studies have analysed consumers' attitudes to

predict food purchasing habits (see Refs. [17,18,52], this paper has provided a study of the consumers' 'actual purchasing behaviour', which allowed the researchers to understand the real behaviour in a particular moment and location, and whose results reduce the uncertainty embedded in the prediction of food purchasing habits. The results of the study reveal that the female population and those over 65 years of age frequent traditional fishmongers the most, and mostly opt for fresh, local fish and shellfish. This is in line with previous studies which have highlighted that women attach greater importance to eating healthily [23] and that frequency of fish and shellfish consumption increases with age [25–27]. Further studies should examine if people only shop in traditional fishmongers or if they also shop in other establishments, depending on the type of fish they buy. Conversely, younger people, particularly those under 35 years of age, do not tend to frequent traditional fish shops. From this it can be deduced that they are more likely to consume more canned and frozen fish, and buy products in large supermarkets, where they tend to be cheaper and have longer opening hours [30]. point out that young people spend less time cooking than older people. Previous studies also highlight that although young people are aware that they should eat more fish, they fail to because of the difficulty of preparing and cooking it and the price [34]. This is one of the most significant barriers to purchasing fresh fish in Mediterranean countries [38]. According to Ref. [36]; consumers' attitudes and intention towards consuming a new fish product also depend on age and cultural differences. Further studies should examine whether the reasons behind this are only linked to economic value, or whether it is also linked to unfamiliarity with the product and consumption habits. Also, fish consumption at restaurants is an avenue for future research (see Refs. [48,49]) which should provide a more robust understanding of the position of consumers in the fish value chain and their contribution to the protection and promotion of the locale.

In addition, the survey respondents were frequent shoppers who went to the fishmonger's at least once a week (see also [28]). The main reason they gave for buying fish and seafood in a traditional fishmonger's was the quality, freshness and taste, as well as the fact that it was local and they trusted the fishmonger's professionalism, particularly how they were able to prepare the fish to their specific wishes. This is also in line with previous studies which state that taste is one of the main reasons for fresh fish consumption [30]. Another reason is that fish is considered to be good for the health [38] and the higher food safety of local food [8]. In this sense, further research could also include in-depth interviews with frequent shoppers in order to understand their reasons to incorporate fish as part of their daily eating habits and the challenges they observe in the fish value chain based on the influence of their past fish consumption experiences on their present fish eating habits, which is also demonstrated in previous research [11].

With regard to fresh fish preferences, the study by Ref. [28] points out that hake is the most popular species in Mediterranean countries, followed by squid and sardines. Our study confirms hake as the first preference, while squid ranks sixth and sardines fourth, respectively. It is also worth noting that the vast majority of respondents stated that their consumption of fresh fish and consumption of seafood had not decreased because of the COVID-19 pandemic. However, an analysis of the evolution of the consumption of different fish products in Catalonia shows a significant increase in the consumption of canned fish over the past few years, particularly during the lockdown, which is consistent with the information from Ref. [33]; that affirms that Spanish consumers have increased fish consumption after the Covid-19 pandemic in 2020.

6. Conclusions

From this research, and the profile of consumer identified, it is derived that it is essential to inform the general public, especially young people, and raise awareness of the importance of consuming local products and knowing how to identify the local products. In this context, the advanced age of current buyers means that further studies need to be

conducted to analyse whether future generations are also likely to buy fish in traditional fishmongers. “Locavores” are not homogenous (see [55]), and generational differences are observed in relation to segments’ profiles, which require specific marketing strategies in relation to each generation. Apart from introducing labelling showing that products are local, there are other campaigns such as “Xarxa Brava” (Brava Network) and “La Mar de Bé” (a Catalan expression which combines the words ‘Sea’ and ‘Good’ to show happiness) campaigns, and local initiatives such as the Espai del Peix, a fish interpretation centre, the Palamós Peix (Palamós Fish) project, and gastronomic classrooms, which are a growing trend on the Costa Brava as avenues to show the stages of the fish value chain. Other projects are ‘Empordà, Land of Fishing’, promoted by the Alt and Baix Empordà County Councils and “Localitza”, which was started by La Selva County Council to promote local products. Aware of the impact that the media and social networks have on the general public, we must continue to promote the consumption of fresh fish and other seafood from fishmongers and fish markets, and spotlight the extensive fishing heritage of the Costa Brava, both in terms of the landscape and the trade and history of the fishing industry (see, also, [50]).

The limited sample used in this study means that the generalization of the results should be taken with care, as they may not be representative of the entire population of the Costa Brava. However, the results do offer a first comprehensive overview that can serve as a basis for future research. In this regard, the study could be expanded to other coastal areas of Catalonia and other coastal regions of Spain, or the number of surveys carried out could be augmented in order to obtain a larger, and therefore, more representative sample. In this sense, results are also representative from the perspective of a consumer behaviour during the weekdays, which may have influenced the consumer preferences and the profile, for example, in relation to age. As a matter of fact, weekdays were selected to avoid possible changes in data related to weekend consumption, as indicated in the methodology, and also to embrace the consumers that have fish incorporated as part of their daily food purchasing and eating consumption habits. Future studies must also analyse the weekend consumption of fresh fish to observe if changes in the consumers behavior are materialised or not, for example a younger profile of consumers, and to understand from a broader perspective the consumer preferences for local food (see Ref. [35]) in traditional coastal fishmongers.

From a theoretical perspective, this research contributes to expand the understanding of consumers’ purchasing habits based on ‘actual purchasing behaviour’, which is a more adequate tool to anticipate future consumption behaviour (see Refs. [17,18]). In addition, this research has also contributed to the analysis of the profile of consumers of fresh fish in a specific geographic location, Costa Brava, which complements and supplements existing research on Catalan coastal “locavores” who buy at traditional fishmongers. The motives for buying from traditional fishmongers, together with the variety of fish and seafood composing the daily shopping basket, completed the profile of the consumers, offering fresh insights into their preferences for fresh food and its main drivers. Moreover, while substantial research on the pandemic and its impact on purchasing habits has shown that it has stimulated, for example, the online shopping for many products, in case of local foods such as fresh fish and seafood, findings seem to indicate that purchasing habits are more resilient to changes and crisis, especially in case of the older consumers.

In addition, replicating existing research, like the one by Ref. [11]; could be an interesting avenue to follow, adding new evidence to the original contribution made by its authors. In the same fashion, it would also be interesting to expand the study to fishmongers located around fish markets and/or supermarkets and to study similarities and differences between the customers, i.e. in terms of their profile, motivation to buy local and fresh food, and their food purchases, which would also provide more robust marketing implications of the study to protect and promote responsible production and consumption that respect both the

local environment and the local people.

Declaration of competing interest

The authors declare that there is no conflict of interest.

Data availability

Data is contained within the article.

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7. Appendix A

Survey Template.

1. Gender:
 - a) Woman.
 - b) Man.
 - c) Other.
2. Age:
 - a) From 18 to 35 years.
 - b) From 36 to 50 years.
 - c) From 51 to 65 years.
 - d) Over 65 years.
3. How often do you shop at a traditional fishmonger’s?
 - a) More than once a week.
 - b) Once a week.
 - c) Once every two weeks.
 - d) Once a month.
4. Has your consumption of fresh fish changed since before COVID-19?
 - a) No.
 - b) Now I buy less fresh fish than before.
 - c) Now I buy more fresh fish than before.
5. Why do you buy at a traditional fishmonger’s?
6. What types of fish have you bought and what will you cook?
7. How much of each type of fish have you bought?
8. How much have you spent?
9. Do you cook for children and adolescents and do they like to eat fish?

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