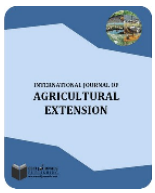

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SETTING-UP A FARM ADVISORY NETWORK IN THE AGRICULTURAL UNIVERSITY OF ATHENS: AN EXPLORATORY ANALYSIS

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A B S T R A C T

The current situation in Greek advisory/extension services is that of a highly fragmented and ineffective system. More specifically, after the transformation of the Greek Extension Service into a bureaucratic organization, especially since the country's accession into the European Union (EU), none of the attempts to reorganize the institution of agricultural extension has been successful. The aim of this paper is to investigate the possibilities of creating a Farm Advisory Network (FAN) based in the Agricultural University of Athens (AUA), which will provide high-quality, specialized advisory services, covering the entire spectrum of current farmers' needs. To this end, a SWOT analysis was carried out to analyse the overall position of AUA and its external environment, regarding farm advisory. In addition, a financial analysis for the establishment and pilot operation of the FAN was carried out in four Prefectures to determine the cost for the provision of the advisory services per farmer. Results of SWOT analysis, overall, indicate that AUA is capable of supporting such a project (i.e. the setting-up of a FAN in the university), due to its distinct competitive advantages of subject expertise and the strong, foreseen linkage between extension, agricultural research and education. Results of financial analysis indicate that the cost for the provision of the advisory services per farmer is not high considering the high-quality of the Network's advisory services and the multiple benefits each farmer can derive from them.

Keywords: Farm Advisory Network, university extension, farm advisory, Greece.

INTRODUCTION

The first systematic attempt by the Greek State to implement an integrated advisory and training system in agriculture took place in 1951 with the establishment of the Extension Service in the Ministry of Agriculture. Throughout the first 15 years the Service was very effective in achieving its targets; therefore, this period was characterized as the "golden age" of Extension in Greece. This owes to the fact that extension programmes were carefully designed and coordinated as well as to the massive and well-organized mobilization of the personnel (agronomists) (Koutsouris, 1999; Alexopoulos *et al.,* 2009).

After the mid 60's the gradual degradation of the Service begun resulting in limitations to its extension/advisory role. Especially, after the country's accession in the EC (1981), the administrative burden of the Common Agricultural Policy (CAP) implementation (including relevant controls) was designated to the Greek Extension Service, gradually entrapping extensionists in a bureaucratic-administrative role. Consequently, the advisory role of extensionists was further constrained; advice was provided mainly to those farmers who actively sought for it, though in a rather fragmented, inadequate and inefficient way (Koutsouris, 1999; Alexopoulos *et al.,* 2009; Koutsouris, 2014).

The Ministry's restructuring and decentralization, including the establishment of semi-autonomous organizations for training and research respectively, were some of the changes that occurred during the mid-90's; these changes, however, did not affect the situation as positively as expected (Alexopoulos *et al.,* 2009; Papaspyrou *et al.,* 2009). More specifically, with the first wave of decentralization (1997), the responsibility for agricultural services was transferred from the Ministry

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of Agriculture to Prefectures. However, this reform did not make "extension services more flexible and relevant to the needs of farmers" (Alexopoulos *et al*., 2009: 179); on the contrary, it made the Prefectural service "vulnerable to local pressures and politics" (Koutsouris, 2014: 12), and the cooperation between central and local services (i.e. the Ministry and the Prefectures, respectively) more difficult (Alexopoulos *et al.,* 2009). Furthermore, with the second wave of decentralization (2010), various Prefectural Directories were merged into a single Directorate (Dir. of Agricultural Economy & Veterinary) which does not include a Section for extension services (Koutsouris, 2014).

All of these constitute some of the reasons why the advisory/extension services in Greece is currently a system highly fragmented and ineffective. In general, none of the national level organizations is involved in the provision of advisory services. They are exclusively occupied with administrative-bureaucratic work, while facing serious understaffing and under-funding issues due to the economic crisis, which further alienate them from their advisory role. The vacuum created in the field of agricultural advisory services is to some extent filled by private agronomists who limit their advisory work to simple technical issues (most of whom are also dealers of commercial inputs) and issues relating to EU programmes (Koutsouris, 2014). As stressed by Papaspyrou *et al.* (2009: 193), "*the transformation of the Greek extension service into a bureaucratic mechanism, results in the provision of inadequate services to farmers, in a time when agriculture faces serious socioeconomic as well as environmental challenges*". The situation is further aggravated by the fact that there is "*suspicion towards, on the one hand, the bureaucratic and clientelistic public extension and, on the other hand, the largely profit-oriented private agronomists, along with allegations that agronomists do not care about what is happening in the fields or are inexperienced*" (Kaberis & Koutsouris, 2012).

The repercussions as well as the needs that have emerged from the lack of extension services in Greece and the serious deficiencies in professional training, have been explored by a number of studies (Alexopoulos *et al.,* 2009; Charatsari *et al.,* 2011; Charatsari *et al.,* 2012; Brinia & Papavasileiou, 2015; Lioutas *et al.,* 2010; Kaberis & Koutsouris, 2012; Pappa & Koutsouris, 2014; Papaspyrou *et al.,* 2009; Michailidis *et al*., 2010; Marantidou *et al*., 2011; Dinar *et al*., 2007). For example, Alexopoulos *et al*. (2009) and Charatsari *et al.* (2011) clearly indicate, that there is demand for extension and training, and indeed farmers are willing to pay for these services, provided that certain requirements relating to the content, methodology and qualified personnel are met (i.e. able to respond to farmers' needs).

Faced with such challenges the current work intends to explore the possibilities of creating a Farm Advisory Network (FAN) in the Agricultural University of Athens (AUA), which will provide high-quality, specialized advisory services, covering the entire spectrum of modern agricultural needs. The main objective is to estimate the cost for the provision of the advisory services per farmer. Such an estimation is deemed necessary in order to determine the project's viability, by ensuring that the cost for the provision of the advisory services per farmer is low comparing to the multiple benefits of advisory provision. Therefore, a financial analysis for the establishment and pilot operation of the FAN was carried out in four Prefectures.

Theoretical background: The extension and innovation systems, as well as their configurations and approaches, have for a long time been a matter of constant debate and research, leading to several paradigms which have affected developments in extension over the years (Cristóvão *et. al.,* 2012). As stressed by Anandajayasekeram *et al.* (2008: 93), "over the years, a number of models have been used to enhance the effectiveness of extension services and service delivery".

Until recently, agricultural sciences have been dominated by "the paradigm of experimental science, also called reductionist science" (Packham & Sriskandarajah, 2005: 121). This dominant paradigm advocates that "a complex system can be explained by reduction to its fundamental parts" (Packham *et al.,* 2007: 4). Furthermore, Nerbonne & Lentz (2003: 67) state that this paradigm implies a reliance "on scientific experimentation to create a 'fix' for agricultural problems". Thus, in the dominant in agricultural development transfer of technology model (TOT), researchers are the ones who identify farmers' technical problems and generate solutions mainly at research stations, while extensionists transfer the ready-made solutions from researchers to farmers (Anandajayasekeram *et al.,* 2008).

However, as stressed by Hubert *et al.* (2000: 17), this "dominant linear paradigm of agricultural innovation based on delivery to, and diffusion among, farmers of

technologies developed by science, has lost utility as an explanation of what happens". According to Anandajayasekeram *et al.* (2008), the top-down model results in a rigid hierarchy and one-way communication which discourages the feedback of information. This, in turn, implies that researchers have a poor understanding of farmers as well as of the opportunities and constraints they face. Thus, although the achievements of science using reductionism were impressive, including agriculture's green revolution (Packham & Sriskandarajah, 2005), alternative approaches have begun to emerge since 1970, due to the realization that linear and mechanistic thinking has to be replaced by systems thinking as it is no longer effective in understanding the source and the solutions to modern, increasingly complex problems (Hjorth & Bagheri, 2006). According to Koutsouris (2010: 3), "*a systems approach, in order to understand complexity, looks at a potential system as a whole (holistically) and focuses on the relationships (important casual inter-linkages or couplings) among a system's parts and on system dynamics, including human and organizational issues which are rather ignored in traditional approaches*".

In this context, a substantial step forward has been the emergence of Farming Systems Research & Extension (FSR/E), as a suite of methods aiming at improving the comprehension and appliance of technical interventions (Schiere, 1999). A further step within FSR/E approaches has been the development and spread of the Participatory Rural Appraisal (PRA), which constitutes an evolution of Rapid Rural Appraisal (RRA) embracing participatory approaches (Chambers, 1992, 1994; Webber & Ison, 1995). FSR/E contributed, among others, to the creation of "awareness about the need for interdisciplinarity, context and relations" (Conway & Barbier, 1990 cited in Schiere, 1999). As pointed out by Packham *et al.* (2007), one of the most important benefits that occurred from the development of FSR/E has been the acknowledgment of the need for 'co-learning' between scientists and farmers.

Subsequently, the development of Agricultural Knowledge and Information Systems (AKIS) and Agricultural Innovation Systems (AIS), further broadened the scope of the participatory approach, recognizing the role of other actors in knowledge and innovation. More specifically, the AKIS concept constitutes a development of the Agricultural Knowledge Systems (AKS) concept which emerged in the 1960s (EU SCAR, 2012). The focus of AKS was on the integration of farmers, education, research and extension forming a knowledge triangle, with the farmer at the center of the triangle. The AKIS concept is an 'extension' of the AKS concept, with emphasis being placed on the process of knowledge generation and communication, and the inclusion of actors outside the research, education and advice fields (Dockès *et al.,* 2011). Moreover, in recent times the AKIS concept has acquired a second meaning (substituting innovation for information), thus opening it up to a wider range of public tasks as well as to innovation support (Dockès *et al.,* 2011; Klerkx & Leeuwis, 2009).

On the other hand, the AIS framework "did not evolve as a further development of the AKIS framework, but rather as a parallel development" (Rivera *et al*., 2006: 587). Despite structural similarities, "*according to Hall et al. (2006) the main difference between AIS and AKIS lies in the greater and more explicit focus of AIS on the influence of institutions (seen as organisations like companies, public research institutes and governmental entities) and infrastructures on learning and innovation, and its explicit focus to include all relevant organizations beyond agricultural research and extension systems*" (Klerkx *et al.,* 2012: 463).

On parallel, public sector weaknesses regarding the provision of extension services (see Alexopoulos *et al*., 2009) have resulted in a plethora of extension reforms, such us decentralization, privatization, contracting/outsourcing and public-private partnerships (see Rivera & Alex, 2005). What is generally observed nowadays in Europe, as well as in many other parts of the world, is not the typical unified extension systems, but a plurality of arrangements that include a wide range of public and private actors (Ministry services, universities, education and training institutions, farmers' organizations, private firms, etc.) (Cristóvão *et al.,* 2012). In other words, nowadays, there is a strong tendency towards pluralistic advisory services rather than pure public sector models, which clearly indicates that the concept of participation has infiltrated every aspect of agricultural extension. Nevertheless, the provision of extension services in Greece is still dominated by the transfer of technology model (see Kaberis & Koutsouris, 2012). Moreover, the dearth of a national policy framework and a coordination mechanism or agreements between the AKIS actors has resulted in the,

nowadays, highly fragmented, uncoordinated and dysfunctional AKIS (Koutsouris, 2014).

Taking into account all the above mentioned challenges agricultural extension services are facing on both national and international levels, it is clear that there is an urgent need for the reorganisation and reorientation of extension services in Greece, following a systemic approach.

The current study concerns the establishment of a FAN in AUA which will provide high-quality, specialized advisory services, covering the entire spectrum of modern agricultural needs. According to the international experience, the provision of advice to farmers through Services operating under the umbrella of academic institutions, is widespread in the United States (U.S.) for more than a century. More specifically, "in 1914, the Cooperative Extension Service (CES) was established to disseminate information about agriculture and home economics from land-grant universities to the U.S. public" (Ahearn *et al.,* 2003: 1). Here the word "cooperative" signals the formal partnership between the U.S. Department of Agriculture, land-grant colleges and universities, and state and county governments (Peters, 2014; Ahearn *et al.,* 2003). This decentralized extension system has an extension office in nearly every county (Swanson & Rajalahti, 2010). Papadopoulos (1996), points out three distinctive features of the American extension model: the institutional linkage between extension, agricultural research and educational institutions; the intense educational dimension of agricultural extension function due to the close connection with educational institutions, such us universities and colleges; the local dimension of the agricultural extension programmes.

The early focus of CES was on farming but over the years its mission has broadened considerably to meet the shifting needs and priorities of American people. Today, most Extension organizations across the country categorize their programming outreach in the four traditional areas of Agriculture, 4-H Youth Development, Family & Consumer Science (FCS), and Community Development. "These categories offer great breadth, depth, and diversity of programming outreach" (Raison, 2014). Nonetheless, goals and extension priorities differ in each state (Wang, 2014). CES has, among others, helped to improve agricultural productivity and, in general, rural economy as well as to educate youth and sustain the environment (Wang, 2014). Such a public extension system, despite the increasing involvement of private firms in providing production-related information, has been unique in assisting farmers through a multi-functional portfolio of programmes with the latter conceived as a public good (Wang, 2014; Padgitt *et al.*, 2000). Kistler & Briers (2003: 213) concluded that "since its establishment in 1914 through the Smith-Lever Act, the Cooperative Extension System (CES) has grown to become the largest youth and adult education organization in the United States, if not the world".

MATERIALS AND METHODS

Basic structure of the Farm Advisory Network: As aforementioned this study seeks to explore the possibilities of creating a Farm Advisory Network in the Agricultural University of Athens. The provision of advisory services under the umbrella of a university was chosen due to the failure of all the previous attempts to reorganize the institution of agricultural extension (see Koutsouris, 2014). The FAN's headquarters will be located at the AUA. Initially, a pilot Network of advisors will be set up and operate exclusively in four Prefectures. The selection criteria for these four Prefectures were their relatively small distance from Attica Prefecture where the AUA is based and their strong agricultural activity. Finally, the Prefectures selected were: Viotia Prefecture, Phthiotis Prefecture, Achaia Prefecture and Laconia Prefecture.

In each Prefecture there will be a specified number of advisors based on the target population of the farmers who are expected to collaborate with the FAN. Their advisory work will be coordinated by the Network's secretariat located in the AUA. The Network shall be placed under the general supervision of a faculty member who will be appointed as scientific manager of the Network. In addition, the FAN will build a website where useful information, educational material as well as web tools for farmers will be posted; access to the website will be open. Furthermore, the advisors may play a broader role in the Prefectures through the provision of general information to all interested farmers (not only clients) for free (e.g. group and mass methods).

Competitive Advantages of the AUA FAN: The main competitive advantage of the Network lies in the fact that operating under the umbrella of the AUA it will link agricultural research, extension and education. As a result, the knowledge gap between farmers, researchers

and advisors which leads to advice that does not respond to farmers' needs will be largely reduced. Through the Network, a two-way information flow system will be created from farmers to researchers and vice versa. More specifically, the Network's advisors along with the farmers will be able to identify the problems of the latter and then transfer the information to the university's researchers, who will contribute their knowledge to find the most appropriate solutions that respond to the farmers' needs. On the other hand, the transfer of knowledge and innovation generated by academic research to the farmers will be facilitated through the Network's advisors.

One of the major roles of the Network's advisors, is that of the facilitator who, according to Ingram (2008), helps "farmers to understand the problems and opportunities within their own farming systems" through farmers' empowerment "in terms of raising general awareness about problems as well as teaching [explaining] certain principles and practices". Therefore, facilitative encounters "are built on dialogue, mutual respect and shared expectations and this provides the right context for joint learning" (Kloppenburg, 1991; Pretty, 1995, cited in Ingram, 2008: 414). Moreover, the AUA FAN has, due to the university's wide relationships with various public and private actors involved in the agri-food sector and, in general, rural development (Ministry, Rural Development Programme (RDP) Managing Authorities, research institutes, farmers' organizations, food industries, retail chains, etc.), the ability to develop synergies and partnerships, especially as far as the co-creation of innovations and the provision of pluralistic advisory services are concerned.

Methodology and Data: In order to explore the possibilities of creating a FAN in the Agricultural University of Athens, a SWOT analysis was carried out to help identify the strengths and the weaknesses of the university in relation to the opportunities and the threats of the external environment, regarding farm advisory. It should be noted that agriculture and related fields are the fields in which SWOT is used the most (Ghazinoory *et al.,* 2011). The SWOT framework has a rather loose structure. However, several methodological advances on SWOT have appeared including its integration with other methods (see Ghazinoory *et al*., op. cit.).

In this study, SWOT analysis is carried out, based on the integrated SWOT framework proposed by Bell & Rochford (2016). This framework uses the resource-based view (RBV) to identify strengths and weaknesses (internal analysis) and PESTEL analysis as well as Porter's five forces model to identify opportunities and threats (external analysis).

The data used in the internal analysis (RBV) are either documented by the content of this study or were obtained through personal communication with faculty members of the AUA (February 2017). The data used in the external analysis (PESTEL analysis and Porter's five forces model) are either documented in the Greek literature cited in this study or were obtained from other secondary sources (Hellenic Statistical Authority, National Rural Development Programme 2014-2020, legislation, etc.).

Furthermore, a financial analysis for the establishment and pilot operation of the FAN was carried out in four Prefectures to determine the cost for the provision of the advisory services per farmer. The financial analysis includes the determination of the start-up budget for the investment and the estimation of the annual costs for the first year of the pilot operation of the Network in the four Prefectures.

Determining the mode of action and the capacity of farm advisors: The Network's advisory activity in each Prefecture will be carried out by groups of advisors. Each group will consist of two agronomists, one holding a degree in agricultural economics and the other, depending on the scientific field covered by the group, in crop or animal science. This scheme has been selected to ensure that the provision of advisory services will cover the entire spectrum of farmers' needs, from simple technical or economic matters to complex matters that require both technical and economic knowledge.

The main advisory method that the advisory groups will employ is individual contacts (farm visits, one-to-one advice), since Greek farmers seem reluctant to take part in collective actions (see Koutsou & Vounouki, 2012; Österle *et al.,* 2016). Nevertheless, in the future, and as far as the pilot program is well established, the provision of advice and facilitation in groups of farmers and at farming systems level will be pursued.

Regarding the capacity of each advisory group (i.e. the maximum number of farmers each advisory group can serve per year), it is calculated by empirical evidence as follows. By setting as a basis for calculation that full-time employment is eight hours per day for five days a week, the annual working days for each advisory group are

estimated at 234 days per year, net of weekends, annual leave and public holidays. From these, around 60%, that is 140 days, will be devoted to farm visits and the rest 94 days to design advice corresponding to each farmer's needs.

Given that each advisory group can visit, on the one hand, up to three farms a day and, one the other hand, each farm approximately three times a year, the maximum number of farms – and consequently farmers – each advisory group can serve per year is estimated at 140 as follows:

(140 days × 3 farms a day) ÷ 3 visits per farm = 140 farms per year

Determining the target population of each Prefecture: In order to specify the target population, i.e. the number of farmers expected to collaborate with the FAN in each Prefecture, anonymized data from the Integrated Administration and Control System (IACS) for 2011 were utilized. It should be clarified, that the data used concern the farmers within the age group of 20-50 years, considering that older farmers will hardly invest in advisory services. The determination of the target population has been based on the below mentioned assumptions.

First, in each Prefecture, the three dominant types of farming have been taken into account with the exception of Achaia Prefecture where the fourth dominant type of farming has been also taken into account as an attempt to cover as far as possible the advisory group's capacity as determined above. The dominant types of farming in Achaia Prefecture concern livestock production and in the other three Prefectures crop production. Secondly, regarding the economic size, holdings of more than 8,000 € have been taken into account, considering that owners of smaller economic size holdings may be unable to meet the cost of advisory services. Finally, in each Prefecture, it is estimated that the percentage of farmers who will cooperate with the FAN will approach 10% of the total number of farmers classified in the selected types of farming, given that farmers express an impressive need for advisory support.

As a result, the estimated number of farmers who are expected to collaborate with the FAN during the first year (pilot operation) is 128 farmers in Viotia Prefecture, 142 farmers in Phthiotis Prefecture, 125 farmers in Achaia Prefecture and 234 farmers in Laconia Prefecture (total: 629 farmers).

*Data regarding the start-up budget***:** Start-up budget regards all the expenditure required to start the operation of the FAN.

Facilities and Equipment: As mentioned above, the FAN will be based in AUA. More specifically, the Network's Secretariat will be housed on campus in an office provided free of charge by the university.

Before establishing the Network's Secretariat at the office, some maintenance work (interior painting, maintenance of electrical installations and air conditioner) will be carried out. Maintenance cost is estimated at 300 €. Moreover, the office will be equipped with furniture, as well as electrical and electronic equipment. According to the current market prices of such equipment, the total cost of the office equipment is estimated at 2,000 € (700 € for furniture and 1,300 € for electronic and electrical devices).

Marketing Communications and Promotion Strategy: The marketing communications and promotion strategy aims at creating awareness of the FAN and its services within its target market (i.e. farmers and other stakeholders involved in rural development). The strategy includes: organization of four information days – one in each Prefecture, radio advertising of the information days, creation of printed information material, corporate identity creation, website construction and social media advertising campaign. Moreover, an information day to present the results and the progress of the Network's advisory action, will take place in the AUA towards the end of the first year of the Network's operation. This activity will be included in the start-up budget for the investment since it will take place only once. The cost for all the above activities is estimated at 9,723 €.

Data regarding annual costs: Fixed costs: Annual fixed costs arise from the start-up budget for the investment and include depreciation, fixed capital interest, maintenance and maintenance interest. Depreciation has been calculated using the straight-line depreciation method and the higher depreciation rate of 20% for such depreciable assets (tangible and intangible). Fixed capital interest has been calculated using a 7.5% medium to long-term loan rate for one year and maintenance interest has been estimated using a short-term loan rate of 7.5% for six months. Regarding maintenance costs, an amount corresponding to 10% of the start-up costs concerning facilities and equipment, has been calculated.

Variable costs: In the case of the FAN, variable costs are as follows:

a. Personnel cost
b. Electricity and water supply costs
c. Telecommunication costs (telephone / internet)
d. Stationery costs
e. Travel expenses of the advisory groups
f. Travel and accommodation expenses of the faculty members
g. Other expenses that may arise during the operation of the FAN
h. Interest on personnel cost
i. Interest on all the above variable costs excluding personnel cost

Travel expenses of the advisory groups relate to the fuel costs for the farm visits and have been calculated according to the following data: The number of working days devoted to farm visits is set annually at 140 for each advisory group. According to empirical evidence, the maximum mileage that each advisory group can cover on a daily basis is 70 km. The mileage allowance paid by the Research Committee AUA amounts to 0.40 €/km. Travel and accommodation expenses of the faculty members refer to the visits that faculty members of the university can make in the four Prefectures to investigate and resolve any complex cases that groups may encounter in their advisory work. The calculation of these costs is based on the maximum compensation for travelling and accommodation expenses provided by the Research Committee AUA and the following assumptions: During the first year of the Network's pilot operation, three visits of faculty members will take place in each Prefecture, except for Laconia Prefecture, where due to a larger number of farmers, four visits will take place. Each visit will be carried out by one faculty member and will last two days (one overnight stay). The kilometric allowances have been calculated using the distances, in kilometers, between Athens and the capitals of the Prefectures. Moreover, travel expenses include the toll costs. The interest on personnel cost, as well as the interest on variable costs (excluding personnel cost), have been calculated using a short-term loan rate of 7.5% for six months. The common practice in financial analysis is not to calculate the interest on personnel cost. However, in this study, the interest on personnel cost is calculated following the principles of agricultural economics (see Tsiboukas, 2009).

Personnel cost: Based on the capacity of each advisory group, the estimated number of farmers who are expected to collaborate with the FAN in each Prefecture and the orientation of the dominant types of farming in each Prefecture towards crop or livestock production, the number and composition of the advisory groups in each Prefecture is shown in Table 1.

Table 1. Number and composition of advisory groups in each Prefecture.

Prefecture	Estimated number of co-operating farmers	Dominant production sector (crop or livestock production)	Number of advisory groups	Composition of advisory groups
Viotia	128	C.P.	1	1 agronomist (agricultural economics) 1 agronomist (crop science)
Phthiotis	142	C.P	1	1 agronomist (agricultural economics) 1 agronomist (crop science)
Achaia	125	L.P.	1	1 agronomist (agricultural economics) 1 agronomist (animal science)
Laconia	234	C.P.	2	1 agronomist (agricultural economics) 1 agronomist (crop science)

Consequently, the FAN will offer full time employment in ten agronomists-farm advisors, of whom five holding a degree in agricultural economics, four in crop science and one in animal science. All agronomists should hold a postgraduate degree in farm advisory. Additionally, the FAN will offer full time employment in one agronomist holding a degree in agricultural economics who will staff the Network's secretariat.

Finally, as mentioned above, a faculty member will be employed in the Network as scientific manager. The faculty member will not receive additional salary from the Network. The cost of providing services will be covered by its normal annual remuneration. Data illustrated in the Table 2 below shows the number of personnel, their monthly salary and the annual personnel cost of the FAN.

Table 2. Analysis of the annual personnel cost of the FAN.

Position	Number of personnel	Salary (€/month)	Annual personnel cost (€)
Secretary	1	1,500	18,000
Farm advisor	10	2,000	240,000
Scientific manager	1	0	0
Total			258,000

RESULTS

SWOT analysis: According to Table 3, the key strengths of the university are the linkage between extension, agricultural research and education, as well as subject knowledge and experience. In general, all the strengths listed below, enable AUA to take advantage of the opportunities appearing in the external environment regarding farm advisory. Finally, it should be noted that the main weaknesses of the university, as well as the threats from the external environment, derive from the economic crisis.

Table 3. SWOT analysis.

Strengths	Weaknesses
Provision of high-quality, specialized advisory services that cover the entire spectrum of current agricultural needs.	Insufficient working capital.
Linkage between extension, agricultural research and education.	Limited resources of the university due to budget cuts imposed by the economic crisis.
Website with useful information, educational material and web tools, tailored to farmers' needs.	Severe shortages in teaching and research staff due to the ban of hiring new staff as a result of the economic crisis.
Subject knowledge and experience.	
Validity of university.	
Opportunities	**Threats**
Lack of integrated farm advisory services.	Unstable economic environment due to the economic crisis.
Demand for extension and training, even if this implies fees.	Lack of liquidity and credit especially after the recession.
Return of young people in rural areas due to the economic crisis.	Increase in production costs in agriculture due to the rise of input prices.
Support for advisory services through Measure 2 of the RDP 2014-2020.	Lack of agricultural advisory services creates a breeding ground for new entrants, also favoured by the new RDP 2014-2020 through Measure 2.
RDP 2014-2020 encourages entry of young farmers into the agricultural sector.	
There are only a few Greek blogs supported by agricultural organizations or experts in order to provide certified and validated knowledge (Ferentinos et al., 2013).	New burdens on farmers' insurance and taxation (Law 4387/2016), resulting in a reduction in their income.

Table 4. Start-up budget.

Investments	Cost (€)
Maintenance works	300
Furniture	700
Electrical and electronic equipment	1,300
Marketing communications and promotion strategy	9,723
Unforeseen expenses	601
Total	12,624

Start-up budget: According to the data presented in Table 4 the start-up budget for the investment, which is about 12,624 €. The main part of the highlighted budget regards the marketing communications and promotion strategy (77%). An amount of around 5% of the total initial investment cost is foreseen for

unforeseen expenses that may arise during the establishment of the FAN.

Annual costs: Table 5 presents the annual costs for the first year of Network's pilot operation. The main part of the annual costs regards the personnel cost (86%). The smallest percentage of annual costs regards fixed costs (1%), while variable costs – excluding personnel cost and interests – regard 9% of the annual costs.

Table 5. Annual costs.

Description	Cost (€)
Personnel cost	258,000
Fixed costs	3,710.2
Depreciation	2,524.8
Fixed capital interest	946.8
Maintenance	230.0
Maintenance interest	8.6
Variable costs *(excluding personnel cost and interests)*	27,919
Electricity and water supply costs	600
Telecommunication costs	300
Stationery costs	600
Travel expenses of the advisory groups	19,600
Travel and accommodation expenses of the faculty members	5,819
Other expenses	1,000
Interest on personnel cost	9,675
Interest on the variable costs (excluding personnel cost)	1,047
Total	**300,351**

Estimating the cost for the provision of the advisory services per farmer: The cost for the provision of the advisory services per farmer results from the division of total annual costs (300,351 €) with the total number of farmers estimated to collaborate with the FAN during the first year of its operation (629 farmers) and is 477.50 €. This cost is the minimum required for covering all annual costs without the Network showing profit or loss.

Finally, it should be clarified that this cost concerns all the consulting services provided annually to each farmer by the farm advisory groups.

DISCUSSION AND CONCLUSIONS

This study aimed to explore the possibilities of creating a FAN in the AUA. First a SWOT analysis was carried out to analyse the overall position of AUA and its external environment, regarding farm advisory. Then a financial analysis for the establishment and pilot operation of the FAN was carried out in four Prefectures to determine the cost for the provision of the advisory services per farmer. Results of SWOT analysis indicate that AUA is capable of supporting such a project (i.e. the setting-up of a FAN in the university), with its distinct competitive advantages of subject expertise and the strong linkage between extension, agricultural research and education. On the other hand, AUA is facing serious constraints due to limited resources and understaffing. Nevertheless, the Network will not be financially dependent on the university but on the farmers through their payment for the advisory services. As far as external threats are concerned, the impacts of the economic crisis such as unstable economic environment, lack of liquidity and credit and taxation increase may discourage some farmers from investing in advisory services. However, the estimated cost for the provision of the advisory services per farmer, as indicated by the results of the financial analysis, is not high (477.50 €) considering the high-quality of the Network's advisory services and the multiple benefits each farmer can derive from them. For example, according to a study carried out on sheep farms in Continental Greece, their gross profit may increase from 6% to 35%, depending on the farm type, if the sheep farmer follows the optimum production schedule of the farm proposed by using linear programming method (see Sintori, 2012). More specifically, in five of the six farm types examined in this study, the increase in gross profit was estimated from 3,157 € to 6,289 €. It should be noted that linear programming is one of the most important operations research tools, widely used in the provision of advisory services. Alternatively, the

FAN could apply for funding under the Measure 2 of the RDP 2014-2020 regarding the providers of advisory services (Farm Advisory System-FAS) and if selected to provide free of charge any of the advisory services included in the six advisory packages adopted by the Measure. Of course, this requires further investigation in order to re-estimate – if deemed necessary for the viability of the Network – the cost of the provided advisory services which are not part of the advisory packages provided through Measure 2.

In parallel, the FAN may participate in cooperation activities under the Measure 16 of the RDP 2014-2020, as a broker and facilitator in European Innovation Partnership's (EIP) Operational Groups, contributing to the promotion of innovative initiatives and knowledge transfer through shared experiences and cooperation. Furthermore, the FAN can play a crucial role in facilitating the dissemination of project results to targeted stakeholders (farmers) through its advisory network. On the other hand, regardless its participation or not to that Measure, the FAN can promote, through its advisory activities, the idea of cooperation by informing the farmers on the Measure's key opportunities and encouraging their participation. However, it should be mentioned that the situation in Greece does not allow for much optimism vis-à-vis the successful implementation of such Measures (see Österle *et al.,* 2016; Koutsouris, 2014). At this stage, it is still unknown when and how these Measures will be implemented. In addition, the FAN may have a positive impact on the level of socio-economic development of the target-areas. Through the provision of free information to all interested farmers by the advisors and the website, it can contribute to improving the welfare of farmers and other people living in rural areas.

On the other hand, the establishment of the FAN under the umbrella of the AUA, can be the springboard for the staffing of the Network with appropriately trained advisors, capable of meeting the new roles of "facilitator" and "innovation broker" that have emerged in parallel with the shift towards participatory approaches (see Cristovão *et al.*, 2012). However, this implies reforms in the university's academic curricula in order to equip young advisors with the appropriate skills required by the contemporary roles.

Finally, it should be noted that if the pilot operation of the FAN proves successful, it will provide the opportunity for AUA to broaden the scope of advisory activity and for the other universities to take corresponding actions in order to cover, at least partly, the lack of extension in Greece.

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