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A Path Analysis of Factors Influencing the Development of Entrepreneurship Skills and Innovation in Rural Cooperatives of Alborz Province

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Abstract

This study mainly aimed to identify the factors influencing the development of entrepreneurial skills and innovation in rural cooperatives of Alborz Province, Iran. This purposefully practical research is a descriptive-correlational study considering the fact achieving and data processing. The research measurement tool was a questionnaire. The statistical population of this study consisted of 22,207 members of cooperatives in Alborz Province, with 283 people selected as the sample calculated by Cochran's formula. The simple random sampling method was performed in this study with a proportional allocation. The validity of the research questionnaire through Cronbach's alpha coefficient for its different parts was calculated to be >0.84, indicating its proper validity. According to the results of multiple regression, four variables, i.e., economic factors, psychological factors, managerial factors, and socio-cultural factors respectively included in the multivariate regression equation, together resulted in approximately 40.7% of the dependent variable modifications in the development of entrepreneurial skills in agricultural cooperatives. The results also revealed that these variables affect the development of entrepreneurial skills and innovation in agricultural cooperatives positively. In addition, the results of path analysis suggested that economic factors had the highest impact on the development of entrepreneurial skills and innovation in rural cooperatives of Alborz Province (F = 0.579), indicating the importance of economic factors; while technical factors showed the least impact on the development of entrepreneurial skills and innovation of rural cooperatives in Alborz Province (F = 0.051).

Keywords: Development of skills, entrepreneurship, rural cooperatives, innovation, path analysis, Alborz Province.

Introduction

The community development is directly linked to the ability of its individuals' income-generating activities. Entrepreneurs can create jobs and new opportunities for people in society to increase their income and be employed (Rezaei-Moghaddam and Izadi, 2019). Entrepreneurship is a strategy for growth, prosperity, and wealth generation in the economy (Saiz-Alvarez, 2020), which can possess an effective contribution in improving the economic and living conditions of rural population by creating new employment and income opportunities (Bashirahsan and Ghorbaninejad, 2017).

The study of the economic growth trend in developed countries reveals that entrepreneurship and entrepreneurs have played a remarkable role in economic growth and job creation in those countries (Farahani et al., 2013). Sustainable development is regarded as a strategy for improving social and economic life of rural people (Zand et al, 2020) Poverty in rural areas is one of the most important factors in preventing entrepreneurship. Therefore, in order to improve entrepreneurship, it is necessary to study strategies to reduce rural poverty (Piran, et al 2018). Improving entrepreneurship is possible by recognizing components such as economy, technology, social capital of human resources and appropriate management methods in sustainable rural development, and in this regard, rural cooperatives have a key role)Ansari et al, 2013). The results of study shows that cultural and social barriers was the main barrier in enhancing innovation capacity in Tehran province. Indicates that factors such as the lack of qualified employment and lack of information to technology and improve entrepreneurship and markets were also the limitations in enhancing innovation. Therefore, by focusing on rural cooperatives for organizations that have the mission of entrepreneurship and innovation in rural areas, we can take a new look at the issue of sustainable rural development) Zand et al, 2012)

Most countries in the world have accepted the farmers' cooperation based on the principles of cooperative schools as a better way for agricultural and rural development and providing a better life for farmers and have also considered agricultural cooperation as a solution to deal with these rural problems (Shirani, 2017). Entrepreneurship can sometimes consider as a glimmer of hope that may bring about some contribution towards improving economic dynamics and performance, particularly in creating employment for young people and generally with more training, more flexibility to be well prepared for working with new technologies (Vítor João Pereira and Domingues Martinho, 2020).

Nowadays, the development of agricultural cooperatives in the majority of countries is considered as a key strategy in rural development. In this regard, the pivotal role of organizational entrepreneurship should not be neglected in the success of organizations, particularly in agricultural cooperatives. Hence, organizational entrepreneurship analysis is required for cooperatives, enterprises, and other various organizations to increasingly move towards its development to achieve sustainable rural development (Khosravi et al., 2017). Entrepreneurship and the organization's movement towards it is one of the leading approaches in creating a competitive advantage that institutionalizes innovation in the organization and as a result leads to economic prosperity of countries (Nora, 2020). On the other hand, innovation is one of the main dimensions of organizational entrepreneurship. In other words, being innovative and entrepreneurship refers to innovation in products, services, processes, and business models (Yunis et al., 2018).

Accordingly, the cooperative sector is an appropriate lever for development that can be effective in increasing production, reducing

unemployment, and improving the economic and social conditions of the people by creating a favorable environment (Haji et al., 2016). Consequently, measurement of the level of individuals' entrepreneurship and efforts to develop and strengthen it in the process of development of rural cooperatives is of particular importance by providing the initial context (Farahani and et al., 2013). Therefore, entrepreneurship development in cooperatives is a strategy to modernize and dynamize them (Azami et al., 2014).

Development in today's world depends on cooperation in economic activities and social movements. Achieving development as well as spreading the culture of cooperation in the country obviously requires preparing the appropriate conditions and providing solutions to solve problems. These organizations can play an important role in reflecting research findings to users (Asgarian & Khosravipour, 2013).

Given the contribution and importance of entrepreneurship and the brilliant history of entrepreneurs in the development of many countries, the promotion and dissemination of the concept of entrepreneurship, cultural contextualization supporting entrepreneurship, and, most importantly, training entrepreneurs are of vital importance and necessity for all societies, particularly for developing societies such as Iran. Experts and scholars in developing countries have become increasingly aware that the unemployment as an obstacle to the development of these countries is one of the main socioeconomic challenges and one of the most important threats to national security and development. In Iran, one of the main concerns of officials has been to find a solution to this problem, especially in the last decade.

Ghasemiyeh et al. (2020) in their study entitled 'Assessing the mediating effect of innovation and organizational entrepreneurship on the relationship between Ict and improving organizational performance (Case study: Ahvaz Industrial Town No. 1)' found that information technology-based innovations and their applications have become the main drivers of organizational performance improvement, economic growth, and social change. Since many researches have focused on this field, the importance of complementary factors such as organizational innovation in promoting technological innovation on organizational performance still needs scientific and experimental research and analysis. This research develops and tests a model in which the nature of the relationship between ICT use and organizational performance in small- and medium-size enterprises is studied. The findings indicate that the ICT use in innovative manners and emphasis on promoting entrepreneurial culture based on entrepreneurship makes it more effective.

Moreover, Yazdani et al. (2020) in a study entitled 'Study of factors affecting rural development, with a focus on the role of agricultural entrepreneurship (Case study: North Khorasan Province)' used a questionnaire for data collection tool and bootstrap method to test the indirect effects of standard SPSS and applied software for statistical analysis of data. According to their results, agricultural entrepreneurship has a positive and significant effect on rural development and there is a direct relationship

between innovation, production, financial resources, and market with rural development. In general, the results also showed that the four factors of production innovation, production factors, financial resources and production market directly and indirectly (agricultural entrepreneurship) affect rural development.

Haji et al. (2019) in their practical, cross-sectional study entitled 'Investigating the Effects of Contextual Factors on Entrepreneurial Spirit (The Case of Agricultural Cooperatives in Naghadeh Township)' concluded that agricultural cooperatives are considered by policymakers because of their entrepreneurship potential and their naturally fostering entrepreneurial spirit.

Khoshmaram et al. (2017) in a study on modeling agricultural entrepreneurial opportunity recognition in Kermanshah province by application of Nvivo software concluded that the major components of the model for identifying entrepreneurial opportunities in the agricultural sector of Kermanshah province are human capital, social capital, environmental support, psychological characteristics, alertness, and turbulence.

According to Valaei et al. (2015) on Northern Marhamat Abad rural district, Miandoab County, the most important factors that have led to sustainable rural development are the economic and personal factors, so that increasing the facilities such as self-employed loans, necessary and sufficient resources, and career diversity enhances individual motivation and morality for the development and expansion of entrepreneurship. Furthermore, the infrastructure factor had the least effect among the eight factors in the development of entrepreneurship in the region.

Pereira and Martinho (2020) in a study entitled 'Agricultural entrepreneurship in the EU: Partnership for sustainable development' used the VOSviewer software to collect data, which is an interesting tool for bibliographic analysis. In this study, statistical data related to EU agricultural entrepreneurship were also analyzed according to empirical approaches. The results showed that there are realities in EU countries where, in fact, common agricultural policy tools are different, for example, they may play a key role in promoting more agricultural entrepreneurship in a more sustainable manner.

Zhu et al. (2018) in a study evaluated the situations of agricultural cooperatives in Mongolia. Their results showed that the surveyed companies have had a growing trend in recent years. In particular, arrangements for better supply of products to the market, identification of multiple target markets, and use of a new financial credit system allowing farmers more access to the capital fund have led to significant development of these companies.

In addition, Lawrence and Ganguli (2016) studied entrepreneurial behavior among ranchers in Tamil Nadu province in India and found that they had a moderate level of entrepreneurial behavior. The other research results showed that entrepreneurial behavior has a positive and significant relationship with factors of education, land ownership, economic status, social participation, economic motivation, and communication.

Objectives

This study mainly aimed to identify the factors influencing the development of entrepreneurship skills and innovation in rural cooperatives in Alborz province and its specific objectives include the following:

- Study and prioritization of entrepreneurship development skills and innovation among members of rural agricultural cooperatives;
- Study of psychological factors influencing the development of entrepreneurship skills and innovation in rural agricultural cooperatives of Alborz province;
- Study of educational, socioeconomic, cultural, managerial, policy-making, and technical factors influencing the development of entrepreneurship skills and innovation in rural agricultural cooperatives of Alborz province;
- Study of individual characteristics affecting the development of entrepreneurial skills and innovation in rural agricultural cooperatives in Alborz province; and
- Study of obstacles and restrictions of the development of entrepreneurship skills and innovation in rural agricultural cooperatives of Alborz province.

Methodology

This descriptive-correlational study is purposefully a practical research, which conducted as a field study with a causal relationship between research variables. This study is methodologically a survey research. In this study, relative stratified random sampling was used to select the statistical population. The statistical population of this study consisted of all members of rural cooperatives in Alborz province, where Alborz Rural Cooperative Organization has 4 affiliated organizations in Karaj, Savojbolagh, Taleghan, and Nazarabad counties. According to the latest statistics obtained from the Agricultural Management Office of this province, all members of rural cooperatives in Alborz province are 22,207 people. The Cochran's formula was used to determine the sample size, which was 283 people. During a pre-test, 30 questionnaires were distributed and collected in the statistical population to determine the reliability of the questionnaires. Cronbach's alpha coefficient of entrepreneurship skills was calculated to be 0.864, indicating the appropriate reliability of both questionnaires.

Results

Descriptive statistics

Personal and professional characteristics

The results showed that approximately 37.1% of cooperative members with the highest frequency aged 31-40 (M = 35 year-old, and SD = 9.52). Most of the members were male (92.6%), while only 7.4% of the members were female. Most of them have Associate Degree (31.2%) and only 7.6% have Master and Ph.D. Degree. The highest history of membership of members (40.1%) in the studied cooperatives was related to the class of 1 to 5 years (M = 7 years and SD = 4.44).

Inferential statistics

In this section, inferential statistics of Pearson and Spearman correlation

coefficients, multiple regression, t-test, and path analysis were used to test the hypotheses.

T-test results

According to the data, t-test was used to determine the significant differences in personal characteristics (gender, participation or non-participation in training courses) regarding the development of entrepreneurial skills. The results of t-test showed that there is no significant difference between men and women in rural cooperatives in terms of entrepreneurial skills at the error level of 5% (Table 1); i.e., the level of entrepreneurial skills of male and female members of cooperatives did not differ from each other and was the same, and the level of entrepreneurial skills was the same between those who participated in entrepreneurship training courses and others who did not participate in the mentioned courses.

Table 1. The effect of personal characteristics on the development of entrepreneurial skills

Variable	Change levels	No.	Mean	SD	t-value	Sig.
Gender	Male	255	59.88	13.31	-0.896	0.371
	Female	21	62.66	17.53		
Participation in educational courses	Yes	63	61.93	14.33	1.217	0.225
	No	213	59.55	13.44		

Spearman correlation coefficient test results

As the independent and the dependent variables of entrepreneurship skills have rating and quasi-distance scales, respectively, in this section, Spearman correlation coefficient was used. The results of Spearman correlation coefficient between the two variables of education level and entrepreneurial skills in agricultural cooperatives of Alborz province ($r = 0.306$; $P = 0.000$) indicate that there is a positive and significant relationship between the two variables. In other words, the higher the level of education of individuals, the higher the level of development of entrepreneurial skills and their innovation. The results of Spearman correlation coefficient between the two variables of familiarity with the entrepreneurial process and entrepreneurial skills in agricultural cooperatives in Alborz province ($r = 0.313$; $P = 0.000$) indicate that there is a positive and significant relationship between the two variables. The results of Spearman correlation coefficient between the two variables of members' interest in entrepreneurship development and entrepreneurial skills in agricultural cooperatives in Alborz province ($r = 0.319$; $P = 0.000$) indicates that there is a positive and significant relationship between the two variables.

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Table 2. Spearman correlation coefficient results on the relationship between personal characteristics variable and entrepreneurial skills development

Independent variable	Dependent variable	Spearman coefficient ®	Sig. (*p*)
Educational level	Entrepreneurial skills	0.306**	0.000
Familiarity with entrepreneurship process	Entrepreneurial skills	0.313**	0.000
Interest in developing entrepreneurship in agricultural cooperatives	Entrepreneurial skills	0.319**	0.000

*: p<0.05; **: p<0.01.

Pearson correlation coefficient test results

As both the independent and dependent variables had a quasi-distance scale, Pearson correlation coefficient was used in this section. The results of Pearson correlation coefficient between the two variables and entrepreneurial skills in agricultural cooperatives in Alborz province (r = -0.170; P = 0.005) indicate that there is an inverse and significant relationship between the two variables. In other words, the younger the members of the agricultural cooperatives, the higher their entrepreneurial skills and innovation.

The results of Pearson correlation coefficient between the two variables of frequency of participation in entrepreneurship training courses and entrepreneurial skills in agricultural cooperatives in Alborz province (r = 0.322; P = 0.010) indicate that there is a positive and significant relationship between the two variables.

Table 3. Results of Pearson correlation coefficient on the relationship between personal characteristics variables and the development of entrepreneurial skills

Hypothesis No.	Independent variable	Dependent variable	Pearson coefficient ®	Sig. (*p*)
1	Age	Entrepreneurial skills	-0.170**	0.005
2	Membership history in cooperative	Entrepreneurial skills	0.250**	0.000
3	Frequency of participation in entrepreneurship training course	Entrepreneurial skills	0.322**	0.010

The results of Pearson correlation coefficient between the two variables of psychological factors and entrepreneurial skills in agricultural cooperatives in Alborz province (r = 0.472; P = 0.000) indicate that there is a positive and significant relationship between the two variables; i.e., the more psychological factors are used in agricultural cooperatives, the more entrepreneurial skills of members in agricultural cooperatives.

The results of the correlation coefficient between the two variables of economic factors and entrepreneurial skills

The results of Pearson correlation coefficient between two variables of economic factors and entrepreneurial skills in agricultural cooperatives of Alborz province (r = 0.598; P = 0.000) indicate that there is a positive and significant relationship between the two variables. The results of Pearson correlation coefficient between the two variables of obstacles and restrictions of entrepreneurship and entrepreneurial skills in agricultural cooperatives of Alborz province (r = -0.617; P = 0.000) indicate that there is an inverse and significant relationship between the two variables. Therefore, the fewer obstacles and restrictions on entrepreneurship, the higher the level of entrepreneurial skills of members in agricultural cooperatives.

Table 4. Pearson correlation coefficient results on the relationship between independent variables and entrepreneurial skills

Independent variable	Dependent variable	Pearson coefficient ®	Sig. (*p*)
Psychological factors	Entrepreneurial skills	0.427**	0.000
Educational factors	Entrepreneurial skills	0.525**	0.000
Economic factors	Entrepreneurial skills	0.598**	0.000
Sociocultural factors	Entrepreneurial skills	0.488**	0.000
Managerial factors	Entrepreneurial skills	0.265**	0.000
Policy factors	Entrepreneurial skills	0.282**	0.000
Technical factors	Entrepreneurial skills	0.212**	0.000
Obstacles and restrictions of entrepreneurship	Entrepreneurial skills	-0.617**	0.000

*: p<0.05; **: p<0.01.

Multiple regression results on the effect of research variables on the development of entrepreneurial skills

In this section, stepwise multivariate regression was used to investigate the role of research variables on the dependent variable of entrepreneurial skills, in which four variables were included into the regression equation. According to the available findings, the variables of economic factors, psychological factors, managerial factors, and sociocultural factors have explained about 40.7% of the changes in the dependent variable of the development of entrepreneurship skills. According to the coefficients in Table 5, it can be generally stated that the variables of economic factors, psychological factors, managerial factors, and sociocultural factors have a positive effect on the development of entrepreneurial skills.

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Table 5. A summary of the various stages of including independent variables on the development of entrepreneurial skills

Stages	Variables	Correlation factor	Determination factor	Adjusted determination factor	F	Sig.
1	Economic factors	0.608	0.370	0.367	137.85	0.000
2	Psychological factors	0.625	0.390	0.385	74.84	0.000
3	Managerial factors	0.635	0.403	0.396	52.49	0.000
4	Sociocultural factors	0.646	0.417	0.407	41.53	0.000

Path analysis of factors influencing entrepreneurship in rural cooperatives of Alborz province

In this section, path analysis was used to investigate the direct and indirect effects of independent variables on the dependent variable. Causal relationships between independent variables and dependent variable are plotted in Figure 1, which identifies the direct and indirect effects of the variables (Fig. 1). Path analysis figure shows that the coefficients of direct and indirect effects of factors affecting entrepreneurship in rural cooperatives of Alborz province are as follows.

Table 6. Direct and indirect effects of factors affecting entrepreneurship in rural cooperatives of Alborz province (in order of priority)

Independent variable	Direct effects	Indirect effects	Total direct & indirect effects
Economic factors	0.479	0.100	0.579
Educational factors	0.143	0.078	0.221
Sociocultural factors	0.177	0.036	0.213
Managerial factors	0.154	0.052	0.206
Policy factors	0.112	0.058	0.170
Psychological factors	0.124	0.021	0.145
Technical factors	0.051	-	0.051

According to Table 6, economic factors had the most direct and indirect effects on the development of entrepreneurial skills and innovation in rural cooperatives in Alborz province (F = 0.579). This result suggested the great importance of economic factors in the development of entrepreneurial skills in rural cooperatives of Alborz province. The second factor is educational factors that have a great impact on the development of entrepreneurial skills in rural cooperatives that should be considered largely (F = 0.221). In this section, the importance of educational factors is obvious in the development of entrepreneurial skills of rural cooperatives. Technical factors had the least effect on the development of entrepreneurial skills of rural cooperatives in Alborz province (F=0.051). This result indicates that although technical factors have been effective in developing the entrepreneurial skills of rural cooperatives, other factors have been more influential in

this regard. Since it is usually impossible to identify all the factors affecting the dependent variable for the researcher in socioeconomic research, path analysis variables can always explain only part of the variance of the dependent variable. Consequently, in path analysis, what remains as an unknown effect or factor is represented by 'e', known as the error quantity. The value e indicates the level of variance of a variable that the previous independent variables in Figure 1 could not explain. By e2, an unexplained variance is obtained.

R2 = Determination factor obtained for all variables

R = 1-e ⟶ 0.655=1- e2 ⟶ e2 = 0.345

Therefore, it can be stated that the obtained causal model does not explain 34.5% of the variance of the dependent variable, i.e., this model explains 65.5% of the total variance of the dependent variable.

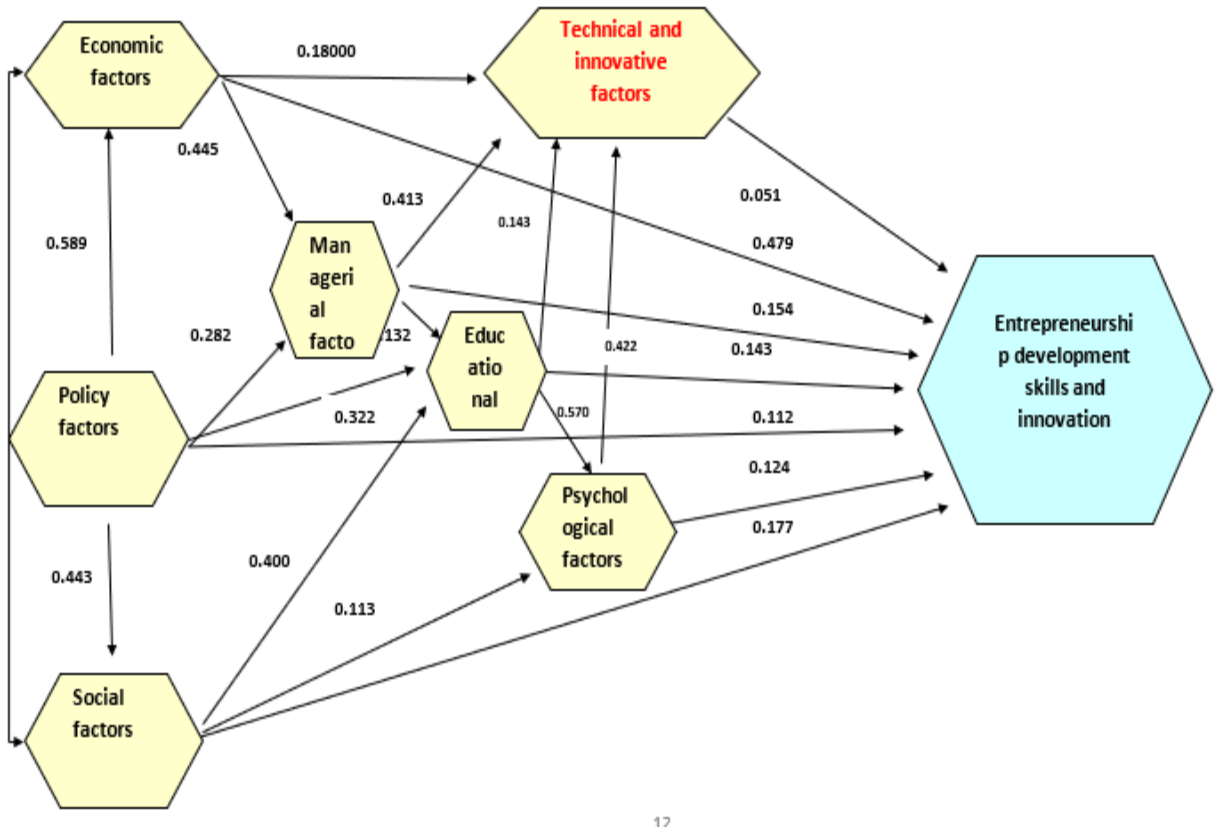

Fig. 1. Path analysis of factors influencing entrepreneurship development skills and innovation

Conclusion

Entrepreneurship is recognizing opportunities and making the best use of them. Although entrepreneurship is a novel science, it is considered in all aspects of development today; and the most important achievements of entrepreneurship for the development of the country are job creation, welfare, wealth, and recognition of favorable opportunities. Some also believe that entrepreneurship can increase productivity in the organization as a mechanism. So that developed countries from a new aspect have kept their companies in a completely changing and dynamic environment and create a platform for success.

According to the results, approximately 37.1% of cooperative members with the highest frequency have 31-40 years old (M = 35 years old; SD = 9.52). Most of the subjects were male (92.6%), while only 7.4% of the members were female. The level of education of most of them is Associate Degree (31.2%) and only 7.6% have higher education than bachelor. The highest membership history of members (40.1%) in the studied cooperatives was related to the class of 1-5 years (M = 7; SD = 4.44).

The results of Spearman correlation coefficient between the two variables of members' interest in entrepreneurship development and entrepreneurial skills in agricultural cooperatives in Alborz province indicate that there is a positive and significant relationship between the two variables. The level of interest of members in the development of entrepreneurship is effective in increasing entrepreneurial skills in agricultural cooperatives that is consistent with results of Ghasemieh et al. (2020) and Pereira and Martinho (2020).

According to the results of Pearson correlation coefficient between the two variables of educational factors and entrepreneurial skills in agricultural cooperatives in Alborz province, there is a positive and significant relationship between the two variables, indicating that the more the use of educational factors in agricultural cooperatives, the more entrepreneurial skills of members in agricultural cooperatives. The results of Valaei et al. (2017) and Zhu et al. (2018) indicate that educational factors are effective in developing entrepreneurial skills, which has been confirmed in the present study.

The results of Pearson correlation coefficient between the two variables of economic factors and entrepreneurial skills in agricultural cooperatives in Alborz province indicate that there is a positive and significant relationship between the two variables, suggesting that economic factors are effective in increasing entrepreneurial skills in agricultural cooperatives. The results of Valaei et al. (2017) and Pereira and Martinho (2020) indicate that economic factors are effective in the development of entrepreneurial skills, which has been confirmed in the present study as well.

Furthermore, the results of path analysis showed that economic factors had the highest impact on the development of entrepreneurial skills in rural cooperatives of Alborz province (F = 0.579), indicating the importance of economic factors in the development of entrepreneurial skills in rural cooperatives in Alborz province. This result is consistent with the research results of

researchers such as Lawrence and Ganguli (2016) and Yazdani et al. (2020). The second factor is educational factors with a significant effect on the development of entrepreneurial skills in rural cooperatives that should be considered significantly (F = 0.221). The third factor is sociocultural factors that have a significant, positive effect on the development of entrepreneurship skills in rural cooperatives (F = 0.213). The fourth factor is managerial factors that have a significant impact on the development of entrepreneurial skills of rural cooperatives (F = 0.206). The policy factor with a positive coefficient is in the fifth place that should be considered (F = 0.170). The sixth factor is psychological factors that have a positive effect on the development of entrepreneurial skills of rural cooperatives in Alborz province (F = 0.145), which also indicates the requirement to apply psychological factors. Technical factors had the least effect on the development of entrepreneurial skills of rural cooperatives in Alborz province (F = 0.051).

Recommendations

- Study of the factors influencing entrepreneurship in rural cooperatives in other parts of the country;
- Study and explanation of entrepreneurship development strategies in rural cooperatives of the country;
- Conceptualization of group and corporate entrepreneurship in rural cooperatives;
- Study of the obstacles and problems in the structure of rural cooperatives in order to develop entrepreneurship from a comparative perspective of managers and members; and
- Study of the current and favorable situations of corporate entrepreneurship in various cooperatives in the country.

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