AdriAquaNet

Enhancing Innovation and Sustainability in Adriatic Aquaculture

Deliverable WP 5.3.2.

Technical-scientific report

on the application of the market research tools and data about the perception of fish consumption by catering SMEs, catering customers and general public

Rijeka, 30.06.2022

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Deliverable name:	**Technical-scientific report on the application of the market research tools and data about the perception of fish consumption by catering SMEs, catering customers and general public.**
WP leader:	**PP5 - Faculty of Tourism and Hospitality Management; University of Rijeka.**
Author (s):	**G.Krešić and PP5 team in collaboration with PP2**
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PART 1

B. REPORT HIGHLIGHTS

In order for aquaculture products to be more successfully placed on the market, it is necessary to plan a series of marketing activities or create a marketing concept. This planning must take into account that although the image of aquaculture is not negative *per se*, consumers worldwide still have a greater preference for wild fish. For this reason, it is important to understand the factors that influence consumer preferences and propose different approaches to promote the consumption of farmed fish. Therefore, the basis of the marketing concept is the needs, desires, attitudes, and perceptions of the target market regarding fish and fishery products, as determined by market research. According to the obtained results, SMEs should make a series of decisions related to the elements of the marketing mix. The marketing mix is called the 4 P's after the initial letters of the elements that make it up (product, price, place and promotion).In the project, three types of research were carried out on the markets in Italy and Croatia. First, the habits and beliefs of fish consumption were studied in the general population, then among the catering customers, and finally among the managers who run catering SMEs.

The results from the Croatian general population confirmed that fatty fish is consumed most often (39% consume it once a week or more), followed by white fish, which is consumed weekly by 34% of consumers. Most respondents believe that fish tastes good (81%), want to eat fish (78%), and buy fish to provide a healthy meal for their family (74%). Croatian consumers are quite knowledgeable about fish, since aggregated score of objective knowledge was 5.60 ± 0.97 out of 7. However, they do not feel as confident in their knowledge, as the average subjective knowledge score was about mid-range (3.05 ± 0.97 out of 5). In addition, consumers are most satisfied with the quality (54%) and freshness of fishery products in the market (50%). However, respondents believe that fish is expensive (67%). Croatian consumers believe that wild fish is of better quality than farmed fish (60%), tastes better (60%), and has a healthier diet than farmed fish (52%). They are least satisfied with the price (17%). If white fish (sea bream, sea bass) from sustainable aquaculture were commercially available, 61 % would buy it.

The results obtained in the Italian general population also confirm that fatty fish is the most consumed (65% consume it once a week or more), followed by white fish (56% of the participants consume it weekly). Similarly to Croatians, Italian consumers possess great knowledge about fish (objective knowledge was 5.55

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± 1.19 out of 7), but are not as confident (subjective knowledge was 2.94 ± 1.02). Consumers are most satisfied with the quality (62%), choice (60%) and freshness of fishery products (60%). They are least satisfied with the price (34%). They believe that wild fish is of better quality (53%) and better taste (56%) than farmed fish. However, they believe farmed fish is less affected by marine pollution (41%), contains fewer heavy metals (35%), and is less affected by parasites (31%) than wild fish. They believe farmed fish is cheaper (53%), more available (51%), and more controlled (37%) than wild fish. Important information about fishery products are: country of origin - Italy (75%), shelf life and production method (wild or farmed fish) (76%). If white fish (sea bream, sea bass) from sustainable aquaculture were available on the market, 65% would buy them.

In both countries, fish consumption was well predicted using the partial least squares structural equation modelling method (PLS-SEM). The results confirmed that subjective knowledge and satisfaction with product attributes predicted fish consumption ($p < 0.001$). Subjective knowledge was influenced by product information and satisfaction with product attributes, while objective knowledge had an influence on product information. These results suggest that consumers need to be educated in different ways to improve their subjective knowledge.

Customers in catering facilities in Croatia prefer white fish slightly more often than fatty fish. The majority of respondents believe that wild fish is of better quality (64%) and tastes better (60%), while cheaper price and better availability are the advantage of farmed fish. Italian customers in catering facilities also prefer white fish rather than fatty fish. They have more positive attitudes toward wild fish in terms of taste (64%), quality (45%) and its diet (49%). However, they have more positive attitudes toward farmed fish in terms of control (69%), price (72%) and availability (64%). About one-third believe farmed fish is fresher (31%) and safer (35%) than wild fish.

Managers who run catering SMEs in Croatia mostly procure fresh, whole fishery products (97%), and only 10% procure fresh fillets. Frozen, whole products are procured by 16% of respondents. When buying fresh fish, the greatest importance is given to the external characteristics of fish (5.00 ± 0.00), the possibility of purchasing fish on the day of catch (4.83 ± 0.46) and country of origin (4.60 ± 0.67). Majority of them believe that wild fish is healthier (80%), tastes better (77%), and is of better quality (77%) than farmed fish.

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Managers who run catering SMEs in Italy also mostly procure fresh, whole fishery products (83%), while 20% of restaurants buy frozen fillets and 17% buy fresh fillets. The most important factors when buying fresh fish are external characteristics of fish (4.60 ± 0.72), fish species (4.33 ± 0.76), and possibility of purchasing fish on the day of catch (4.33 ± 0.71). Eighty percent consider country of origin (Italy) an important factor. They believe wild fish is of better quality, better taste (67%) and less fatty (70%) than farmed fish. However, they believe farmed fish is easier to find (83%), cheaper (87%), more controlled (70%), offers more guarantees (50%), and contains more antibiotics (57%). Fifty-three percent believe guests prefer wild fish, 13% believe guests prefer farmed fish, and one-third believe guests have no particular preferences (33.3%).

Considering all this, it could be concluded that it is necessary to educate the different stakeholders about the benefits of sustainable aquaculture products and provide them with different promotional materials to increase their competitiveness. For this purpose, brochure, dissemination material- flyer and promotion videos were designed and produced as an example of promotional activities.

Brochure about the nutritional value and health benefits of fish included several topics: nutritional value of fish in general (energy, proteins, fats, omega-3 fatty acids, vitamins and minerals), importance of fish in children's diet, athletes' diet and in diet of the elderly. In addition, 6 daily menus with fish (sea bass or sea bream) were included. These menus targeted previously mentioned

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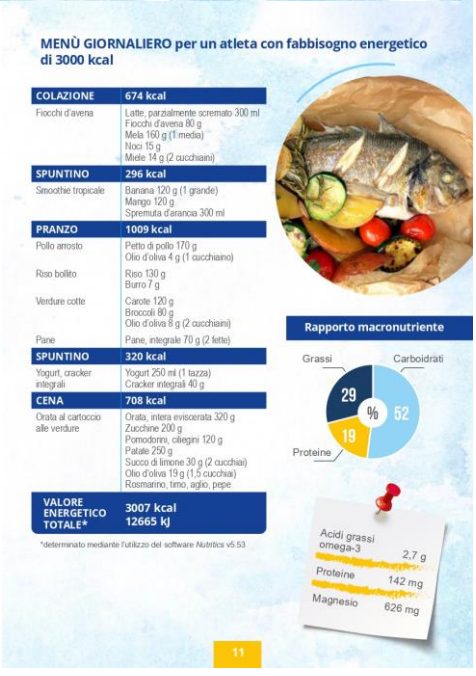
specific consumer groups. Nutritional analysis of all daily menus, based on the chemical composition of fish produced within the Project was made. The flyer (dissemination material to deliver on educational workshops, international fairs for aquaculture producers and expert conferences) included four recipes, along with detailed nutritional information and instructions how to prepare the dishes. (Italian version below and on the project website all the materials related)



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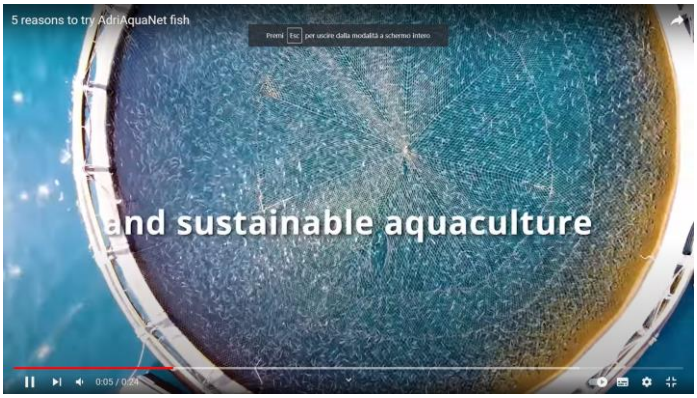
Promotional video about fish production and nutritional value was filmed at fish farm, fish processing facility and at the premises of institutions for food control and education. The main goal of the video was to inform consumers, general population, as well as the business-to-business market about sustainable Adriatic aquaculture and to change beliefs and attitudes about farmed fish. The speakers in the video were various experts in their field to ensure that the messages came from credible sources. In this video, important aspects of fish farming were addressed, such as fish feed and fish health, as well as the nutritional quality of farmed fish and its health benefits.

Besides, another shorter video has been made from the existing recording material. It is intended for consumers with the aim of persuading them to buy fish from sustainable Adriatic aquaculture. The message shown in the video highlights the main characteristics of fish that are important to consumers and differentiates the product: The Adriatic Sea, sustainable aquaculture, fresh fish, controlled quality, high nutritional value.



Although the results obtained among catering customers and managers who run a catering SMEs represent only a pilot test due to the small number of participants, which could be considered a limitation of our work, any market research results obtained could be used as a basis for proposed promotional activities, with the aim of informing different consumer groups about the nutritional value and health benefits of eating farmed fish, which could likely increase their intention to purchase farmed fish in the future.

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C. WP PROJECT OUTPUTS AND RESULTS

Specific 3: Increase SMEs competitiveness thanks to new high quality fresh and processed fish

Activity 5.3.2 has been designed to support the implementation of an innovative and functional marketing system. The objective was to create a framework for the implementation of marketing activities targeting SMEs (fish farms and fish processing industries) and responding to market needs, taking into account the latest scientific advances in sustainable fish production. With the increased awareness of the importance of fish consumption and its nutritional value, consumers are interested in easily accessible fish products as part of their healthy diet. Particular attention has been paid to specific population groups: children, athletes, and the elderly. Consequently, advanced environment-friendly/cost-efficient farming protocols for healthier and tastier fish products can be an excellent way to increase SME competitiveness in regional and international markets. To achieve this, market research has been conducted, that were the starting point for the implementation of all other marketing activities.

Proposed informational and promotional activities aimed at consumers and caterers in order to present the advanced environmentally friendly/cost effective farming protocols and the nutritional value of farmed fish. That also included the dispelling preconception of farmed fish that it is of lower quality than wild fish. In addition, taking into account the results of market research and evidence of the nutritional value of farmed fish (derived from nutritional analysis), ways to popularise farmed fish among consumers and restaurateurs have been proposed. This measure has provided fish farmers and the fish processing industry with marketing tools for the production and promotion of fish and innovative fish products, which they will continue to use long after the project has ended. The project objectives achievement, related to the EPO applications and specific objectives, were fully achieved.

Reasons of discrepancies between planned and realized outputs (if any)

There were no discrepancies between planned and realized outputs.

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Impact of outputs underachievement on project results All outputs were achieved.
Additional results (was the project able to reach additional outputs /results besides those foreseen in AF? The project was presented on several national and international meetings, such as PP5 particpation at Nordic Nutrition Conference in 2020 and the partecipation at the 13th International Scientific and Professional Conference WITH FOOD TO HEALTH. In Osijek 16.09.2021 where AAN Poster and abstract presentation was elaborated (250 copies). Several scientific articles were published on the topics proposed and several pubblishing on Croatian an Italian magazines, national TV have been done during the project for awarness on the importance of fish consumption (all the materials were gathered and proposed on project website).

D. DURABILITY AND TRANSFERABILITY OF THE PROJECT AND ITS RESULTS

Please describe shortly:

How will the outputs and results be maintained and developed further after project end? The results of the market research and the proposed marketing activities could be used in two directions in the future: - First, for fish farmers and producers of fish products with the aim of increasing their competitiveness in the market, better marketing their products in the market and increasing sales. For this purpose, in the future, they can use the marketing tools they have received in this project and the proposed marketing activities that they can carry out. The marketing activities could target customers in catering establishments and managers who run SMEs in the catering industry, since fish and fishery products are the most common products in this market. - Second, the results of the market research, the messages created, and the elements of the promotional materials (brochures, dissemination materials, and videos) that could be disseminated through various communication channels will help promote the consumption of sustainable farmed fish long after the project ends.
How has the availability of project results and outputs for general public and other stakeholders been ensured during the project life and eventually after the project end?

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The brochures and dissemination materials - flyers - produced as part of this deliverable have been distributed at various events and trainings, and since there are still some left, they will continue to be distributed after the project ends. They are also available in electronic form and can be downloaded from the project or PP5 website at any time. Similarly, promotional videos have been uploaded to the project's YouTube channel and played at training sessions; they will also be available at any time after the project ends.

E. CAPITALISATION OF RESULTS

Please provide information about capitalisation:

Was the project able to capitalise or influence future calls or other projects? Please specify main results or output to be considered for future capitalisation action.
Are there any obstacles of legal or administrative nature that the project has encountered and which hampered cooperation? Is there any room to solve these obstacles?

Since the current limitation of market research among customers of catering facilities and managers who run catering SMEs is the small number of participants and the limited geographical area, market research among these groups could be conducted in the future with a large and representative sample. Therefore, the results would be more reliable and could be further used in marketing and promotional activities targeting these groups.

F. PARTNERSHIP COOPERATION

Please provide an assessment of the participation and involvement of the partners in the project, answering the following questions:

Which Partners were active in your WP and the activities related to the report? Were all the Partners involved also active?

Partners involved in WP5 were LP, PP1, PP2, PP3, PP4, PP5, PP7, PP8, PP10, PP11.

In activity 5.3 partners involved were PP1, PP2, PP5, PP7, PP11. All involved partners were active.

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Were they all able to attract other local/regional actors and involve them in the project activities?

PP2 conducted market research on catering customers and managers who run catering SMEs in Italy.

PP7 attracted aquaculture SMEs for trainings in Croatia and helped PP5 in collecting data for catering SMEs and catering customers.

LP, PP1 and PP5 with the collaboration of PP7 and PP11 promoted the research work during the 8 cycles of training held in Italy Croatia and online during the epidemics of Covid-19 (Croatia – online, 9.12.2020, Padova, 19.11.202, Croatia – online, 24.2.2022, Croatia – online, 10.3.2022, Ostuni, 6.5.2022 and 7.5.2022, Zadar, 2.6.2022). 391 participants were involved in all trainings where WP 5.3 activities were presented and at 6 events were realised during the project specifically on the topics related.

What was the added value given by the cooperation?

By partners' cooperation (LP, PP1, PP5), Manual of raw meat standardisation for fish production and product safety (5.1) has been produced in which PP5 was also involved (prof. Krešić was one of the authors). Certainly the cooperation between PP1, PP5 and PP7 in order to organised several successful trainings in Croatia and online gathered a large number of SMEs and fish producers. Also the events in presence organised on the local territory in collaboration with the Croatian partners helped to reach general public.

Which were the main problems encountered?

Covid-19 made it difficult to gather market research data among catering customers and managers who run catering SMEs and caused a delay and it certainly limited the organisation of the events in presence (Adria4blu, Rijeka 24.-25.09.2020 was cancelled due Covid Emergency and Crofish fair in Porec was cancelled in 2019 and 2020 due Covid and we needed to rethink several times the agenda and the action plan).

Was the project able to create links with other projects

PP5 have presented the project activities in 2019 jointly with Interreg ZerowasteBlu AdRIa4Blue manifestation in Rijeka on 07.06, and in Split we have collaborated with ADRION "Ariel" event on 14.06.2019. On October 8th and 15th, 2020 in Crikvenica and Mošćenička Draga two

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promotions of the small fisheries sector were organized by the Primorsko-Goranska County within the project Adri.SmartFish – Valorisation of SMall-scale ARTisanal FISHery of the Adriatic coasts in a context of sustainability .The mentioned events were attended by representatives of the Primorje-Gorski Kotar County, caterers, Fisheries Local Action Groups (FLAGs) and fishermen, as well as students of primary and secondary catering schools. PP5 researcher G. Krešić was one of the speakers and she presented AdriAquaNet project and gave a lecture about the nutritional value of fish and factors influencing consumer choice in fish consumption. Within that, AAN project and market research results were presented. Additionally, she also held two educations for 8th-grade pupils about the importance of fish in children's diet (one in elementary school of Vladimir Nazor in Crikvenica, and the other in Eugen Kumičić in Mošćenička Draga) .In all four occasions we disseminated brochure and flyer about our project.
Will the PPs cooperate in the future even without funding (if yes explain the main aims of this cooperation)? PP1 and PP5 will work together in the future on promotion of quality and nutritional value of farmed fish, as well as educating consumers on its health benefits.

G. TARGET GROUPS INVOLVEMENT

Please list the main target groups that benefited from your WP project's achievements as inserted in the relevant Report Section in SIU that you will find on the left (the numbers are our project numbers). In few word provide further details on how they were able to make use of the outputs/ results of the project.

TARGET GROUPS	***Description***
SMEs (50)	24 enterprises received support, 4 enterprises received grants, CO44 – 391 participants involved in joint local employment initiatives and joint training In particular Dane Desnica, director of Cromaris fish farming enterprise that joined the final conference in Zadar
Universities, technology transfer institutions, research institutions (10)	7 research institutions participated in cross-border, transnational or interregional research projects
NGOs, associations, innovation agencies, business incubators,	Fisheries Local Action Groups (FLAGs)

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cluster management bodies and networks (5)	
Centers of R excellence (5)	
Local, regional and national public authorities (10)	• Lovro Jurišić, Joint secretariat of the INTERREG Italy-Croatia Programme, Zadar branch • Dragan Kovačević, Vice President of the Croatian Chamber of Commerce • Representatives of the Primorje-Gorski Kotar County
General public (1000)	Thanks to the publications on the national magazines more than 500.000 people were reached.

PART 2

A. CONTRIBUTION TO EUSAIR

Please provide a description of the project contribution to the EUSAIR in terms of synergy with the Strategy's pillars and alignment of implemented project's activities with the Action Plans and labelled projects.

The project directly involved researchers from University and public Institute, fish farms and hatcheries, enterprises (SMEs being part of the aquaculture business chain such as companies for feed producing, recycling wastes, fish food transforming), and different type of stakeholders (experts, general public, productive associations, policy) from Italy and Croatia in order to improve the competitiveness of the mariculture sector Adriatic Sea. The results of task 5.3 will ensure important positive impacts on innovation, economic development, job creation, and environmental sustainability. The project approach and outcomes can be transferred to other territories of the EUSAIR macro region, thus multiplying the positive effects of project outputs. In this case, the marketing research and the information and promotional activities of project innovative outcomes can promote synergies between fish farms and researchers to satisfy demand and promote "healthy and safe" fish productions to consumer. Also the development of fresh and processed fish farmed products of high nutritional value can increase SMEs' competitiveness on the common market. The research and marketing models can be transferred to the EUSAIR countries that identifies aquaculture as a key sector in the blue economy of Italy, Croatia and Greece, having the potentiality to play a pivotal role in the entire area.

B. CONTRIBUTION TO HORIZONTAL PRINCIPLES

Please provide a description of the project contribution to the horizontal principles of equality between men and women, non-discrimination and sustainable development.

The project engaged technical and administrative staff based on personal characteristics, complying with the equal opportunities and without discriminations, such as gender, race, nationality, ethnic origin, religion or belief, disability, age or sexual orientation. The employment relationship was based on the principle of equal opportunity and fair treatment, including type of contract, wages and benefits, working conditions and terms of employment, access to training, promotion, and termination of employment as for any other Italian or Croatian staff hired. The staff and external services involved

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were formed without any kind if discriminations based on personal characteristics, genre, age, belief, race, nationality, ethnic, religion and belief, sexual orientation, etc. Several doctoral students of the Faculty of Rijeka were involved also in the project activities and most of them were women. All questionnaires used for marketing research activities, focus groups and other tools such as promotional materials were done without discriminations, such as gender, race, nationality, ethnic origin, religion or belief, disability, age or sexual orientation

C. COMMUNICATION ACTIVITIES

Please refer to the Final Communication Report template and provide a summary on the main achievements trying also to identify which were the most successful communication tools in reaching general public/decision makers/other target groups.

Flyers made in cooperation with PP2 for promotion of questionnaires for managers who run catering SMEs and catering customers, both in Italian and Croatian language. The aforementioned activities have been presented at the training events held in Padua, Ostuni and online. During the final conference in Zadar (3 June 2022) and Udine (20 June 2022) a summary of the most important results have been presented by PP5 and staff. Numerous reports, meetings, brochures, training courses, conferences, a website and a YouTube channel have been produced to communicate the results. Significant contribution to the project results dissemination was made by big interview of PP5 project manager (prof. Greta Krešić) for Croatian daily newspaper (Novi list). Prof. Krešić discussed fish consumption habits in Croatia, presenting results of consumer market research conducted within the project as well as the project objectives itself. Few other news portals shared the parts of this interview.

D. NATURA 2000

Please describe, if it is the case, measures foreseen and implemented by the project:

a)	**In case the project involved Natura 2000 sites, describe what measure the project envisaged and implemented to avoid any negative impact:** No Natura 2000 sites are included in the areas where the project activities have been carried out; therefore, no measures have been envisaged and implemented during the project in order to avoid negative impacts.
b)	**In case the project had a positive effect on Natura 2000 sites, please describe which measure the project has foreseen and implemented in order to reach a direct or indirect positive impact:** No Natura 2000 sites are included in the areas where the project activities have been carried out; therefore, no measures have been envisaged and implemented during the project in order to avoid negative impacts.

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E. TYPES OF ACTIONS ADDRESSED (as defined in the Cooperation Programme)

These are our primary objective's types of actions, that we addressed by the Project:

Specific Objectives	***Types of action***	***the most relevant one within the SO addressed by your project***
1.1 Enhance the framework conditions for innovation in the relevant sectors of the blue economy within the cooperation area	*Joint projects and actions aimed at creating platforms, networks and at supporting exchange of good practices in order to enhance the knowledge transfer and capitalization of achieved results in the field of blue economy*	***X***
	Actions aimed at cluster cooperation, joint pilot initiatives in order to boost the creation of marketable innovative processes and products, in the field of blue economy	***X***

F. TYPES OF OUTPUTS PRODUCED

Specify the types of outputs generated by your activity that are reported here and provide a brief description

Output typology	**Description**
Trainings	Participation in trainings: Ostuni, 19.9.2020 Croatia – online, 9.12.2020 Padova, 19.11.2021 Croatia – online, 24.2.2022 Croatia – online, 10.3.2022 Ostuni, 6.5.2022 and 7.5.2022 Zadar, 2.6.2022
Monitoring systems	N.A.
SMEs clusters	N.A.
New networks	N.A.
Platforms	N.A.
Adaptation plan	N.A.

Building renovation	N.A.
Improving marketing of fresh and processed fish	Brochure about nutritional value and health benefits of fish Promotional videos about fish production and nutritional value of farmed fish Dissemination material to deliver on educational workshops, international fairs for aquaculture producers, expert conferences – flyer

G. TYPOLOGY OF IMPACTS

Please indicate what type of impact(s) your project has had. You can choose more than one answer. For each tangible impact selected, please provide a concrete example from your project, where possible supported by quantitative information.

TANGIBLE IMPACTS

Tangible impacts	**Example/ quantitative information**
Improved access to services	N.A.
Cost savings	The use of set of tools can be as an instrument for SMEs marketing offices to improve promotion and communication and spare cost and time.
Time savings	The use of set of tools can be as an instrument for SMEs marketing offices to improve promotion and communication and spare cost and time.
Reduced energy consumption	N.A.
Reduced environmental impact	N.A.
(Man-made, natural) risk reduction	N.A.
Business development	Set of tools (three bilingual questionnaires, methodology to select participants, data analysis) for aquaculture SMEs and food companies for investigating different markets in Croatia or Italy (B2B – managers of catering SMEs, B2C – general public, catering customers) based on their needs. Different promotional materials were elaborated and distributed: 1 brochure and 1 dissemination material in three languages – Croatian, Italian, English (750 copies) , 1 video in Croatian, subtitled in English, 1 video in English).

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Job creation	1 person employed on the project as researcher 1 person employed on the project as administrator
Improved competitiveness	Proposed promotional materials can be used for educating consumers, and, therefore, enhancing company sales.
Other tangible impacts (specify)	N.A.

INTANGIBLE IMPACTS

Intangible impacts	**Example/quantitative information**
Building institutional capacity	Increased research capacity of institution, networking and increased possibilities for future collaboration
Raising awareness	The project has stimulated the attention of fish farmers and producers regarding the issues related to correct marketing mix to be used in order to promote sustainability and the reduction of the farm environmental impacts and the nutritional quality of farmed fish as positive elements of the Mediterranean aquaculture. 750 copies and electronic versions of brochure and flyer in three languages (Croatian, Italian, English – each 250) 2 promotional videos about fish production and nutritional value of farmed fish
Changing attitudes and behavior	N.A.
Influencing policies	N.A.
Improving social cohesion	N.A.
Leveraging synergies	N.A.
Other intangible impacts (Specify)	The project lead to the strengthening of relations between Italian and Croatian research groups, as well as between universities or centres of excellence and fish farmers. This collaboration may be exploited in the future for the drafting and implementation of new research projects

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	aimed at improving aquaculture farming systems and waste/energy management in fish farms.

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