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**FACTORS INFLUENCING THE DEVELOPMENT OF ENTREPRENEURIAL  
EDUCATION IN AGRICULTURAL APPLIED-SCIENTIFIC EDUCATIONAL  
CENTERS IN IRAN**

**BAHARAK AZIZI<sup>1\*</sup>, SEYED JAMAL F. HOSSEINI<sup>2</sup>, MOHAMMAD REZA  
SOLEIMANPOUR<sup>3</sup>, ALI NASIMI<sup>4</sup>**

1-Ph.D. of Agricultural Extension and Education, Assistant Professor of University of Applied  
Science and Technology, Iran (Email: [baharak\\_1615@yahoo.com](mailto:baharak_1615@yahoo.com))

2- Department of Agricultural Extension and Education, Science and Research Branch, Islamic  
Azad University, Tehran, Iran

3-Young Researchers Club, Varamin-Pishva Branch, Islamic Azad University, Varamin, Iran

4-Department of Agricultural Extension and Education, Varamin-Pishva Branch, Islamic Azad  
University, Varamin, Iran

**ABSTRACT**

An understanding of factors influencing entrepreneurial education in agricultural applied-scientific educational centers in Iran is crucial for creating the new opportunities for educators and encouraging them to involve in entrepreneurial activity. The purpose of this study was twofold. First, it determined the key factors that influence entrepreneurial education in Iranian agricultural applied-scientific educational centers. Second, the study examined relationship of these factors with developing entrepreneurial education. The research in terms of nature is a kind of quantitative research and in terms of goal is applied research, in terms of controlling the variables is descriptive and correlation kind, which has been carried out in a survey way. Statistical population of the study consisted of 1106 educators for agricultural applied-scientific education in Iran. Based on the classification of the Ministry of Agriculture which has divided these centers into five regions, sample taking has been conducted using stratified proportionate random sampling technique. Sample size for the educators is 145 people using Cochran formula.

Considering the entire size of the sample, some 120 questionnaires have been returned. The results of the ordinal factor analysis showed the classification of the factors into five latent variables. The variables were classified into managerial, economical, cultural, technical and regulatory. Also Spearman coefficient showed that there was relationship between economical, cultural, technical, regulatory and managerial factors and perception of educators about entrepreneurial education.

**Keywords: Entrepreneurship, entrepreneurial education, applied-scientific education, agricultural education**

## INTRODUCTION

With regard to population growth during 1979-1989 and that wave reaching to the first decade of 21st century, lack of progress in agricultural economy, immethodical expansion of agricultural higher education, excessive number of agricultural graduates, government policies to downsize its structure, inability of agricultural private sector to employ the graduates due to traditional structure of production and livelihood exploiting system, Iran has faced an intensive crisis of unemployment for agricultural graduates in 2000s. At present based on available authorized statistics it is estimated that there are 42,500 unemployed agricultural graduates. Iranian agricultural higher education system has to find a comprehensive solution for the employment of graduates in self-employment sector (The Agriculture and Natural Resources Engineering System Organization, 2007).

Entrepreneurial education can play a significant role in changing views of students towards self-employment and through education on necessary skills to manage a business has prepared them for self-employment labor market (Nelson, 1986).

Oversupply of graduate manpower in agricultural sector, unemployment growth in their community, lack of response or positive feedbacks to the efforts made in recent decade to find a solution for unemployment problem of graduates on one side and on the other hand the necessity to move to competitive agriculture based on market caused to pay more and more attention to entrepreneurship as a fundamental issue. Proposing new ideas based on the role of entrepreneurship in increasing job opportunities, competitiveness, improvement in manpower productivity, technology development, wealth generating and social welfare level and also existence of strong relation between entrepreneurial

development and economic growth of the countries have all resulted in a serious consideration of entrepreneurship in new economic theories and have been regarded as a provocative engine in economical-social growth and development of countries (Audretsch, 2002; Zoltan, 2006). This issue which has been noticed in agricultural economy and development of entrepreneurship is one of the necessities of agricultural development (Smit, 2004).

Such situation has brought about an increasing demand in agricultural entrepreneurship education in recent years and has been emphasized by researchers and government authorities in different countries (McElwee, 2005).

As a result in agricultural sector the entrepreneurial education has been turned to a serious necessity and the governments must compile strategic plans for entrepreneurial education in agricultural sector in order to upgrade the individual's capabilities for the entrepreneurship (Smit, 2004). Indeed, the entrepreneurship is a key element in production and employment increase, a solution to fight against the unemployment crisis, a response to community diverse demands; therefore, it is considered as one of the important fundamental aspects in

agricultural development plans (Higgins and Morgan, 2000; Sherief, 2005; Smit, 2004).

With a look at the background of education in agricultural sector in Iran it can be observed that the amount of investment and paying attention to this issue from different dimensions has never been at expected education dignity level or proportionate to indexes and employment criteria. Furthermore, available resources, expansion of this sector in term of frequency, employees and beneficiaries of this sector (3.5 million Individuals as beneficiaries) were not applicable to the country's demands (Institute of Applied-Scientific Educations, 2002).

Although considerable efforts of universities and higher education agricultural centers in educating and training of specialist human resources should not be ignored, concentrating on learning theoretical knowledge (Know-How) instead of applied-scientific knowledge, inattention to innovation and initiative abilities of learners, disproportionate text books syllabuses with labor market requirements, inefficient efforts in teaching practical courses, insufficient experienced and skilled lecturers for teaching the latter courses and inefficient graduates from universities and higher education centers in labor market, especially in agricultural

section, are of the major difficulties in this system (Hajimirrahimi, 1999).

According to UNESCO (1997) universities educations develop scientific theories while applied-scientific education is there to carry out the theories. Actually, these two types of education are parallel and supplementary. On one side applied-scientific educations can reduce the risk and the danger of youth unemployment dramatic increase and on the other, decrease full time unemployment of low skilled and incapable individuals (Varma, 2000).

In a research, Zamani (2001) has emphasized on unemployment of most of agricultural graduates, thus recommending what follows, as the results of his study, to improve the educational system of this sector:

- Expanding the practical courses;
- More close cooperation and relation between universities with executive departments and the farmers;
- Establishing self-employment and entrepreneurship mentality in students;
- Emphasis on short training courses during the academic year.

In another research on situation of applied-scientific students of the Ministry of Agriculture Heydari (2002) has emphasized on the following comments:

- New outlook in syllabus planning for each course according to entrepreneurship standards and community needs;
- Emphasis of educational contents on scientific and practical educations.

Fayzabadi and Khoynejad (2002) in their research on employment situation of applied-scientific graduates of Agriculture Ministry suggested the following recommendations:

- Improving scientific level of the professors and lecturers;
- Establishing employment agency in complexes;
- Increasing scientific and applied skills in courses;
- More conformity of the majors with labor market needs.

Mirzaee (2002) in his study on employment situation of the applied-scientific educations graduates has obtained the following results:

- Student admission has to be done in compliance with the real requirement of labor market;
- Factors such as social relation, capital, finance and more practical experience in the profession are among the most effective for employment based on graduates view points;

- Revise text books syllabuses according to labor market needs, increasing training centers and eliminating professional skill weakness of students, labor cultural development, establishing a secure environment for agricultural investment and guaranteeing the interest of the investment;
- Increasing practical skills in courses, improvement of scientific level of professors and lecturers, emphasizing on guidance and job advisory services to students during the course and establishing employment agencies in agricultural applied-scientific centers.

Nouroozadeh and Mehrabiyeganeh (2006) in their studies recommended that entrepreneurship development in agricultural applied-scientific higher education centers is one the efficient methods for increasing human resources productivity in agriculture sector.

Landkinen (2000) in his research emphasized that applied-scientific education could be considered as an investment for human resources qualitative improvement, because such educations result in knowledge and skill in production procedure in the direction of social and economic development.

Australian vocational education and training statistics (Australian Vocational Education

and Training Statistics, 2001) has revealed that employers are completely satisfied about skills of applied-scientific educations of graduates and believed that applied-scientific educations can compensate their expenses through increasing the productivity of staff.

The findings of another study, carried out at US Cornell University toward wide entrepreneurial education at university, alternative models and current trends indicate:

- ✎ The trend toward entrepreneurial education is strong;
- ✎ Our conceptual framework clarifies the different pathways for creating a university wide approach toward entrepreneurship;
- ✎ While the radiant model (entrepreneurship out of university) is extremely appealing to students, parents and alumni, the magnet model (entrepreneurship inside university) is easier to administer and present in various methods;
- ✎ While the magnet model is simpler to implement, it may lead to conflicts in a long run because the benefits and facilities may not be distributed equally among the university students (Streeter *et al.*, 2002).

Kuratko (2003) in a study entitled emergence of entrepreneurial education: Development,

trends and challenges, says that the entrepreneurship has emerged and developed over the recent two decades and its recent growth in curricula and programs dedicated to entrepreneurship has been very considerable. The number of faculties and universities which deliver curricula in connection to entrepreneurship has surged to over 1600 in 2005 in comparison to few programs in 1970s. This huge development has resulted in some academic legislative challenges for entrepreneurship that this article has focused on these trends and challenges of entrepreneurial education in the universities in the 21st century.

Some experts consider applied-scientific educations as a plan both for instructors and skilled experts in the field of scientific educations of agriculture for teaching the students and pupils who are interested in agricultural affairs or even employees of production units (Mack Bannatyne and Hall, 1998).

UNESCO (2004), in its global prospect of higher education for 21st Century, has described the new universities as: "A place in which the entrepreneurial skills in order to facilitate the graduates' capabilities and promoting them to job producers are developed".

In another research entitled conceptual framework for the assessment of the efficiency of entrepreneurial education of programs aimed at entrepreneurship, there is a meaningful relationship between entrepreneurial education and the tendency to entrepreneurship. Knowing the fact that entrepreneurial education of programs can change the entrepreneurship purpose, which is to examine the economic relation of entrepreneurship activity, is fascinating. In this research, the first stage goal is framework development that enables us to explain the programs of entrepreneurial education alongside with the changes in visions and participants' beliefs in the program and then presents the assessment of the impact of entrepreneurial education of programs on participants' goal (Volery and Muller, 2006).

An understanding of factors influencing entrepreneurial education in agricultural applied-scientific educational centers in Iran is crucial for creating the new opportunities for educators and encouraging them to involve in entrepreneurial activity. The question is what are the factors influencing the entrepreneurial education in agricultural applied-scientific educational centers? The purpose of this study is twofold. First, it determines the key factors that influence entrepreneurial education in agricultural applied-scientific educational

centers in Iran. Second, the study examines relationship of these factors with developing entrepreneurial education.

## MATERIALS AND METHODS

Since the research aim was designing a model for entrepreneurial education system in Iranian agricultural applied-scientific educational centers, the research in terms of nature is a kind of quantitative research and in terms of goal is applied research, in terms of controlling the variables is descriptive and correlation kind, which has been carried out in a survey way.

**Table 1: Target and sample population**

Province	Number of educators	Sample
West azarbayjan	63	40
Khorasan razavi	47	30
Kurdestan	13	8
Tehran	53	33
Khuzestan	53	34
<b>Total</b>	<b>229</b>	<b>145</b>

For examining the validity of research instrument, the views of some of the professors and experts in centers of agricultural applied-scientific education were used and for examining the reliability of research instrument, 30 questionnaires were filled by educators in centers of agricultural applied-scientific education in Qazvin and Zanjan. For each part of the questionnaire Alpha Cronbach coefficient was separately calculated. Based on the results of this test and the acquired coefficient, some questions

were eliminated and some others were modified. In overall the reliability or the acquired coefficient for different parts of questionnaire relating to educators was more than 0.75, so we can express that the noted coefficients are within the reliability range. Statistical population of the study consisted of 1106 educators for agricultural applied-scientific education in Iran. Based on the classification of the Ministry of Agriculture which has divided these centers into five regions, sample taking has been conducted using stratified proportionate random sampling technique. Sample size for the educators is 145 people using Cochran formula. Considering the entire size of the sample, some 120 questionnaires have been returned (Table 1).

Independent variables in the study included factors (managerial, economical, cultural, technical and regulatory) influencing the development of entrepreneurship education in centers of agricultural applied-scientific education. The dependent variable in this research study was the perception of educators about entrepreneurship education. For measurement of correlation between the independent variables and the dependent variable correlation coefficients have been utilized and include spearman test of

independence. The data were also analyzed using the technique of ordinal factor analysis.

## RESULTS

The results of descriptive statistics show that the average age of educators were 38 years old and majority of them were male (72.5%). It was also reported that more than 56% of respondents got Master of Science degree and the scientific rank of 43.3% of educators with highest frequency was instructor (table 2).

Table 3 by using the ordinal factor analysis shows the classification of the factors into five latent variables. The variables were classified into managerial, economical, cultural, technical and regulatory. The basic idea of factor analysis is to find a set of latent variables that contain the same information.

The classic factor analysis assumes that, both observed and the latent variables are continuous variables. But, in practice, the observed variables are often ordinal.

Spearman coefficient was employed for measurement of relationships between the perception of educators about entrepreneurship education and factors influencing the development of entrepreneurship education in centers of agricultural applied-scientific education. Table 4 shows that there was relationship between economic, cultural, technical, regulatory and managerial factors and perception of educators about entrepreneurial education.

**Table 2: Personal characteristics of educators**

Sex	Female (27.5%)		Male (72.5%)
Age	Mean = 38		SD = 4.8
Degree	BA (26.7%)	MSc (56.7%)	PhD (16.7%)
Scientific rank	Instructor (43.3%)	Assistant Professor (36.7%)	Associate Professor (20%)

**Table 3: Classification of factors by using ordinal factor analysis**

Factor	Variables	Variance
Managerial	Participation of managers of centers in educational program	20.73%
	Changing the knowledge level of managers about entrepreneurship education	
	Changing the attitudes of managers about entrepreneurial education	
Cultural	Beliefs about entrepreneurial education	19.96
	Attitudes about entrepreneurial education	
	Social status of family	
	Negative attitude about entrepreneurship	
Economical	Lack of social interaction	13.78
	Securing the cost of entrepreneurial practical training	
	Allocating budget to hire instructors	
	Providing financial resources for entrepreneurial education	
	Providing grants to do research about entrepreneurship	
Technical	Organizing the financial mechanisms for centers	13.22
	Access to educational hardwares and softwares	
	Access to technology and know how required for entrepreneurship education	

	Availability of equipments for practical training	
	Tax exemption for entrepreneurship companies established by graduates	
Regulatory	Facilitating the registration of entrepreneurship companies	12.96
	Stimulus packages by governments for entrepreneurs graduates	
<b>Total</b>		<b>80.65</b>

Table 4: Correlation measures between independent variables and dependent variable

Independent variables	Dependent variable	r	sig.
Economical factors		0.489**	0.000
Cultural factors		0.527**	0.000
Technical factors	Entrepreneurial education	0.418**	0.000
Managerial factors		0.504**	0.000
Regulatory factors		0.234*	0.020

\*\* : p<0.01; \* : p<0.05

## DISCUSSION

As the ordinal factor analysis showed, the factors were categorized into five groups, namely cultural, economical, managerial, technical and regulatory, ordered by the magnitude of their impact (Fig. 1).

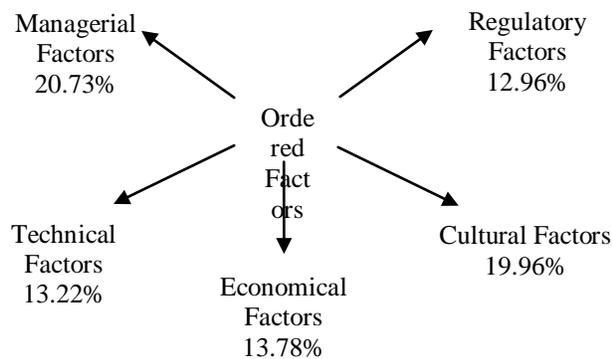
The findings reflect an important fact, namely that entrepreneurship would have a positive impact on perception of educators about entrepreneurial education. In this regard, a sound regulatory and policy environment is a necessary prerequisite for enhancing the capacity of educators to start entrepreneurship activity. This has been pointed out by several authors including Pages and Markley (2004) and Smit (2004).

The results of the study also point to the relationship between cultural factors and development of entrepreneurial education, a finding in accordance with the findings of the studies by Pages and Markley (2004).

The findings about economic factors are in accordance with those of Mirzaee (2002) and Volery and Muller (2006) which show that allocating the necessary budgets and securing the cost of practical training would have affect on the entrepreneurial education.

Regarding the nature of agricultural applied-scientific educations which has been planned and executed to teach and train skilled and specialist manpower, increasing their technical and scientific ability to obtain job vacancies and create a new business or job (entrepreneurship), coordinating and conformity of these educations with the requirements of production sectors, service sectors, employment and labor market system and in parallel regulating the syllabuses of courses, conformity of schedule content and education methods with entrepreneurship perspective, promoting self-confidence and self-assurance mentality and motivating individuals to be entrepreneurs are among the

measures which can be effective on promoting agricultural education, increasing human resources productivity in agriculture sector and social capabilities and self-employment of graduates of the universities.



**Fig. 1: Classification of challenges by using ordinal factor analysis**

## CONCLUSION

Entrepreneurial education has a tremendous potential to help in the active status of educators in agricultural applied-scientific educational centers in Iran. These centers have the opportunity to play a major role in the development of entrepreneurial education. The development of entrepreneurial education results in creating more jobs and employment sustainability could be achieved over time. Therefore, certain special factors in developing entrepreneurial education among educators in these centers should be identified and need to be carefully examined. Innovative strategies need to be developed that cater specifically the entrepreneurship educational needs of educators. Agricultural

applied-scientific educational centers in Iran need to provide practical training in entrepreneurship to their educators, to make them more aware of the benefits of entrepreneurship and to address the factors that impact on developing entrepreneurial education in the centers.

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