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Social Aquaculture Model for Sustainable Rural Development

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ABSTRACT

The paper follows two main objectives: to understand aquaculture farmers' perception and image of social services and to identify communication levers in order to improve the perceived image of social farming. Orientations in terms of communication are product-focused and aim at enhancing the reputation of social farming consequently with impact on rural development. This paper conducted a questionnaire survey of Romanian aquaculture farmers' perception toward social agricultural. The empirical study indicated that farmers shown different awareness to social farming.

1. Introduction

Aquaculture production has been the fastest growing food, reaching average worldwide growth rate of 8% per year. In 1950, world aquaculture production was 638 577 tonnes overall. Global production of nearly 84 million tonnes in 2011, reflecting increased production by over 50 % since the beginning of the millennium and an average annual growth of 5% in last decade.

The conversion of conventional aquaculture farms in sustainable and ecologically aquaculture farms help aquaculture businesses to achieve economic viability and competitiveness. Green aquaculture is undoubtedly the management technique that has most contributed to support aquaculture businesses to adopt aqua-environmental measures for protection of the environment, natural resources and landscape.

The social agriculture includes all agricultural activities using resources both from plants and animals, in order to promote or generate therapy, rehabilitation, social inclusion, education and social services in rural areas. However, strictly linked to agriculture where groups of people can stand to work together for social family farms.

Social farming can also be regarded as a service provided by subsistence agriculture. This does not mean a reduction in quality of services in poorer areas, but rather serve as a way to improve their effectiveness by linking formal and informal professional services with more than one non-professional (Armstrong, 2000).

Social farming is an emerging concept in Europe that includes various participants interested in its development: farmers, farmer organizations, users of services provided by farms social welfare service providers and other health stakeholders in social and health and local, regional and national.

This is an innovative approach located within two concepts based multifunctional agriculture and social community. Social agriculture includes all agricultural activities using resources both from plants and animals, in order to promote (or generate) social services in rural areas. Examples of services are rehabilitation, therapy, job protected, lifelong education and other activities that contribute to social inclusion.

Social farming is a new concept and also traditional. It comes from traditional rural systems before modernizing agriculture and increasing civil service system. In today's concept was substantially reformed in an innovative way in evolution.

The main products of social agriculture, in addition to marketable products are health and employment, education or therapy. Agriculture provides opportunities for people to participate in various rhythms of day and year, either in domestic livestock. Social agriculture includes agricultural enterprises which integrate people with physical, mental or emotional, firm, providing openings for the socially disadvantaged, for young offenders or those with learning difficulties, people with drug addictions, senior long-term unemployed and actively citizens, strong schools and kindergartens, and more. Disease prevention, inclusion and a better quality of life are features of social farming.

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The added value of social farming enables disadvantaged people to be integrated in a living context. The presence of farmers, contact and relationship with people, animals and vegetable crops, specific responsibilities of the person using the service are some of the key features of the social practices of agriculture. (Di Iacovo, 2003).

The financial and ensuing economic crisis has had negative impacts on the majority of enterprises; however, cooperative enterprises around the world are showing resilience to the crisis. Financial cooperatives remain financially sound; consumer cooperatives are reporting increased turnover; worker cooperatives are seeing growth as people choose the cooperative form of enterprise to respond to new economic realities.

Cooperation is often confused with cooperatives. This is a mistake. We observed a wide range of experiences of cooperation, not involving cooperatives, and usually sound actually more successful than cooperative.

The idea of "cooperative" (or production team) still produces negative feelings among farmers. Even if the old style unions have lost much of their power from the mid-1990s, farmers still remember and therefore official attempts to foster cooperation meet resistance.

In the areas studied forms of cooperation are extremely varied, cooperative groups covers a wide range of activities and, in some cases, cooperatives and cooperative groups overlap, so define the content and form another form.

2. Material and methods

The suggested methodology for socio-economic analysis consists of a baseline profiling of case and socio-economic characterization with regard to future economic activities (agriculture production, aquaculture and social services). Then, production and demand functions of the model of multi-use aquaponics production platforms are identified. A decision on whether full or limited data should be collected for an impact assessment is taken. Thereafter data on the site is collected and costs and benefits are quantified. The assessment of impacts and evaluation of the assessment based on limited data approach, integrating results on Impact Assessment Analysis are conducted. Finally, policy recommendations based on impact assessment results and sensitivity analysis are provided.

This part of the framework focuses on gathering information about the socio-economic environment and context of the proposed development with regard to aquaponic production, aquaculture and social services. Hence, before achieving the evaluation of the socioeconomic impact it is necessary to start with the baseline profiling of the case study areas in order to identify who is going to be impacted. Thus, this approach is expected to enable the identification of the production and demand functions of the model of multi-use aquaponics production platforms.

Following study is conducted by the researcher to find out the behavior of the farmers, to analyze the preference of farmers, farmer awareness. Descriptive research design was adopted and the data is collected through primary and secondary sources. The method adopted for conducting survey is questionnaire; Simple random sampling technique was adopted for selecting the farmers.

Farmers' perception to the social farming included value, which were influenced by farmers' demographic characters and their economy condition, also by their purchase experience and information from others.

Perception is a mental process, whereby an individual selects data or information from the environment, organizes it and then draws significance or meaning from it.

Attitudes cannot be seen; they can only be inferred from the manner in which an individual behaves. Nevertheless it is crucial that attitudes are measured. This is because an individual with a positive attitude towards a service offering is more likely to make a purchase. Attitudes can be measured by observation, qualitative studies and quantitative techniques (or rating scales).

The data has been collected with the help of questionnaire. And it has been analyzed and interpreted with the help of tables along with relevant descriptions. Appropriate treatment has been done to the raw data and logical conclusions are drawn based on the findings.

The questionnaire survey was conducted with farmers from Braila, Galati, Tulcea, Constanta, Vrancea and Buzau, all being counties of South East Romania's development region, were chosen as the respondents.

20 questionnaires were distributed in above 6 counties and returned. After eliminating the validity of the returned questionnaire, 4 questionnaires that incomplete and with logical mistakes were deleted, 16 valid questionnaires were obtained; the effective response rate was 53%. From 16 respondents 8 expressed the intention to develop social farming activities.

All the data obtained from the responses at the questionnaires were transformed into statistics variables and then processed. Descriptive statistics method was mainly adopted to calculate the mean with standard deviation of each variable, and to examine the different levels of farmers' awareness.

The index values of product familiarity were the ratio between each product's familiarity value and the average value.

3. Result and discussion

In order to fulfill EU strategies for Sustainable Development of Smart and Green Aquaculture, this project aims to address the following key-questions:

• What are the best practices to develop an aquaponics project on multi-use platforms?
• What are the accumulated social, economic and environmental effects of aquaponics production system?
• What are the best strategies for installation, maintenance and operation of a multi-purpose aquaponics production system?
• What is the economical and environmental feasibility of multi-use aquaponics production platforms?

It is essential that all work under this project contributes directly towards real design concepts for multi-purpose aquaponics production system in terms of the new emerging sectors in aquaculture areas:

- Tourism (including pesca tourism);
- "Green" products and services (including environmental protection, waste management, energy saving and alternative energy)
- "White" or social services and jobs (including child care and old peoples care, working with schools, health)
- "Smart" products and services (including uses of IT, creative and cultural industries, design and research).

For this reason test sites will be studied to develop innovative plans and designs for harvesting agricultural, aquaculture and logistic support.

The questionnaire survey gained a total of 16 valid samples and 8 with intention to develop social farming activities.

The education level is correlated positively to the image of social farming. The higher the education level increases, the farmer sees the social farming.

The absence of image of the social farming sector is still seen as a risk by some managers. Indeed, the image can then still be developed and hence be hijacked. To fill this gap in terms of image should therefore be considered as a strategic priority for the social farming sector. Farmers have a confused and slightly negative image of the social services sector. The image of social farming sector derives from the image of the social services sector.

If a specific promotion of social farming were to be preferred, it should base itself on the positive but often unknown attributes of these types of activities. Indeed, improving the image of social farming sector should be a priority of the public service sector, as it will contribute to improving acceptance of this type of services, on the long term.

Social farming fits with the changing needs of society. Social farming represents a growth opportunity of agriculture and rural areas. After World War II, a strong agric-food sector development was recorded in urbanized regions in Europe. These agricultural and rural areas have changed dramatically (Maris and Veer, 1971). Mechanization, new technologies, increased use of chemical policies specialization led to increased productivity (Veldkamp et al., 2008). These developments have led to an over-specialization and pressures on the environment. This caused the agric-food sector ecological and social limits (Zheng, 2010). In less densely populated areas of Europe, abandoning farms and rural areas has become a problem. There is a great need for more sustainable agricultural production systems, which to the changing needs of society (Xiong, 2010). Social farming is an example of inspiration for a type of multifunctional agriculture more sustainable, referring to social values of agriculture.

There are four different stages in terms of how agriculture developed social services:

- Statement of pioneering: At this stage, there are relatively few examples. Private farms develops its own projects, there is a low awareness of the society as a whole (Slovenia is now at this stage).

- Multifunctional agriculture: At this stage of social agriculture is increasing interest in this sector comes mainly from agriculture, there are local initiatives, both private and public (Belgium is currently at this stage, social agriculture is backed by agricultural and rural development).

- Social farms as a recognized social work: At this stage, there is a high level of interest in social agriculture health care sector. Public health institutions recognize that social agriculture apply to private and public structures. Germany and Ireland are at this stage now. Professional social farms are often developed as a system of care based oriented farms that are part of the health care sector. Private family farms are still in a pioneering situation in both countries.

- Social farms as a model including: At this stage there are a number of initiatives, strong-integrated society in general, social farms were organized into regional and national networks.

In many European countries there have been important changes to social economy structures. In Italy since the 1980s we have seen a new cooperative structure: social co-operative, which combines elements of the non-profit (voluntary) organization with that of the co-operative. Thus in contrast to traditional co-operatives where members are of one type (farmers, consumers, workers, etc.) members in social co-operatives may be workers, volunteers, community members, municipal representatives, parents of disadvantaged workers, users of services). But the business operates to a substantial degree in the market in a similar way to that of traditional co-operatives. Several thousand of such co-operatives have been formed. Italy, thus, has a favorable context for social co-ops (and co-ops in general) and has emerged as a leader in

this form of social enterprise. But the emergence of similar trends in the development of co-operatives and social enterprise can be seen in many other countries. These include the introduction of new legal status the "enterprise a finality socially" in Belgium (1995), the "social solidarity cooperative" in Portugal (1998), the "social initiative cooperative" in Spain (1999), the "social cooperative with limited liability" in Greece (1999), and the "society cooperative d'être collective (SCIC) in France (2001), and the proposed "Community Interest Company" (CIC) in the UK. The replication of social co-ops in other countries has been a development that indicates there may be isomorphic trends across social economy sectors, responding to new situations in welfare systems, for example. There have also been developments of co-operatives in new sectors, such as Sweden, where social co-ops in the nursery or crèche sector take the form of parent or worker owned structures (Borzaga and Defourny, 2001).

Germany has regulations regarding social agriculture. In Slovenia of social agricultural was recognized by the Rural Development Plan 2007-2013. This means that a farmer may continue to act in social agriculture only as a subcontractor of a social institution (Baars, 2008). Social farming is develop in many social enterprises in rural areas, providing rehabilitation and training, and subsidies for disabled (Zakon, 2007). Social institutions (Zakon, 2007), very often using agricultural activities to broaden the range of activities for user services without work capacity. The same goes for protection and care centers that are involved in rehabilitating and training, as well as providing sheltered employment.

Disadvantaged persons, excluded from working life, will not have chances to achieve reintegration into mainstream economic and social life, unless they work together with stronger persons, who are ready to contribute their strengths and their resources.

In Belgium, there are specific regulations for social farms. Rural development funds are used to pay farmers for their services. Regulations shall be limited to private commercial farms. Maximum support is 40 euro / day, regardless of the number of service users (EU Commission, 2008).

In Netherlands social farms can gain access to funds in the health sector. They can become an entrepreneur in an officially accredited institution care. Also they can make use of personal budgets for service users. Environmental support is 60 euro / day / person (Matthews, 2008).

In Ireland, there are no specific regulations on social farming itself. However, all organizations involved in providing services through the use of public funds by the state may pay for these services. Germany and Ireland are mainly oriented health sector. Italy, Slovenia and France are more oriented towards social sectors and Employment and the Netherlands and Belgium to agriculture. Cooperatives Irish Society (ICOS) is structured as a cooperative, managed and controlled by a National Council. The National Council is elected from cooperatives States (currently there are more than 150 cooperatives), which in turn represent more than 150,000 people. National Council structure consists of 31 representatives so most representatives of cooperatives in the dairy sector. Established in 1894, ICOS mission is to lead, represent and support the Irish agric-food sector cooperation in achieving its business objectives. As coordinating organization for co-operatives in Ireland, ICOS provides a range of services cooperatives States and represents national and international organizations. The main features are: coordination in organizing cooperatives in Ireland, business development, rural development training. Funding comes from four main revenue streams: government funding, contributions from member cooperatives, fee-for service and operating income.

Networks of English, Scottish and Irish had a funding structure consists of four revenue streams. The most significant impact of the creation of such networks was the way it affected their relationship with the government and how they used their position to influence government policy, as opposed to lobbying for legislative changes and tax favor of agricultural cooperatives.

Funding comes from four main revenue streams: government funding, contributions from member cooperatives, fee-for service and operating income.

English Farming and Food Partnerships (EFFP) is primarily an association formed by members of agricultural cooperatives in England. Revenues are based on fee-for-service consulting and training on behalf of agricultural cooperatives in partnership with the government. It has a small number of members 70 agricultural cooperatives in agricultural cooperative approximately 400 existing in England. This situation is partly due to his lack of maturity as an organization and pressures on agriculture in the UK. However the partnership includes the largest group of agricultural cooperatives as an associate with large food businesses, including recognized brands, Tesco, Morrisons supermarket, McCain, McDonalds restaurants and Waitrose.

Recently established in 2004, EFFP is a network of agricultural cooperatives working in the agri-food supply chain. They combine knowledge transfer in agriculture with expertise in the food industry to provide structural support at trade food system. The main functions relate to business development, regional development, supply chain management, climate change and networking information.

Funding comes from four main revenue streams: government funding, contributions from member cooperatives, fee-for service and operating income.

Agricultural cooperative networks Scottish and English received almost half of their annual revenues from government contracts while their business models pursued gradually shift from government dependence to independence and long-term durability.

In the UK, the Department of Trade and Industry has established a Social Enterprise Unit. Part of the motivation of promoting social enterprise is an interest in reforming public services delivery (incorporating co-operatives and non-profit structures into the spectrum of service providers); and partly an interest in involving community/civil society stakeholders combat social exclusion. The activities of this Social Enterprise Unit have played a role in promoting a huge interest in social enterprise in the UK - this can be seen in outcomes such as the development of strategies for social enterprise and new legislation to facilitate the creation of new locally based social enterprise through the community interest company (CIC).

The Community Interest Company is about to be launched as a new legal form in the UK, and it may become an important model of social enterprise. The context for this development is resurgence in interest in mutuality after declines in the co-operative/mutual sectors due to demutualization and poor performance - developments that parallel similar isomorphic tendencies in other countries.

4. Conclusions

Social farming adopts a multifunctional view of agriculture. The main products, in addition to marketable products are health care, education or therapy. Agriculture provides opportunities for people to participate in the activities of the plant or animal. Social agriculture includes agricultural enterprises that integrate people with physical, mental or emotional, firm, providing openings for the socially disadvantaged, for young offenders or those with learning difficulties, people with drug addictions, long-term unemployed, people the old active engagement with schools and kindergartens, and more. Disease prevention, inclusion and a better quality of life are features of social farming.

Aquaculture developments raise issues of concern in terms of environmental impacts and ecosystem health. For aquaculture systems to be sustainable, they should not cause damage to natural systems by critically increasing (e.g. nutrients) or decreasing the concentrations of natural substances (e.g. chlorophyll). Other potential impacts relate to increasing concentration of man-made substances, such as persistent chemicals and through physical disturbance leading to habitat changes.

Aquaponics is a food production system that combines soil-less vegetable growing (hydroponics) and fish farming (aquaculture) within a closed re-circulating system. This combination of food production methods (hydroponics and aquaculture) removes the problems associated with the individual production methods.

For aquaculture, the main problem with Recirculating Aquaculture Systems is the production of Nitrate rich waste water that must be treated or dumped, creating major environmental problems. For hydroponics, the main problem is the complete reliance on chemical fertilizers to grow the vegetables.

When both methods are combined in an aquaponic unit, the nutrient-rich wastewater from the fish tanks, which would normally need to be treated or dumped, is used as an organic fertilizer for plant production. In turn, this removes the need for chemical fertilizers for plant growth using hydroponics.

Social value-added is the ability to integrate disadvantaged people in a context of social life. Presence farmers, contact and relationship with other living beings - animals and plants, assuming specific responsibilities are some key features of social rehabilitation practices of agriculture. The research results show that farmers have different perception of social farming. The information channels of social farming are mainly from friends, relatives and neighbours.

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