*Full Length Research Paper*

# Studying the variables that separate entrepreneurial and non-entrepreneurial agricultural producer cooperatives (APCs) for predicting group membership

### Fereshteh Ghiasvand Ghiasy[1] and Seyed Jamal F. Hosseini[2]

[1]Department of agriculture. Takestan Branch, Islamic Azad University, Shomi Shop Junction, Takestan, Ghaznvin, Iran.
[2]Department of Agricultural Extension and Education, Science and Research Branch, Islamic Azad University, Tehran, Iran.

**The main purpose of this study is to predict the group membership of entrepreneurial or non-entrepreneurial agricultural producer cooperative based on a linear combination of the interval variables. Discriminant function analysis was used in this research for access purpose. The study's sample consisted of 250 agricultural cooperatives in Iran. The variables that indicate the entrepreneurial situation of a cooperative include the number of jobs that were created by cooperatives, increase or decrease of cooperative members, number of enterprise(s) created by cooperatives and growth in cooperatives' funds or possession. After recognition of these two types of cooperative, independent variables [individual, educational, economic, managerial (structural), managerial (financial), policy making, social and psychological] were entered into the discriminant function. The independent variables were obtained by factor analysis technique and each of them consists of many components. A questionnaire that was made by researchers based on literature review was used for data gathering. The questionnaire's content and face validity were established by a panel of experts consisting of faculty members and managers in cooperation ministry. The reliability of the questionnaire was measured by Cronbach Alpha ($\alpha$=0.88). The results obtained based on the structure matrix of independent variables showed that the individual characteristics of cooperative members have the most discriminant power of separating entrepreneurial from non-entrepreneurial APCs. After this variable, psychological, social and managerial (structural) variables have more discriminant power to separate these two kinds of agricultural producer cooperatives.**

**Key words:** Agriculture, cooperative, entrepreneurship, entrepreneurial, non-entrepreneurial.

## INTRODUCTION

Since the establishment of the first cooperative 150 years ago, there has been a tremendous growth in developing cooperatives throughout the world. Based on the latest statistics, approximately 800 million people are members of cooperatives in over 100 countries. Cooperatives can accelerate the process of development and participation of the rural population in their activities. In many countries, agricultural cooperatives prove to be an important model of enterprise by which small farmers can organize and optimize limited resources to increase their income (United Nations, 2007). Enterprise development and particularly the promotion of small and medium enterprises have been adopted as a strategy for job creation and economic growth in a large number of countries. More awareness and knowledge about the cooperative form of enterprise, as an option to conduct business, is widely needed by the people most likely to benefit from it (Nippierd, 2002).

Entrepreneurship can be defined as the process of using private initiatives to transform a business concept into a new venture or to grow and diversify an existing venture or enterprise with high growth potential (UNDP,

---
*Corresponding author. E-mail: ghiasvand_fereshteh@yahoo.com or f.ghiyasvand@tiau.ac.ir. Tel: 00989126813408.

1999). Voslee (1994) asserts a conceptual understanding of entrepreneurship and its role in the process of economic development. The evidence from developing and developed countries supports the position that government should not manage development in detail (Voslee, 1994). Wenneker and Thurik (1999) identified three dimensions of entrepreneurship: (i) the condition, which leads to entrepreneurship, (ii) the attributes and (iii) the impacts of entrepreneurship. As regards the individual, the conditions for entrepreneurship are culture and incentives, the elements of entrepreneurship are attitudes, skills and creativity, and the impacts are self realization and income. It is important to look at the development of entrepreneurship cooperatives in a systematic approach. An effective entrepreneurship development system integrates a wide range of programs and modifies products and services to meet the diverse needs of entrepreneurs. It should be comprehensive, flexible, culturally sensitive and integrated, and should require providers to collaborate rather than operate independently or in isolation (Dabson, 2005). Empowering rural population by establishing entrepreneurship cooperatives has been recognized as an important approach in developing countries. Entrepreneurship is conducive to economic growth and the creation of employment. Many governments support the creation of entrepreneurship business, and a specific policy could be to develop the entrepreneurship cooperatives.

Cooperatives' entrepreneurship in agricultural develop-ment contributes to the economic empowerment of poor people living in rural areas. By joining isolated and scattered resources, it can help marginalized farmers to acquire opportunities for entrepreneurship and strengthen their capacity for self-help (United Nations, 2007). However, the research by Audretsch and Kielbach (2005) shows that the impact of entrepreneurial activity in rural West Germany was weaker in rural regions. Acs and Armington (2004) and Camp (2005) suggest that the impacts of entrepreneurship on economic growth could differ in rural locations. All entrepreneurs have grown up in a social environment and cultural attributes have shaped the individual (Ronning et al., 2007). The promotion of entrepreneurship, its role in society and the opportunities it presents for personal gain, appears to be critical for facilitating economic growth. Policies geared toward enhancing the entrepreneurial capacity of a society will have the greatest impact on the level of entrepreneurial activity (CRE, 2005). Fostering a culture of entrepreneurship requires the sustenance of the social capital that culture identifies, whilst maximizing trading opportunities for societies to develop. Local cultural tradition is a necessary component in establishing the networking and trust that will provide the solidarity required for the emergence of entrepreneurial activity for self-determining development (April, 2008). In a study about entrepreneurship in the North Carolina rural areas,

it was found out that the sense of isolation ranks near the top of concerns expressed by rural entrepreneurs. They believe that their community and state leaders support small business at the rhetorical level, but undertake few actions or initiative to nurture and support these companies (Pages et al., 2004).

The main purpose of this study is to study the variables that separate entrepreneurial from non-entrepreneurial agricultural producer cooperatives (APCs). To achieve this aim, we follow these specific goals:

1) To identify the different characteristics of cooperatives.
2) To predict group membership of cooperatives.
3) To identify the differences in entrepreneurial and non-entrepreneurial agricultural cooperatives.

## METHODOLOGY

This research was conducted with a survey-descriptive method. The research population included all agricultural cooperatives in Iran (N =1891). Managers of cooperatives (250 cooperatives) formed the study's sample. Because the main purpose of this study is to find the best variables that could distinguish entrepreneurial from non-entrepreneurial cooperatives, two types of cooperatives were applied; in the sample cooperatives, the variables that indicate entrepreneurial situation were measured. These variables include: number of jobs that were created by cooperatives, increase or decrease of cooperative members, number of enterprise(s) created by cooperatives and growth in the cooperatives' funds or possession. After measuring these variables with regard to the added grade cooperatives, they were divided into two groups: entrepreneurial and non-entrepreneurial.

After this stage, independent variables (individual, educational, economic, managerial (structural), managerial (financial), policy making, social and psychological) were entered into a discriminant analysis and studied in cooperatives. It is notable that the independent variables were obtained by factor analysis technique and each one of them consists of many components. A questionnaire that was made by researchers based on literature review was used for data gathering. The questionnaire's content and face validity were established by a panel of experts consisting of faculty members and managers in cooperation ministry. The reliability of the questionnaire was measured by Cronbach Alpha coefficient and the reliability for the overall instruments was estimated as 0.88. Discriminant function analysis was used in this research for access purpose. The rationale behind the discriminant function analysis is to predict group membership based on a linear combination of the interval variables.

The procedure begins with a set of observations where both group membership and the values of the interval variables are known. Another rationale behind the discriminant function analysis is to have a proper understanding of the data set, as a careful examination of the prediction model that results from the procedure can give insight into the relationship between group membership and the variables used to predict group membership. Data were analyzed in SPSS$_{11.5}$ software.

## RESULTS

The results of descriptive statistics show that the main field of activities in cooperatives is agronomy comprising a total of 28 cooperatives (13.3%). The average number

**Table 1.** The independent variables before they were entered into the discriminant analysis.

| Factor(variable) | Tolerance | Min. tolerance | F to enter | Wilks' lambda |
|---|---|---|---|---|
| Psychological | 1.000 | 1.000 | 21.790 | 0.892 |
| Educational | 1.000 | 1.000 | 0.331 | 0.998 |
| Economic | 1.000 | 1.000 | 0.913 | 0.995 |
| Managerial(financial) | 1.000 | 1.000 | 0.446 | 0.998 |
| Managerial(structural) | 1.000 | 1.000 | 5.986 | 0.968 |
| Policy making | 1.000 | 1.000 | 1.082 | 0.994 |
| Social | 1.000 | 1.000 | 9.181 | 0.951 |
| Individual | 1.000 | 1.000 | 26.929 | 0.870 |

**Table 2.** The variables that have already been entered into the analysis of each step.

| Step | Factor(variable) | Tolerance | F to enter | Wilks' lambda |
|---|---|---|---|---|
| 1 | Individual | 1.000 | 26.929 | ------- |
| 2 | Individual | 0.982 | 30.575 | 0.892 |
|  | Psychological | 0.982 | 25.371 | 0.870 |
| 3 | Individual | 0.972 | 32.473 | 0.843 |
|  | Psychological | 0.974 | 26.945 | 0.821 |
|  | Social | 0.984 | 12.109 | 0.762 |
| 4 | Individual | 0.965 | 33.816 | 0.811 |
|  | Psychological | 0.968 | 28.060 | 0.798 |
|  | Social | 0.981 | 12.610 | 0.730 |
|  | Managerial(structural) | 0.987 | 8.364 | 0.713 |

of members of any cooperative was 35 members and these cooperatives have been active for about 9 years now. The maximum year of activity for cooperatives was 27 years and the minimum was 5 years. It was reported that slightly more than 50% of cooperative members had bachelor degree. Approximately 23% of cooperative members were involved in farming, 13% in animal husbandry and more than 10% in horticultural activities. For determination of the variables that have more discriminant power to better separate entrepreneurial agricultural producer cooperatives (APC) from non-entrepreneurial agricultural producer cooperatives, discriminant analysis equation was applied. For this analysis on the one hand, the characteristics of APC in Iran were studied and they showed the status of entrepreneurial and non-entrepreneurial cooperatives. The variable that best separated the two cooperatives was used as the dependent variable (grouping variable) in discriminant analysis technique.

Among the characteristics (variables) used to determine cooperative membership, the status of entrepreneurial or non-entrepreneurial APCs was shown to consist of addition of cooperative members and stockholders in prolonging the existence of an APC,

calculation of lapsing members, addition of workrooms and professions in cooperatives, growth in stocks, and transferable and non-transferable assets of a cooperative. On the other hand, with application of factor analysis technique, effective factors on entrepreneurship in APC were determined. Factor scores of these distinguished factors as dependent variables (variables that can distinguish these two kinds of APC) were entered into the analysis for determination of their significance and weight. Conversely, to determine which one of these variables has the discrimination power of separating entrepreneurial from non-entrepreneurial APC, Stepwise method was used for the independent variables in the equation. In this method, for entrance or exit of variables in the equation, Wilks' lambda was used. To determine the discriminant function confidence method, Split sample was used.

In this study, to determine the importance of the independent variables and the difference between the two groups of APC, structure correlation (structure matrix) was used. Table 1 shows the independent variables before they were entered into the analysis. Table 2 shows the variables that have already been entered into the analysis of each step. As it is shown in

**Table 3.** Eigenvalue.

| Function | Eigenvalue | Percentage of variance | Cumulative percentage | Canonical correlation |
|---|---|---|---|---|
| 1 | 0.468 | 1.000 | 1.000 | 0.656 |

**Table 4.** Wilks' lambda.

| Function | Wilks' lambda | chi-square | df | Sig. |
|---|---|---|---|---|
| 1 | 0.681 | 68.344 | 4 | 0.000 |

**Table 5.** Standardized and non-standardized canonical discriminant function coefficients.

| Variable | Coefficient | |
|---|---|---|
| | Standardized | Non-standardized |
| Psychological(X1) | -0.666 | -0.384 |
| managerial (structural)(X2) | -0.379 | -0.471 |
| Social(X3) | -0.461 | 0.772 |
| Individual(X4) | 0.722 | 0.703 |
| constant | ----- | 0.000 |

**Table 6.** Function at group centroids.

| Entrepreneurship cooperatives | Function 1 |
|---|---|
| Entrepreneurial | -2.840 |
| Non-entrepreneurial | 1.630 |

Table 2, the variable of individual characteristics of cooperative members has the least Wilks' lambda, and then the first variable was entered into the equation. After the first step, Wilks' lambda was calculated again and the variable that had the least rate of Wilks' lambda was entered into the equation. As it is shown in Table 3, after the variable of individual characteristics of cooperative members, psychological variable was entered into the equation.

In the tertiary step, social variable was added to previous variables and in the fourth step, managerial (structural) variable was entered into the equation, after which the process was stopped. Educational variable was the only variable that was not entered into the equation. Table 3 shows eigenvalues and Table 4 shows the rate of Wilks' lambda, that is, the significance of the discriminant function (P<1%). The wrought function for discrimination of these two groups with this significant Wilks' Lambda implies significant and good discriminant power of the discriminant function. Because the dependent variable was planar, just one discriminant function was formed. Canonical correlation (0.656) shows that roughly 43% of variation on grouping variables has been determined with this function (four variables). The rate of chi-square is 68.344, with 4 as the degree of freedom, and they have both been significant in a high level. Standardized and non-standardized canonical correlation function coefficients are shown in Table 5. Based on the non-standardized coefficients, the discriminant function that can separate entrepreneurial agricultural producer cooperatives (APC) from non-entrepreneurial APC are as follows:

$$Y = 0.703(X4) + 0.772(X3) - 0.384(X1) - 0.471(X2)$$

Based on the structure matrix of independent variables, the individual characteristics of cooperative members have the most discriminant power for separating entrepreneurial from non-entrepreneurial APCs. After this variable, psychological, social and managerial (structural) variables have the discriminant power for separating these two kinds of cooperatives. Table 6 shows the function of group centroids for separating entrepreneurial agricultural producer cooperatives (APC) from non-entrepreneurial APC.

## Conclusion

Recognition of entrepreneurial agricultural producer cooperatives (APC) from non-entrepreneurial APC and studying their characteristics can help planners and policy makers to improve the economical and social dimension of cooperatives. The development of cooperatives entrepreneurship results in creating more jobs and employment sustainability that could be achieved over time. Therefore, certain special factors in developing entrepreneurship among cooperative members should be identified and carefully examined.

Innovative strategies that cater specifically for rural areas need to be developed.

The burden of developing entrepreneurship for cooperatives in rural areas should not be only on governments, it is important to enlist NGOs and the private sector to participate in developing entrepreneurship in rural Iran. However, a large proportion of the rural population in Iran is yet to benefit from entrepreneurship. Agricultural producer cooperatives in Iran need to provide training in entrepreneurship to their members and non-members, to make the rural population more aware of the benefits of entrepreneurship, and to address the policy and regulatory issues that impact on developing entrepreneurship in the cooperatives.

**REFERENCES**

Acs Z, Armington C (2004). The impact of geographic differences in human capital on service firm formation rates. J. Urban Econ., 56: 244-278.

Audretsch DB, Keilbach M (2005). Entrepreneurship Capital and Regional Growth. Ann. Regional Sci., 35: 457-469.

April WI (2008). Experiential learning from the Khoi-Khoi (Namibia) and Maori (New Zealand) communities. Int. J. Entrepre. Innov., 9(2): 103-110.

Camp SM (2005). The Innovation Entrepreneurship NEXUS: A National Assessment of Entrepreneurship and Regional Growth and Development. Small Business Research Summary. Small Business Administration. Office of Advocacy, p. 256.

Center for Rural Entrepreneurship (2005). Energizing the entrepreneurial economy, Policy Brief, No.2, RUPRI.

Dabson B (2005). Fostering Entrepreneurship Development Systems in Rural America. Kellogg Foundation.

Nippierd AB (2002). The potential Role of the UN Guidelines and the New ILo Recommendation on the Promotion of Cooperatives. Paper for Expert Group Meetings on Supportive Environment for Cooperatives: A Stakeholder Dialogue on Definitions, Prerequisites and Process of Creation. Ulaanbaatar, Mongolia.

Pages ER, Markley DM (2004). Understanding the environment for rural North Carolina. Center for Rural Entrepreneurship. Available at http:\\ www.ruraleship.org.

Ronning L, Ljunggren E (2007). Community Entrepreneurship: Building Entrepreneurship-facilitating social capital, Nordland Research Institute, Norway.

United Nations (2007). Developing women's entrepreneurship and e-business in green cooperatives in the Asian and Pacific Region. New York.

UNDP (1999). Entrepreneurship development. Essential No.2. Evaluation Office, New York.

Voslee WB (1994) (ed.). Entrepreneurship and Economic Growth. Pretoria: HSRC Publisher

Wennekers ARM, Thurik, AR (1999). Linking entrepreneurship and economic growth. Small Bus. Econ., 9(3): 27-55.