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# ANALYSIS OF TRAINING COMPONENTS EFFECTING ON STUDENTS' ENTREPRENEURSHIP CAPABILITIES IN IRANIAN AGRICULTURAL SCIENTIFIC-APPLIED HIGHER SYSTEM

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### ABSTRACT

The main purpose of this study is to analyze training components effecting on students' entrepreneurship capabilities in Iranian agricultural scientific-applied higher education system. This research is an applied and descriptive research. Statistical population is all 470 graduates of agricultural scientific-applied centers from 2008-2010 in central district of Iran. From this population, 135 of them were selected as sample through stratified sampling. A questionnaire was used for the data collection whose reliability was estimated to be 87%. The data analysis was done in two descriptive and inferential parts by SPSS software. Based on the results, age mean of graduates was 28. Also, according to the results of factor analysis, training components can be divided into seven factors of training methods, management and organizing, educational contents, personality characteristics, facilities and equipment, educators' features, and students' features. These factors could explain 62.6% of variance in students' entrepreneurship capabilities.

Keywords: training component, agricultural education, scientific-applied higher education, entrepreneurship capabilities.

### INTRODUCTION

The nature of entrepreneurship, its complexity, variability and contingency, makes it a difficult topic to teach. Yet when we consider the priority that society now places on enterprise, we must recognize the key role that universities have to play in shaping attitudes, supplying knowledge and generally enabling our students as enterprising customers and endowing them as entrepreneurial products (Anderson and Jack, 2008).

Katz (2003) commented that in the 21<sup>st</sup> century, entrepreneurship education will become a worldwide product with multiple national and niche competitors competing for intellectual mindshare, students and trainees. As Heinonen and Poikkijoki (2006) explain, the attributes of entrepreneurship; an innovative approach to problem solving, high readiness for change, selfconfidence and creativity are necessary for economic development. Thus entrepreneurship seems to uniquely offer a solution to problems associated with the increased pace and turbulence of social and economic change. New businesses with new products, new services or simply better products or services, appear to have the flexibility and adaptability to incorporate and adapt change (Galloway *et al.*, 2005).

The rapid expansion of highly subsidized higher education in one hand, and extremely poor articulation with the working environment in public, private and selfemployment sectors in the other hand, which leads to a major "brain drain", with tens of thousands of university graduates leaving the country every year and crisis in employment, bring new developmental questions to the fore. Prominent among them is the attempt to gain a better understanding of entrepreneurial activities (Schmitt-Rodermund and Silbereisen, 2003).

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 (Zoltan, 2006). 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 (Sherief, 2005; Smit, 2004).

Nouroozzadeh 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.

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

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". ARPN Journal of Agricultural and Biological Science

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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.

According to the study of Azizi *et al.* (2010), entrepreneurial education had a tremendous potential to help in the employment status of students in Iran's applied-scientific educational centers for agriculture. These centers had the opportunity to play a major role in the development of entrepreneurial education. The development of entrepreneurial education could results in creating more jobs and employment sustainability. Therefore, applied-scientific educational centers for agriculture in Iran need to provide practical training in entrepreneurship to their students, to make them more aware of the benefits of entrepreneurship and to address the factors that impact on developing entrepreneurial education in the centers.

Sharifzadeh (2005) found that to enhance need for power, competitiveness, and risky attitude among students, creating an appropriate teacher-learner environment would be effective to accomplish many of the learning objectives of entrepreneurship education. Also, the role of teacher should not be restricted to teach a subject on entrepreneurship alone, but to convert students into actual or potential entrepreneurs by motivating them and providing proper guidance and counseling support in setting goals related to their future work, challenging with real working market, and involving problem solving methods with situation they would face, workshops and individual counseling and etc.

Based on the results of the mentioned researches, it is clear that almost all studies have emphasized on importance and necessity of improvement and reinforcement of training components of agricultural education system and especially agricultural scientificapplied educations. According to national studies, training components of scientific-applied educational system are curriculum, educational climate and equipment, learners, teachers, course content, evaluation, educational methods, and teaching and learning conditions.

As it mentioned before, development of entrepreneurship education in agricultural scientificapplied higher education centers could be considered as one of the efficient methods to increase productivity of human resources in agriculture sector. Also using methods of entrepreneurship education development in agricultural higher education centers could be effective to increase entrepreneurship skills among students of different fields of agriculture. Entrepreneurship education is necessary to achieve goal of agricultural education which is training skills required for graduates' employment.

Some of entrepreneurial qualities are possible to teach in any conventional educational scheme since most are experienced based. However, it is possible to learn about the nature of these qualities and to teach about how they can be acquired (Anderson and Jack, 2008). Indeed the ability to engage students, entrepreneurs, business support professionals and learning facilitators is one of the advantages of entrepreneurship education (Collins *et al.*, 2006).

At higher education level, the primary purpose of entrepreneurship education should be to develop entrepreneurial capacities and mindsets. In this context, entrepreneurship education programs can have different objectives, such as: a) developing entrepreneurial drive among students (raising awareness and motivation); b) training students in the skills they need to set up a business and manage its growth; c) developing the entrepreneurial ability to identify and exploit opportunities (European Commission, 2008).

So given the needs of agriculture sector to skillful and capable graduates, and according to the key role of universities in strengthening students' entrepreneurial capabilities, it was necessary to identify effective training components in universities. Therefore, the main goal of this study is to analyze training components effecting on students' entrepreneurship capabilities in Iranian agricultural scientific-applied higher system.

## MATERIALS AND METHODS

This is applied and descriptive (nonexperimental) research. The population in this study is graduates of agricultural scientific-applied centers from 2008-2010 in central district of Iran including Tehran, Ghom, Semnan and Ghazvin that are 470 graduates. In order to determine size of sample, 30 graduates were selected accidentally and variance was calculated through distribution of questionnaire between them as data collection tool. Based on the variance, size of sample was estimated 135 graduates through Cochran formula. The sampling method was stratified sampling in which the people were selected quite by accident inside the stages.

Questionnaire was designed as the main tool of the study, all questions except the some personal characteristics of students were written as Likret's fivepoint range. Content and face validity were established by a panel of experts consisting of faculty members at Islamic Azad University. Minor wording and structuring of the instrument were made based on the recommendation of the panel of experts. A pilot study was conducted with 30 persons who had not been interviewed before the earlier exercise of determining the reliability of the questionnaire for the study. Computed Cronbach's Alpha score was 87%, which indicated that the questionnaire was highly reliable. Data analysis was done in two descriptive and inferential statistic levels by SPSS software. Statistics used in this study were frequency, percentage, mean, standard deviation, variance and ordinal factor analysis.

### RESULTS

According to the results, the graduates entering by free quota (59.6%) in agricultural scientific-applied educations are more than graduates of employment quota (40.4%). The average of their age was 28 years and its standard deviation was 9.34 which are indicative of high ARPN Journal of Agricultural and Biological Science ©2006-2013 Asian Research Publishing Network (ARPN). All rights reserved.



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dispersal of interviewees' age. Among graduates of free quota 78.8 percent were male and among graduates of employment quota 84 percent were male. Based on the findings, only 23.19 percent of free quota graduates were married; meanwhile 69.7 percent of employment quota graduates were married. According to Table-1, more than half of graduates are employed meanwhile 63.74 percent of free quota graduates are unemployed. Also, according to the Table-2, among total 83 occupied graduates more than half (57.14%) are working in public sector and only 6 persons (7.8%) are self-employed. In this study, graduates also were asked to report their work experience, family income, parents' educational level, and interest in continuing education.

Quota	<b>Free</b> (59.6%)		Employment (40.4%)
Age	<b>Mean = 28</b>		S.D = 9.34
Gender	F*	Male (78.8%)	Female (21.2%)
	E*	Male (84%)	Female (16%)
Marital status	F	Married (23.2%)	Single (76.8%)
	Е	Married (69.7%)	Single (30.3%)
Occupational status	F	Employed (36.3%)	Unemployed (63.7%)
	Е	Employed (100%)	Unemployed (0%)

Table-1. Demographic profile and descriptive statistics of graduates.

Table-2. Occupational state of employee graduates.

Type of occupation	Public	Private	Self-employed	Total
Fulltime employee	46	16	0	62
Part-time employee	1	14	6	21
Total	47	30	6	83

One of objectives of the study was to assess effectiveness of different educational approaches in entrepreneurship development and qualitative improvement in agricultural scientific-applied educations. Therefore some of educational approaches which considered effective were chosen and evaluated from graduates' point of view. The results show that both two groups of free by the average of 6.21 percent and employment quota with the average of 5.82 percent found educational approaches effective. And the priorities of these approaches from view of graduates were mentioned in Table-3. ©2006-2013 Asian Research Publishing Network (ARPN). All rights reserved.



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Educational approaches		Free quota			employment quota		
		SD	Rank	Mean	SD	Rank	
Compiling textbooks in the field of entrepreneurship and management of small businesses	5.65	1.94	10	5.62	2.10	6	
Planning entrepreneurship courses in curriculum plan	6.58	2.08	4	6.44	2.26	1	
Presenting education in fields of creativity, innovation and idea development	6.89	2.02	1	6.11	2.29	7	
Using entrepreneurship trainers beside instructors of professional courses	6.74	2.06	2	6.31	2.21	2	
Employing expert trainers fulltime and constantly	6.12	2.05	7	5.84	2.18	5	
Holding entrepreneurship seminars and meetings in order to change students' knowledge and attitude	5.84	1.96	8	4.97	1.93	10	
Organizing the entrepreneurship centers in order to develop entrepreneurship spirit	6.06	1.98	6	6.26	2.17	3	
Establishment of employment consulting core in the centers and continuous relation with students	6.29	2.12	9	5.05	2.21	8	
Holding matches and fairs with the topic of entrepreneurship to identify entrepreneur students	6.46	2.11	5	5.54	2.11	9	
Proportionate the outlines of courses with entrepreneurship	6.71	2.06	3	5.92	2.07	4	
Total	6.21	2.01		5.82	2.15		

 Table-3. Priorities of effective educational approaches in entrepreneurship development and qualitative improvement agricultural scientific-applied educations.

In this study, from all 61 variables, 39 variables were significantly loaded into seven factors. These factors explained 62.59 percent of total variance in students' entrepreneurship capabilities. According to the Kaiser criterion, seven factors with eigen-values over 0.5 were extracted. The eigen-values and percentage of variance explained by each factor are shown in Table-4. The percentage of variance explained by each of the seven

factors is also shown in Table-4. Eigen-values drive the variances explained by each factor. Sum of squares of factor's loadings (eigen-values) indicates the relative importance of each factor in accounting for the variance associated with the set of variables being analyzed. According to Table-4 eigen-values for factor 1 through 7 are about 3.6, 2.7, 2.3, 2.0, 1.8, 1.3 and 1.2 respectively.

 Table-4. Extracted Factors, eigen value, variance percentage and cumulative percentage of effective factors in students' entrepreneurship capabilities.

Factor	Eigen value	% of variance	Cumulative % of variance
1	3.058	13.26	13.26
2	2.690	11.67	24.93
3	2.287	9.96	34.89
4	2.049	8.90	43.79
5	1.812	7.88	51.67
6	1.347	5.86	57.53
7	1.163	5.06	62.59

The factor analysis is shown in Table-4. The results show that the factors named training methods, management and organization, educational content, personality characteristics, facilities and equipment, educators' features, and students' features contributed about 62.6 percent of variance in students' entrepreneurship capabilities. Table-5 represents the factors, as well as, the variables were loaded in these factors significantly.

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Name of factor	Variables loaded in the factor	Factor loadings
	Practical projects about creating of new business	0.823
	Scientific visits to familiarize students with future career	0.764
	New teaching methods (group discussion, problem solving, teamwork	0.757
Training methods	Using students' participation in class activities	0.725
	Scientific seminars or meetings with successful graduates and students	0.661
	Workshops in the laboratory and field	0.649
	Appropriateness of teaching methods and curriculum content	0.614
	Far or near the location of the educational institute	0.841
	Management and organizing of educational institute	0.824
Management and	Establish entrepreneurship center in educational complexes	0.787
organization	Connection of institute with various sectors of agriculture	0.775
	Research team to identify problems in different fields of study	0.762
	Using the professional and experts on teaching practical courses	0.607
	Emphasis on practical issues related to specific courses	0.795
Educational content	Flexibility of training courses in accordance with changes in the labor market	0.781
	Adaptation to scientific and technological advances	0.775
	Fit the scientific abilities and skills of students	0.742
	integrating entrepreneurship issues in training courses	0.718
	Ability to foster innovation and creativity in students	0.678
	Self confidence	0.861
	Accountability	0.846
Personality	Age at start of employment	0.838
characteristics	Individual education	0.823
	Independence and freedom	0.796
	An appropriate environment for personal growth	0.775
	Adequate laboratories, facilities, and equipment for experiments	0.819
Facilities and equipment	Fitness educational facilities to the needs of field of study	0.816
	Access to the internet and other computer networks	0.802
	Availability of external resources and books	0.789
	Sufficient instructional space in institutions	0.735
Educators features	Scientific ability and knowledge with regards to subject	0.832
	Having an educational background in relation to the subject	0.818
	Familiarity with a variety agricultural resources and references	0.803
	The ability to use a variety of instructional media	0.786
	Passing the training courses on entrepreneurship	0.767
	Learning the practical skills	0.845
Stadouto fortono	Interest to agricultural occupation	0.836
Students features	Previous experience in agricultural occupations	0.798
	Creativity level of students	0.769

# Table-5. Variables loaded in the factors using varimax rotated factor analysis.

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#### CONCLUSIONS

This research was conducted analyze training components effecting on students' entrepreneurship capabilities in Iranian agricultural scientific-applied higher system. Majority of respondents were male and more than half of occupied graduates were working in public sector and only 6 persons were self-employed.

This research has shown that both two groups of free by the average of 6.21 percent and employment quota with the average of 5.82 percent found educational approaches effective. Based on the results of this section, "presenting education in fields of creativity and innovation" and "planning entrepreneurship courses in curriculum plan" are the most effective educational approaches in entrepreneurship development as perceived by free and employment quota graduates.

The other consequences of this study showed that 39 variables were significantly loaded into seven components of training methods, management and organizing, educational contents, personality characteristics, facilities and equipment, educators' features, and students' features. These components could explain 62.6% of variance in students' entrepreneurship capabilities.

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