

THE IMPORTANCE OF FACTORS AFFECTING THE ENTRY OF ENTREPRENEURIAL SUBJECTS TO ORGANIC FARMING IN THE CZECH REPUBLIC

Hana Stojanová¹, Veronika Blašková², Michaela Lněničková²

¹Department of Management, Faculty of Business and Economics, Mendel University in Brno, Zemědělská 1, 613 00 Brno, Czech Republic

²Department of Statistics and Operation Analysis, Faculty of Business and Economics, Mendel University in Brno, Zemědělská 1, 613 00 Brno, Czech Republic

Abstract

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The aim of the article is to identify the key factors influencing the entry of entrepreneurial subjects into the sphere of organic farming in the Czech Republic. Primary data for the research was obtained from a questionnaire survey carried out in 2016 through an internal communication system of the PRO BIO Association, comprising 481 operators in the field of organic farming in the Czech Republic.

The research questions mainly concerned the reason for entering the sphere of organic farming, and what influenced this decision, the motivation of entrepreneurs to stay in organic farming and what could possibly be the reason for their departure from this sector of business. Another part of the research questions related to the knowledge about organic farming in the establishment of their business. a combination of factors that are important in deciding on entry into the industry and subsequent stay was found.

Keywords: organic agriculture, biodynamic agriculture, dendrogram, entering of entrepreneurial entities into organic agriculture field, Chi-square test, cluster analysis, personal motivation

INTRODUCTION

The orthodox model of agriculture has been aiming, with a help of increasing input into a productive process e.g. doses of fertilizer, a vast chemical protection of plants and its technical equipment, to achieve the highest production possible. From this aspect, conventional agriculture increases the pesticide demand, industrial fertilizers and more efficient agricultural machinery, which inevitably results in negative impact on ecological stability (Pimentel *et al.*, 2005; Woese *et al.*, 1997; Rembalkowska, 2007). With the formation of different ecological unions, the awareness of chemical substance harmful effects on environment and on body system raised (Vetter *et al.*, 1987; Liebman *et al.*,

2001; Steiner, 2004; Heimler *et al.*, 2009; Kuminoff, 2010). Literature of fact introduces the whole stream of economical and environment friendly agriculture (e.g. biodynamic agriculture, alternative agriculture, organic farming), but the official name in Czech and EU, is eco farming. In this article, there are terms of biodynamic agriculture and eco farming, symbolizing the agriculture, succeeding within the nature without chemical substances, pesticides, soil regulators and other chemical substances.

Bio agriculture is a demanding branch not only on the level of knowledge, time and economy, but also for its ethical and social approach (Mala, 2011; Bellon and Penvern, 2014). Currently the focus is on biodynamic agriculture and is influenced

by an effort for the landscape preservation and improving the environment compare with the conventional intensive agriculture, also by a strength of European donation programmes and by the target profit (Kroupova and Maly, 2010; Pechrova, 2014; Sejnohova *et al.*, 2015). a wide spectrum of scientific studies and literature sources (Tuomisto *et al.* 2012; Mondelaers, 2009; Burton *et al.*, 1999) gives the reasons of entry into this branch. The main intentions have economic character, completed with the environmental and ethical motives (Greene *et al.*, 2009; Chouinard, 2008; Brekke *et al.*, 2003; Mzoughi, 2011).

The BIO or ECO label of eco-products has become an important indicator for certified, highly valuable foodstuffs, produced by a considerable land cultivating, plant growing and animal farming, according to welfare (Spoolder, 2007; Heimler *et al.*, 2011; Liebman, 2001). According to current observations, the complex value exceeds the valuation of agriculture importance for the society. It involves economic, social and ecologic target groups of agriculture.

Eco-farming in Czech Republic

Biodynamic agriculture was introduced by Rudolf Steiner in 1924 (Steiner, 2004). First mention about eco-farming in Czech Republic is in literature of fact, dated to 1990, where MZe CR, Libera association and PRO-BIO Union established the whole system. In the era of donation slump (1993-1996), two of five unions have been reduced and MZe Czech Republic paid attention to legislative amendment, methodical regulations and to unification. Methodical guide of eco agriculture cj. 655/93-340 dated to 22. June 1993 has been in effect in Czech Republic from 1993. Only inner union guidelines of eco farmers existed up to this year. The European Union started the accreditation process of eco farming and the trademark of bio products has been determined (Zidek, 1999). Eco farming in Czech Republic comes under the Czech Ministry of Agriculture surveillance and every eco farmer, using the label BIO has to be registered, according to the law nr. 252/1997Sb., of eco farming (Ministry of Agriculture,

2014, Ministry of Agriculture, 2015). The PRO-BIO Association is a national civilian union which associates eco farmers, processors, wholesalers, advisers, schools, research facilities, bio-product consumers and eco farming friends (PRO-BIO, 2016). The law for eco-farming nr.242/2000Sb. identifies the plant and dairy production in organic farming, it implements the idea of 'eco-farm', which is understood as independent and closed economic unit, covering buildings and lands. The target of clear and intelligible eco-farm demarcation is a reasonable separation of eco-farming from another agricultural production of businessmen and its clear identification, proceeding from a Law nr.242/2000 Sb., for ecological farming. The IFOAM, International Federation of Organic Agriculture Movements is the worldwide umbrella organization for the organic agriculture movement. This federation represents 800 affiliates in 115 countries worldwide. IFOAM EU represents more than 340 members of the European Free Trade Association (IFOAM, 2016).

The aim of the article is to identify key factors influencing the entry of business subjects into Biodynamic agriculture in Czech Republic. The research was mainly related to the reason why to enter the organic farming business and what was the key factor and motivation of entrepreneurs to maintain in this branch and what could possibly cause the withdrawal from this business field.

MATERIALS AND METHODS

The questionnaire was chosen to collect the primary data. Electronic questionnaires were sent via inner communication system to members of union 481 PRO-BIO doing business in this matter in Czech Republic longer than a year. The respond 's rate was 22.04 %. The questionnaire contained 20 questions: 4 of them related to identification, 9 of them related to general business in eco-farming, 5 of them dealt with the entry into this branch and 2 questions were related to maintaining in this business. Some of the questions were not answered by all 106 respondents but all

I: Number of registered entities in organic farming

	2000	2014	2015	2016
Organic Farmers	563	3885	4115	4243
Soil land – share for agricultural land	3.86%	11.72%	11.74%	12.03%

Source of data: PRO-BIO 2016

II: Soil fund structure in organic farming

	2000	2014	2015	2016
Arable land	12.44	11.4	13.05	13.12
Permanent grassland	86.72	83.54	82.37	82.65
Permanent cultures	0.32	1.57	1.38	1.22
Other areas	0.52	3.47	3.2	3.01

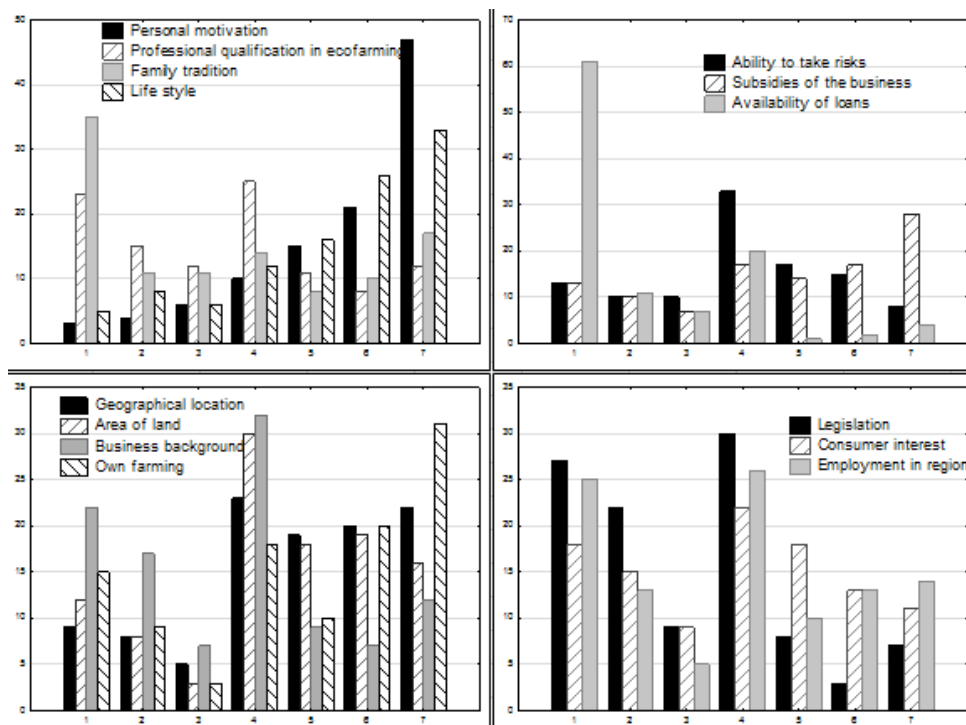
Source of data: PRO-BIO 2016

the respondents answered the key question related to measures, influencing the entry of business interests into the eco farming. This is the reason why all the questionnaires are valid. Authors divided the questionnaire results into subchapters according to these four subjects. The key factors influencing the decision to enter the eco farming business and their importance was identified, hypotheses of analysis results were verified and utilized in Statistica programme version 12 with a help of a chart method. The influence of factors was evaluated according to the relative frequency and p-values, carried out in a test of independence. The 5% level of importance has been chosen to verify Chi square test, and compared with the given p-value. The clustering method has been used to find the group of factors, important for their producers to influence the entry into the eco-farming sector. The Ward method had the best results.

The respondents' characteristics

The 76% of men and 22% of women aged between 31 and 60 years took part of the questionnaire, 2% of respondents did not answer this question. The highest achieved education represents 1% of basic education, 19% of respondents represent high school education with the vocational certificate, college education with leaving exam certificate represents 39% of respondents, higher scholar education represent 4% of respondents and academic education represent 37% of all respondents. 63% of all respondents have education related to agriculture in some way and 14% of

respondents have education directly related to eco-farming. 95% people doing business in eco-farming longer than 3 years, which is influenced by legislation factor, when entering the eco-farming sector and by the length of conversion period. Respondents worked within the sector of plant and dairy production, where 15.69% of these respondents also focused on another sector of business, which is organic food production, agro tourism, accommodation services or organic food sale. 50% of all respondents worked in the plant and the dairy sector of production, and 50% of respondents worked in either of the production sectors. 44% of businessmen employ 1–5 people, 9% employ 6–15 people, 6% employ 16–25 people. Nearly 39% of people in business do not have any employees (only family members) and 2% of respondents employ more than 26 people. The whole 70% of respondents employ only family members and friends, 27% of respondents employ people with no family relation, 3% of respondents employ both the categories. The greater number of respondents uses the combination of ways to finance the eco-farming. 89% of respondents use own profit, 70% use Czech Republic or EU donation programmes as a financing source. Only 8% of respondents use the PRO-BIO union subsidies, 65% of respondents use preferably long term mortgages to short term ones. Only 4% of respondents use other source of funding as profits from another business, loans from independent people and a main working income outside the eco-farming business. 75% of respondents find their business profitable even if they use funds or loans.



1: Frequency of responses

RESULTS

26% of respondents had an experience within this branch when starting the eco-farming business, 67.9% of respondents already had an experience with agriculture (although just conventional) and had a space for the business. The reason for a different way of farming or starting this business was mainly compromised by economic factors (funding programmes, better product profit, and higher demand) and by personal factors which was disapproval with this orthodox way of farming and a call for its simplifying (not necessarily register the chemical substances and save time when avoiding the spraying) and also by the interest for an environment, a nature, a better animal treatment and plant cultivation. Factors that influenced start of the business matter into the eco-farming sector. Respondents evaluated 14 features on a 7 point scale. Number one, (the lowest number on the scale) showed a very little significance of factor influence when making decision to enter the biodynamic agriculture, number 4 showed the neutral factor influence and number 7 showed a very important factor influence. Respondents had a possibility to present further factors and based on those, they made decision. Examined features were divided into groups according to the economic and personal focus, the business location and socio-legislative factors. Frequencies of responses of all factors are in Fig. 1.

1. Economic factors

The ability of risk taking, gaining funds and credit availability was included amongst economic factors, relating to a financial frustration to start the eco-farming business, especially with the investment threat due to nature forces. Respondents did not find this factor important. 55% of respondents found the factor of functional funding program in CR and EU important. The factor of credit availability was evaluated as unimportant. 90% of respondents, who found the fund factor important, mentioned they would consider staying within the eco-farming business, if there was a change of funding.

2. Personal factors

A personal motivation of entrepreneur, professional qualification in eco-farming, life style, and family tradition was included amongst personal factors.

More than 85% of respondents had a personal factor of motivation on the scale from 4 to 7 points, which shows a great importance when deciding to start the eco-farming business. Family tradition has been found as an unimportant factor. Life style together with eco-farming has been rated as a very important factor, which is visible in the chart. 70% of respondents rated the life style factor on the scale of points from 4 to 7.

3. Factors of business location

Factors of business location covered a geographical building position, land size, equipment, and support of business and own farm. Respondents gave an important role to a geographical position in terms of pastures access, fertile soil for cultivating, water supply and suitable micro climate (60% of respondents rated the importance on the scale of points from 4-7). The size of land has been rated as a very important factor, especially for farmers dealing with dairy production. If we compare the result of importance to farmers in testing who deal with dairy production with those, who only deal with plant production, we get the important differential (p-value is 0.001). Equipment and business support is a neutral factor and does not influence any decision about starting the business.

4. Socio-legislative factors

Legislation, entry barrier, interest of consumers for organic food, working within region and professional qualification belongs to a group of socio-legislative factors. Respondents rated the professional qualification as unimportant factor together with legislation. Respondents also answered, if there were more administrative and legislative requirements, they would consider leaving this business. 50% of respondents rated the legislation question between 1 and 2 and 30 % of respondents answered with value 4 (neutral). If we start testing respondents and we exclude those with the neutral answer, we can see the important differential in answered questions 1-3 and 5-7. Based on testing we can say, the percentage of respondents, who do not find the legislation interesting, is higher than percentage of those, who can see it as a problem. 99% of respondents answered the question about remaining in eco-farming and only 4.7% answered, they consider leaving this business. The main reason to leave was the decrease of funding or funding programmes, too much supervision and bureaucratic strain. The interest of consumers for organic food was important for those respondents who sell their products directly or by box sale. Working within region was not an important factor.

Tables with basic statistic characteristics, arithmetic average, median and modus show the evaluation of individual criterion on the scale which has affected the entry of respondents into eco-farming. For example the personal motivation factor has reached the highest point on the evaluation scale and therefore this factor can be found as most important. On the other side, mortgage availability reached the lowest point and therefore the factor is not important at all. The scale value identifies degree of importance, which was voted most by respondents. As stated previously, number 1 symbolizes factor that is least important when deciding to start the business and is only apparent at (mortgage availability and family tradition). Number 4 is in the middle of the scale

and it rates factors neutrally, neither important nor unimportant. Eight factors are rated with this value, which is 57% of observing items. The highest value is number seven on the scale which represents a very important factor and we can find it in these four criteria (personal motivation, funds of Czech republic. and EU, own farm and lifestyle).

The scale of factor importance, influencing the business establishment is built upon modus, the statistical value of individual criteria and their significance has been measured in the questionnaire (Tab. III).

According to this value, we can divide influence of factors into three groups: very important, insignificant and neutral. These three groups

III: Basic statistic criteria

Criterion	Mean	Median	Modus	Scale of factor
Personal motivation	5.65	6	7	Very important
Lifestyle	5.23	6	7	Very important
Own farming	4.73	5	7	Very important
Subsidies of the Czech Republic and the EU	4.62	5	7	Very important
Geographical location of the business	4.73	5	4	Neutral
Area of land	4.46	4.5	4	Neutral
Consumer interest in organic products	3.85	4	4	Neutral
Professional qualifications	3.55	4	4	Neutral
Ability to take risks	4.02	4	4	Neutral
Employment in the region	3.74	4	4	Neutral
Legislation	3.07	3	4	Neutral
Family Tradition	3.45	3	1	Insignificant
Availability of loans	2.17	1	1	Insignificant

Source: own elaboration

IV: Dividing of neutral factors

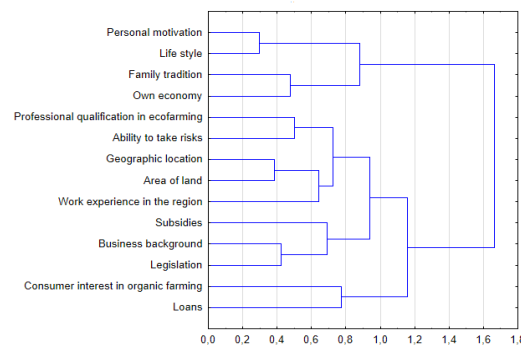
Rather insignificant	Rather important
Professional qualifications	Ability to take risks
Business background	Geographical location of the business
Legislation	Area of land
Consumer interest in organic food	
Work experience in the region	

Source: own elaboration

V: *p*-value for test independence (factor and motive for entering eco-farming)

Factor name	<i>p</i> -value
Personal motivation	0.823
Professional qualifications in organic farming	0.601
Ability to take risks	0.464
Geographic location	0.673
Area of land	0.925
Subsidies (Czech Republic, EU)	0.469
Business background	0.656
Legislation (national, international)	0.871
Consumer interest in organic farming products in the area	0.468
Loans	0.999
Family tradition	0.215
Own economy	0.430
Lifestyle	0.669
Work experience in the region	0.305

Source: own elaboration



2: Dendrogram – Ward's method

represent points on a three point scale of factor importance. If neutral criteria take to account mean and relative frequency, we can include them amongst rather important or rather unimportant criteria. Values of mean of value less than four are rather unimportant and values above number one are rather important criteria for deciding of entry the eco-farming business (table IV).

We investigated further, how individual factors on the scale of importance influence people when starting the eco-farming business. In Tab. V is p-value for test independence. Null hypothesis shows no relation between the value of given factor and the motive for entering the eco-farming business.

Looking at the Tab. V, we can see the result for all tests and we do not reject Null hypothesis what means that, the relation between given factor and motivation of starting business was not convincing. Therefore we have dealt with the possibility of finding relation of factors which influences the motivation of entering business.

The four or five factor groups are recognizable from the dendrogram (fig. 2). The amount of groups has been also proved on the base of factor analyses, which prefers four groups.

Personal motivation, lifestyle, family tradition and own farm belongs to first cluster. This cluster could be called as a producer's persuasion about importance of bio farming to lead a better lifestyle. Professional qualification, ability of risk taking, geographical position of business, size of land and working within region belong to second cluster. This cluster could be called as operator's disposition for a good usefulness in bio-farming sector. The third cluster is constituted of legislation, business support and funding possibility. These factors could be found as an influence of government and state. There is an interest of consumers and mortgage in the last cluster that is just economical section of business. It is quite clear there always have to be several factors linked together to motivate a new producer.

DISCUSSION

Organic farming can be characterised by increasing amount of soil with more organic content using

natural organic fertilizers produces unpolluted products and provides new guidelines in agriculture through diversification in a general context of protecting the environment and promoting sustainable agriculture development (Stanciu, 2008). The interest in the organic farming started in the highly developed countries as a result of social awareness about the negative side effects of the highly intensive agricultural production. Organic farming responds to the demand for organic food and support for organic farming. The biggest areas of agricultural land utilised for organic farming are in the richest countries of Western Europe countries. Also the spending on organic food per capita in these countries is the biggest (Komorowska, 2014). As of the end of 2015 the Organics International declare that 2.5 percent of the agricultural area was organic in Europe, 6.2 percent within European Union with 270 000 producers. Twenty-five percent of the world's organic land is in Europe. The countries with the largest organic agricultural areas were Spain with almost 2 million hectares, Italy with 1.5 million hectares and France with 1.4 million hectares. The largest market for organic products in 2015 was Germany, with retail sales of 8.6 billion EUR, followed by France with 5.5 billion EUR and then UK market with 2.6 billion EUR (Jula Willer, Lernoud, 2017). Potential farmers can evaluate the idea of organic farming as more profitable but contrary to the idea of organic farming as potentially more risky as suggested by Acs *et al.* (2009) among others, followed by the apprehension of weeds and insects as potential sources of business failure (Khaleedi *et al.* 2010). The opinion that the organic food prices are higher than the standard food may be opposed by Flaten *et al.* (2010) that too low organic price premiums are one of the main reasons for opting out of organic farming in Norway. Literal sources (Chouinard, 2008, Greene *et al.* 2009, Mondelaers, 2009, Mzoughi, 2011, Tuomisto *et al.* 2012) reason the change from orthodox way of farming to ecological one with financial motives, especially by reaching funds. Czech eco farming funds are stabilized and are the key factor during conversion period. Into this period that cannot exceed 6 years in Czech can be included only soil together with cultivated plants

without chemical treatments for the time of 6 months. The process of conversion comes under eco-farming law nr. 242/2000 and is a subject to an inspection twice a year.

The conversion goes along with changes in business which is loss of profit caused by starting the ecological system, lowering returns and quantity of animals on a farm, changing market plants. This loss is not compensated with raising prices of eco-products because leaving business

does not correspond with this indication. This statement can be supported by the argument stressed in several studies of the conversion period and would pose a substantial source of risk and a potential barrier for a farmer considering converting (Acs *et al.* 2007, Kerselaers *et al.* 2007, Lampkin, Padel 1994). An often used key link in literature between funds and eco-farming business was not confirmed in conditions of biodynamic agriculture in Czech Republic.

CONCLUSION

The 78.3% of respondents find personal motivation important and 70.8% of respondents find lifestyle important. People starting eco-farming business, have 67% of experience with orthodox agriculture. Size of land, own farm and geographical position were indicated as very important factors. The most surprising is the evaluation absence of farmland quality. Over 75% of respondents use subsidies of Czech Republic and EU as a source of financing and 76.4% of respondents use one of important factors, 76.4% use subsidies of CR and 74.5% of respondents use subsidies of EU. Unimportant factors: support of business, professional qualification, family tradition, working within region, ability of risk taking, interest of consumers for local organic products. Within other factors, legislation is the unimportant factor influencing the start of eco-farming business however it is the important factor when leaving the business.

The organic development and production plays a key role in the society, as creates a specific market responding to consumer demand for organic products, as well as delivers public goods, job creation and the stimulation of the organic food sector and rural economies.

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Contact information

Hana Stojanová: hana.stojanova@mendelu.cz
Veronika Blašková: veronika.blaskova@mendelu.cz
Michaela Lněničková: michaela.lnenickova@mendelu.cz