Journal of Research and Rural Planning
Volume 11, No. 2, Spring 2022, Serial No. 37, Pp. 61-79
eISSN: 2783-2007 **ISSN: 2783-2791**
http://jrrp.um.ac.ir

Original Article

A Regional Analysis of the Entrepreneurship Ecosystem in Rural Areas of Northern Iran (Case Study: Watershed of the Haraz Plain)

Hadi Moumenihelali [1]- Enayat Abbasi [2*]- Otto Kroesen [3]

1- Ph.D. in Agricultural Extension and Education, Tarbiat Modares University, Tehran, Iran
2- Associate prof. in Agricultural Extension and Education, Tarbiat Modares University, Tehran, Iran
3- Assistant Prof. in Cross-cultural Entrepreneurship, Delft University of Technology, Delft, the Netherlands.

Abstract

Purpose- Having an appropriate and integrated entrepreneurial ecosystem in rural areas largely guarantees the sustainability of rural businesses. Therefore, this study was conducted with the purpose of classification of the rural regions of Haraz plain watershed in terms of entrepreneurial ecosystem.

Design/methodology/approach- This is a descriptive study that was done using a survey. The questionnaire was the key instrument for gathering data. The study samples were 182 pluriactive rice farmers and 50 rural experts.

Findings- The results showed that the studied regions are in an inappropriate situation in term of rural entrepreneurship ecosystem. Relative assessment using Shannon's entropy showed support component ranked at the highest level by a large difference compared to other components. The financial component ranked at the lowest level in comparison with other components. The results using the ORESTE and hierarchical cluster analysis techniques showed that Nour and Babolsar regions are the most appropriate regions in term of the rural entrepreneurship ecosystem for rural business development, respectively.

Research implications/limitations- The improvement of REEs in the six regions should be seriously considered and pursued by policy makers. At the same time according to this research and creating mental ideas for the authors, it is suggested that researchers study the REE and introduce the types of rural businesses appropriate to the situation of the EE in all region of the world; the subject that is not covered in this article. In addition, the method, model, and strategy used in this study provide an appropriate pattern for future researches in entrepreneurial activities development in different regions of the world.

Keywords- Rural Entrepreneurship Ecosystem (REE), ORESTE Technique, Shannon's Entropy (SE), Watershed of Haraz Plain (WHP).

Use your device to scan and read the article online

How to cite this article:
Moumenihelali, H., Abbasi, E. & Kroesen, O. (2022). A regional analysis of the entrepreneurship ecosystem in rural areas of northern Iran (Case study: Watershed of the Haraz Plain). *Journal of Research & Rural Planning*, *11*(2), 61-79.
http://dx.doi.org/10.22067/jrrp.v11i2.2112-1035

Date:
Received: 29-12-2021
Revised: 13-04-2022
Accepted: 20-04- 2022
Available Online: 12-05-2022

Corresponding Author:
Abbasi, Enayat, Ph.D.
Address: Department of Agricultural Extension and Education, Faculty of Agriculture, Tarbiat Modares University, Tehran, Iran.
Tel: +989126089468
E-Mail: enayat.abbasi@modares.ac.ir

1. Introduction

The goal of any society is to achieve growth and development. Most scholars and policy makers believe that entrepreneurship is a driving force in developed and developing countries due to its role in sustainable growth by employment creation, innovation and business diversification (Biru et al., 2020). Valerio et al. (2014) says that entrepreneurship is a catalyst for achieving economic and social development objectives, including growth, innovation, employment, and equity. It can appear in an economy in a number of ways with the goal of creating wealth. Also, it can be an important source of income and employment for societies. Therefore, governments use entrepreneurship as an important tool for achieving sustainable development (Prieger et al., 2016). In recent decades, Iran has taken steps to succeed and sustain development towards entrepreneurship. However, many entrepreneurs face barriers such as unstable government policies and applying personalization policies, uncompetitiveness business environment, frequent changes in government executives and employersm, inappropriate rules, lack of business infrastructure, lack of supporting social norms and culture from entrepreneurship, inappropriate market, a high interest rate on bank loans, etc., that causes unfavorable entrepreneurship ecosystem (EE) (Ghambarali et al., 2015). This problem is more acute in Iranian rural areas. Considering the reality of village contexts in Iran suggests that job opportunities are limited in the rural areas (Statistical Center of Iran, 2016). Therefore, people prefer to migrate to big cities to meet their needs by getting a job and access to income (Taghdisi et al., 2015). This is largely the result of a different performance of the EE in rural and urban areas (Bosma & Sternber, 2014; Gholami & Moohamadzadeh, 2017). Therefore, the existence of an efficient and desirable entrepreneurship ecosystem in the rural regions can greatly help benefit from the capacities (Moumenihelali et al., 2022) including unemployed human resources.

Review of the literature and field surveys revealed that there were unemployment problems, lack of proper utilization of economic capacities and extensive rural to urban migration, the unfavorable situations for the creation and growth of new rural businesses in the watershed of the Haraz plain (WHP) in the north of Iran. In recent decades, this issue has grown in Iran and in the WHP. In other words, the capacities of the region are used on a limited basis. The lack of proper use of capacities and potentials in the WHP was largely related to space and the EE. Hence, it was necessary to examine the effect of a systematic approach on some of these problems that are rooted in limited spaces and EE. Therefore, the purpose of this study is to analyze and classify the rural regions of the WHP in terms of the entrepreneurial ecosystem (EE).

EE research commonly includes policies and programmes at the municipal, regional and country levels (Meyer et al., 2020). This research, unlike other researches in the field of the EE, which mainly seek to identify and present indicators and metrics at different levels (see, Stam & van de Ven, 2021; Biru et al., 2020; Shwetzer et al., 2019) as well as dynamics issue of the EE in different regions (see, Roundy & Fayard, 2019; Spigel, 2017), uses the multi attribute decision making (MADM) (Bagheri Moghaddam et al., 2011), for the relative assessment of the EE situation in rural different regions. Therefore, this study by moving forward and using selected indicators and criteria and applying advanced techniques, in addition to expanding research in the field of EE, helps to fill the research gap in this field.

This study contributes to theory and practice in different ways. Theoretically, it has developed a unique model with a combination of ORESTE, Shannon's Entropy (SE) techniques, and Isenberg Entrepreneurship Ecosystem Model (IEEM) to assess the EE in the rural area, which has not been explored in the literature. In practice, the results of this study will have implications for those who seek to improve entrepreneurship context in order to the promotion of entrepreneurship activities among rural entrepreneurs in different regions.

This paper is organized as follows. First, we scheme the theoretical basis and consider the existing literature for identifying criteria and their matching with the Isenberg model as well as literature related to applying ORESTE. Second, we illustrate the precise methodology and data collection process of this study, followed by presenting how to apply ORESTE, SE, and hierarchical cluster analysis (HCA). Finally, we discuss the research findings and highlight the

theoretical and practical implications along with limitations and future research directions.

2. Research Theoretical Literature

2.1 Entrepreneurial Ecosystem

The term EE was introduced by Moore (1993). The importance of exploring the space and the EE and its role in developing entrepreneurial activities has attracted the attention of scholars, institutions and international organizations (Dodd & Anderson 2007; Stam & Spigel 2016). EE is the interacting socio-economic context that promotes entrepreneurs to start and develop their businesses (Manimala et al., 2019). It is the set of forces that generate and sustain regional entrepreneurial activity (Roundy & Bayer, 2019). The EE approach focuses on the significance of the environment where the entrepreneur grows his business and distinguishes the features of the ecosystem of a specific region (The National Women's Business Council (NWBC), 2017). In general, regional advantages, absolute, relative and/or competitive advantages in a region are pillars of entrepreneurial opportunities, so each region has its own specific entrepreneurship processes (Guesnier, 1994). Therefore, policy-making should be based on regional specific advantages (Asheim et al., 2011), but not based on the non-localized experiences of other regions (Davari et al., 2017). Regional features are effective in deciding entrepreneurs to set up or develop business and the likelihood of business success (Butler et al., 2015). Aspen Network of Development Entrepreneurs (ANDE), 2013); Stam and Spigle (2016) and Rezaei et al. (2018) acknowledge that activities on the EE are in the early stages of development, and there is no common and comprehensive definition of the areas of EEs among scholars and institutes. The IEEM has been used in this research because it has the capability to implement and a high degree of flexibility in ecosystem assessment and relatively covers other models and approaches (ANDE, 2013). Liguori et al., (2018) believe that it is an important tool to better understand the situation (local). It has a lot of popularity amongst policy-makers and leaders (Stam & Spigle, 2016), and has been recognized as an influential approach in recent years (Mason & Brown, 2014). Isenberg, (2011) believes that the EE consists of hundreds of elements that can be grouped into six major realms. From Isenberg's perspective, the main realms of EE include politics, financial resources, culture, support, human capital and market. Table 1, shows components of the EE, describing the components and matching various previous studies with the described components.

Table 1. Components of rural entrepreneurship ecosystem (REE), their description and matching with different sources

Components / Matching with different sources	Policies[a]	Financial Resources[b]	Culture[c]	Support[d]	Human's Capital[e]	Market[f]
Liguori et al., (2018)	*	*	*	*	*	*
Davari & Najmabadi, (2018)	*	*	*	*	*	*
Morales & Velilla, (2018)			*			
Global entrepreneurship monitor (GEM), (2018)	*	*	*	*	*	*
Spigel (2017)	*	*				*
Rezaei et al. (2017)	*		*			
Movahedi et al. (2017)	*	*	*		*	
Davari et al. (2017)	*	*	*	*	*	*
McKague et al. (2017)		*		*	*	
Ghambarali et al. (2016)	*					
Stam (2015)	*	*				
Ghambarali et al. (2015)	*	*	*	*	*	*
Pishbin et al. (2015)		*				
OECD (2015)		*				
Najafi Kani et al. (2015)		*	*	*	*	*
Yaribeigi et al. (2014)	*	*	*		*	*
Shao-quan et al. (2013)				*	*	
Alvarez et al. (2011)	*	*	*	*	*	*
Dries et al. (2011)				*		*
Faraji Sabokbar et al. (2011)		*	*	*	*	*

Components / Matching with different sources	Policies[a]	Financial Resources[b]	Culture[c]	Support[d]	Human's Capital[e]	Market[f]
Lu and Tao (2010)						*
Haugen and Vik (2008)						*
Ronning and Kolvereid (2006)	*					
Marshall and Samal (2006)					*	
Lordkipanidze et al. (2005)				*		
Greve and Salaff (2003)						*

Description (Isenberg, 2011):
a. It includes strong leadership practices and support for government structures within institutions, regulatory frameworks for incentives and investment-friendly regulation.
b. It includes micro-credit, venture capital financing, and investors.
c. It includes visible success, risk tolerance, and the social position of entrepreneurs.
d. It includes infrastructure, professional support such as law and accounting, and nongovernmental organizations.
e. It includes educational institutions and labor force.
f. It includes early clients and networks such as entrepreneurship networks and international companies.

2.2 Using the ORESTE Technique

As noted earlier, the development of entrepreneurial activities should be based on the available capacities and potentials in different regions to achieve success. In other words, assessing the EE and identifying the potential of different regions are essential to prevent the loss of capital and time (Faraji Sabokbar et al., 2011). One of the suitable methods for relative assessment of the EE in different regions is the use of the ORESTE technique, which is one of the common and advanced methods of MADM (Bagheri Moghaddam et al., 2011). If in one MADM case, goal, ranking option m is based on indicator K and for each indicator, a weak arrangement on the set of alternative is to be illustrated and the approximate significance (weight) of each indicator to be illustrated by another weak arrangement; the basics of each MADM methods being excel to ORESTE is to be established. The ORESTE technique provides a tool to rank the decision-making alternative and eventually highlights the discrepancies (see, Zhang et al., 2018; Raj & Vinodh, 2016; Portaheri et al., 2015; Jafari, 2013; Chatterjee & Chakraborty, 2013; Pastijn & Leysen, 1989). Raj and Vinodh (2016) believes that ORESTE technique can be used for different domains to improve efficiency. Also, Chatterjee and Chakraborty (2013) argues that this technique is effective in ranking options**.** In the literature, the ORESTE technique have been used in different studies including the nuclear waste management problem (Delhaye et al., 1991), identification and prioritization of grain discharging operations risks (Jafari, 2013), the assessment of entrepreneurship status in rural areas (Najafi Kani et al., 2015), the appraisal of consequences and rural settlements ranking (Portaheri et al., 2015), the agile concept selection (Raj & Vinodh, 2016), patients' prioritization of hospitalization (Zhang et al., 2018). The literature suggests the widespread use of the ORESTE technique in various fields like rural entrepreneurship. Accordingly, the main goal of the study was to analyze the rural entrepreneurship ecosystem (REE) in the six regions of the WHP in the following stages.

Stage 1. Weighing and evaluating REE criteria through using SE;
Stage 2. Ranking (relative assissment) six regions of WHP based on REE criteria through using the ORESTE technique;
Stage 3. Classifying the ranked regions through using a HCA technique.

3. Research Methodology

3.1 Geographical Scope of the Research

The WHP is in the central part of the Mazandaran province, Iran. The WHP is surrounded by the Caspian Sea from the north, the Alborz mountain range from the south, the cities of Pol-e-Sefid, Qaem Shahr, and Juybar in the Mazandaran province from the east, and the city of Nowshahr in the same province from the west. This region includes Amol, Babol, Babolsar, FereydonKenar, MahmudAbad and Nur (Figure 1). Mazandaran province has the highest rice cultivating area (37%) and rice production (38.4%) in Iran. In this regard, the WHP is one of the high-quality plain for cultivating rice in Iran. This plain has the highest rice cultivation area (58.65%) in Mazandaran province (Statistical Center of Iran, 2016).

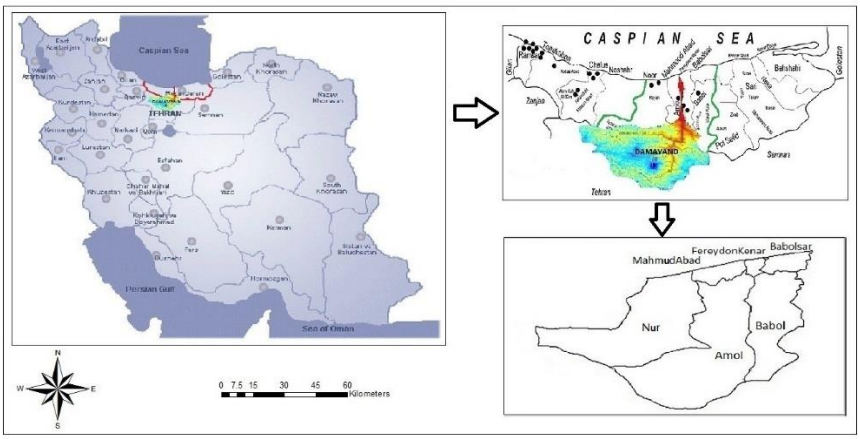

Figure 1. Iran, Mazandaran Province and WHP

3.2. Methodology

The study used the quantitative design. From the point of view of the relationship among variables, the research is descriptive-analytic, and it is practical in terms of purpose; Therefore, by applying the principles, foundations and assumptions of the EE indicators, it seeks to investigate the criteria of the rural entrepreneurial ecosystem and the relative evaluation of the six regions of the WHP. It was done through a questionnaire based on the interview as the main tool for collecting data. The statistical population of the study was two groups. The first group included rice farmers who launched at least an entrepreneurial business alongside with rice farming (pluriactive rice farmers (PRFs) in the WHP. Referring to the Jihad Agricultural Organization of Mazandaran Province, 196 PRFs were identified equally in 6 regions. Of these, 182 of them participated in this study (Table 2). The questionnaire included questions (items) about the current situation of REE criteria in Likert scale from 1 to 5 (very inappropriate = 1 to very appropriate = 5). According to the data collected, the average of rice farming experiences was more than 20 years. The average of activity experiences in at least one entrepreneurial business was more than 11 years. Moreover, the average earnings of respondents were 48.45 percent of rice farming, 44.15 percent of the entrepreneurial business and 20.7 percent of the other activities.

Table 2. Distribution of questionnaires in six regions of WHP

Regions	Completed questionnaires (n)
Amol	30
Babol	32
Babolsar	30
FereydonKenar	30
MahmudAbad	30
Nur	30
Total	182

The second group included rural experts (REs) in the study area who were identified and questioned using the snowball referrals sampling technique, too. These experts included 7 people from the Rural Cooperative Organization (RCO), 7 people from Haraz Extension and Technology Development Center (HETDC), 4 people from the Jihad Agriculture Applied Science Higher Education Institute (JEAASHEI) and 32 people from the Jihad Agriculture Officces (JEAO). The questionnaire of this group of respondents which focused on the importance of REE criteria, which is the same as the first geoup (in content), examined in 5 Likert-scale (very low = 1 to very much = 5).

3.3 The Criteria of REE in this Study

Based on Isenberg's entrepreneurship ecosystem model (2011) and various sources (Table 1), several criteria were extracted. At first, experts examined the validity of the research tool. Therefore, the necessary amendments (deleting some inappropriate questions and modifying how to express and how to put it in

some others) were carried out. Finally, the appropriate criteria were adjusted in the six components included the policy component with 5 criteria, financial component with 3 criteria, culture component with 7 criteria, support component with 10 criteria, human capital component with 4 criteria and market component with 5 criteria.

3.4 Techniques in Research

In this research, SE, ORESTE and HCA techniques were used to achieve the goal in three stages:

3.4.1 Weighting and evaluation of REE criteria using SE (stage 1)

In order to apply the ORESTE technique, it is necessary to determine the weight of the estimator criteria. For this purpose, first PRFs' opinions about the status of the REE were received. Second, in order to modify the views of PRFs about the situation of the REE, REs provided their views on the importance of each item of the REE. Finally, combining the two groups' viewpoints (PRFs and REs in this study) needs weighing and evaluating of the status of the REE and uses one of the appropriate and necessary techniques. One of the appropriate techniques for weighing and adjusting is SE (Jafari, 2013; Najafi Kani et al., 2015; Portaheri et al., 2015). Thus, this study has used the SE technique. This technique includes a combination of the viewpoint of two groups (PRFs and REs in this study) in an issue. Weighting the REE criteria was done in the following steps:

- At first step the weight of REE criteria based on view of PRFs was determined using Equation 1.

Equation 1: $$w_j = \frac{d_j}{\sum_{j=1}^{n} d_j}$$

wher d_j is the amount of deviation from data in each criterion, which is calculated using Equation 2. $\sum_{j=1}^{n} d_j$ is the total amount of deviation from the data.

Equation 2: $$d_j = 1 - E_j$$

where E_j is the entropy j^{th} criterion for all criteria, which is calculated using Equation 3.

Equation 3: $$E_j = -k \sum_{i=1}^{m} \left[P_{ij} \ln P_{ij} \right]$$

In Equation 3, given the constant value of 1 and the number of 6 options (m in Equation 4), the value of k is fixed, which is obtained from Equation 4. Also in Equation 3, P_{ij} is the average of the data obtained from the study area.

Equation 4: $$k = \frac{1}{\ln(m)}$$

- In the second step, the importance of REE criteria based on view of experts was determined using Equation5.

Equation 5: $$\lambda_j = \frac{r_i}{\sum r_i}$$

In Equation 5, r_i represents the average importance of each criterion. Also, $\sum r_i$ represents the sum of average importance of the criteria.

- In the third step, weights extracted from steps 1 and 2 were combined using Equation 6 and the final weights were determined.

Equation 6: $$w'_j = \frac{\lambda_j w_j}{\sum_{j=1}^{n} \lambda_j w_j}$$

3.4.2 Applying the ORESTE technique for ranking (relative assessment) the six regions in the WHP (stage 2)

In general, ORESTE technique is done in the following steps:

- Creating preference structures on a set of criteria and options;
- Initial ranking on the set of criteria and options using Besson's mean ranks method (Equation 7).

Equation 7: $$\bar{X} = \frac{X_1 + X_2}{r}$$

X_1 = Maximum assigned amount; X_2 = Minimum assigned amount; $\bar{X}$ = the mean distance amount

- Projection distances $\boldsymbol{d(0, m_k)}$: The projection in ORESTE technique is based on using the hypothetical matrix called position matrix. In all its columns, the decision options are organized from the best to the worst and accordingly, the columns are arranged based on the criteria ranks. Figure 2 shows an example of the position matrix.

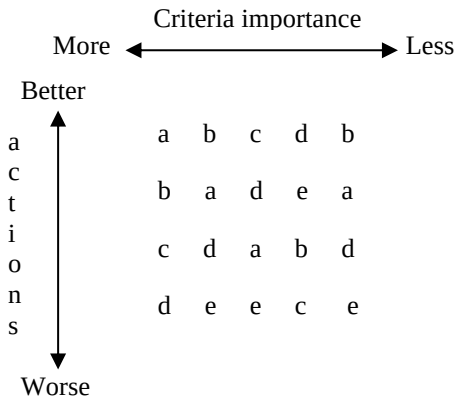

Figure 2. An example of the position matrix (Pastijn & Leysen, 1989)

Illustrating the members of the matrix, we have the following relationships (Equation 8, 9, & 10):

Equation 8: if $aP_k b$ *then* $d(0,a_k) < d(0,b_k)$

Equation 9: if $r_1(a) = r_2(b)$ and $1P2$ *then* $d(0,a_1) < d(0,b_2)$

Pastijn and Leysen (1989) discussed various types of projections. In this paper, the linear orthogonal projection is used. In this mode to perform the projection distances $d(0,m_k)$ from r_k and for $r_k(m)$ option m in k criteria, Equation 10 is used.

Equation 10: $d(0,m_k) = \frac{1}{2}\left[r_k + r_k(m)\right]$

- Global ranking of the options distances: For constructing a complete order of the options, the projections are ranked again by means of Besson's mean ranks method as their relative positions are important but not their exact values. A global rank $R(m_k)$ is assigned to all the projection distances from the lowest to the highest ones (Chatterjee & Chakraborty, 2013).

Equation 11: $R(a_1) \le R(a_2)$ if $d(0,a_1) \le d(0,b_2)$

These ranks are called global ranks and all exist in the following scope (Equation 12):

Equation 12: $1 \le R(m_k) \le m, k$

- Aggregation: For each option, a mean rank is computed by the summation of their global ranks over the entire set of criteria using the following expression which yields a complete ranking order of the options (Chatterjee & Chakraborty, 2013). According to Equation 13, we have:

Equation 13: $R(m) = \sum_{k-1}^{k} R(m_k)$

Thus, an incremental sequential structure is modified based on $R(m_k)$ and with regard to Equation 14 and 15:

Equation 14: if *R(a) < R(b)* then *a P b*

Equation 15: if *R(a) = R(b)* then *a I b*

The smaller $R(m_k)$ indicates better position of a particular option (Roubens, 1982; Leeneer & Pastijn, 2002; Chatterjee & Chakraborty, 2013).

3.4.3 Classification of the six rigons in the WHP using HCA (stage 3)

HCA is used to classify different regions based on the degree of similarity in different clusters. In this research, the hierarchical cluster procedure from the type of agglomerative clustering was used (Kalantari, 2013; Portaheri et al., 2015; Tan et al., 2019). Therefore, to better understand and recognize priorities in the creation and development of rural businesses in different regions, six studied regions based on the degree of similarity in terms of REE were classified into three appropriate, semi-appropriate, and inappropriate levels.

3.5. Data Analysis Tools

For data analysis, Excel, SPSS and Arc GIS software were used. Excel software was used to weigh the criteria and rank the six regions. SPSS software was used to classify the rankings obtained from the six regions. ArcGIS software was used to show the visual presentation of the results of the research.

4. Research Findings

4.1 Situation of the REE in the WHP

According to Table 3, the component of human capital (M= 2.87) is in a better situation from the viewpoint of PRFs. Moreover, the policy component (M= 2.18) from the viewpoint of PRFs has a lower average

compared to other components. In general, the situation of REE in the studied region is inappropriate.

Table 3. Describing the REE current situation in the WHP from the viewpoint of PRFs

	Components	n	M*
REE in the WHP	Policy	182	2.18
	Fanancial	182	2.20
	Culture	182	2.61
	Supports	182	2.70
	Human Capital	182	2.87
	Markets	182	2.36

*Mean: very inappropriate = 1 to very appropriate = 5

4.2 Phases of Ranking of Six Regions in the WHP in Terms of REE

As explained in the previous section, the REE in the WHP is not in a favorable situation. However, the study of the relative status of six regions in the WHP based on the REE compared to each other is very important for regional planning and, integrated development. Thus, weighting the criteria and then ranking (relative assessment) as well as classifying the six regions were considered.

4.2.1 The status of the REE criteria using SE (stage 1)

Wighing the criteria includes a combination of current status in the REE criteria (the viewpoint of PRFs) and the importance of REE criteria (the viewpoint of REs). Table 4 showed the weight of components and criteria. The results indicated that the support component (32.57%) was ranked the first compared to other components. According to this component, access to needed scientific and technical advice (27.18%) and access to the energy infrastructure in the region (19.48 %) were ranked high. The components of the market (16.35%), human capital (16.16%), policy (16.15%) and culture (14.56%) with slight difference from each other, respectively, were ranked second to fifth. Thus, in the market component, access to local entrepreneurs' network and business owners in the region for the exchange of market information (37.22%) and the presence of primary and key customers producing new products/services by businesses in the region (23.30 %) were ranked high. Access to skilled and experienced workforce in the region (55.67%) and access to semi-skilled workforce in the region (34.14%) were ranked high in the human capital component. In the policy component, local government support from R&D sectors for the creating and developing of the business (CDB) (30.07%) and ease of obtaining permissions necessary for the CDB from related organizations (24.93%) were ranked high. The social situation of business owners in the region (20.64%) and belief in effectiveness and usefulness of business owners in various dimensions including social, economic, etc. (20.54), were ranked high in the culture component. The financial component ranked at the lowest level in comparison with other components.

Table 4. Status of REE components and criteria based on the combined viewpoint of the PRFs (current situation of criteria) and REs (criteria important) using SE technique

Goal	Components	%	Rank of components	Criteria	%	Rank of criteria related to each component
REE in the WHP	Policy	16.15	4	Local government support from R&D sectors for the CDB	30.07	1
				Ease of obtaining permissions necessary for the CDB from related organizations	24.93	2
				Opportunities for the CDB	17.86	3
				Tax exemption laws for the CDB	16.85	4
				Local government support of bankrupt business owners	10.30	5
	Financial	4.12	6	The participation of private sector (legal entities) in financing for the CDB	35.32	1
				The participation of investors (natural persons), friends and family in order to invest for the CDB	34.48	2

Goal	Components	%	Rank of components	Criteria	%	Rank of criteria related to each component
				Access to loans for the CDB	30.21	3
	Culture	14.65	5	The social situation of business owners in the region	20.64	1
				The belief to effectiveness and usefulness of business owners in various dimensions include social, economic, etc.	20.54	2
				The tolerance status of risk, mistake and failure of business owners in the region	16.11	3
				The prominence of successful business owners in the region	13.01	4
				The status of people's tendency for the CDB in the region	11.96	5
				Introducing exemplary business owners and publishing their success stories across the region	8.96	6
				The status of attention to innovation, creativity and experience in business	8.78	7
	Supports	32.57	1	Access to centers needed to receive scientific and technical advice on a specific business	27.18	1
				Access to the energy infrastructure (water, gas, electricity) in the region	19.48	2
				Promoting and expanding the CDB by NGOs in the region	17.78	3
				Access to the virtual communication infrastructure (telphone and mobile, Internet) in the region	8.80	4
				Access to the physical infrastructure (road, etc.) in the region	8.70	5
				Conducting of idea contests and plan for the CDB in the region	6.85	6
				Conducting conferences and seminars on the CDB in the region	3.13	7
				The extent to which business owners in the region have legal advice (e.g. how to obtain permission, how to get tax exemptions, etc.)	3.01	8
				Providing technical services and support (e.g. providing equipments) by business associations for business owners in the region	2.71	9
				The extent to which business owners in the region have financial and accounting advices (e.g., guidance to estimating the cost of launch a business)	2.36	10
	Human Capital	16.16	3	Access to skilled and experienced workforce in the region	55.67	1
				Access to semi-skilled workforce in the region	34.14	2
				The status of general, cultural and extensional education for the CDB in the region	5.33	3
				Holding training courses and workshops related to the CDB in the region	4.86	4
	Markets	16.35	2	Access to local entrepreneurs' network and business owners in the region for the exchange of market information	37.22	1
				The presence of primary and key customers to introducing produced new products/services by businesses in the region	23.30	2
				Access to the overseas Iranian entrepreneurs' network and business owners for exchanging market information	21.20	3
				Access to distribution channels, wholesalers and retailers to sell produced products/ services	9.19	4
				Access to national entrepreneurs' network and business owners for the exchange of market information	9.09	5

4.2.2 Ranking (relative assessment) and classifying the six regions in the WHP based on the components of the REE using ORESTE and HCA techniques (stage 2 and 3)

In this section, first, the ranking of different regions was determined based on each component, and also the combined criteria. Then, according to the ranks of each region using a HCA technique, six regions were classified into three levels including appropriate, semi-appropriate, and inappropriate.

Ranking (relative assessment) and classifying the six regions in the WHP based on the components of the REE- According to Figure 3, the results showed that the Nur and Babolsar regions were in a more appropriate

situation in terms of the policies governing REE in comparison with other regions, respectively, but Amol and Babol regions were in an inappropriate situation, respectively. The results showed that the Babolsar region is in an appropriate situation in terms of access to financial resources, but Nur, Babol and Amol were respectively in a more inappropriate situation in comparison with other regions. In terms of cultural criteria governing the REE, MahmudAbad and Nur regions were in an appropriate situation but Babol and Amol regions were in a more inappropriate situation. The results showed that the PRFs in the Amol, Nur and FereydonKenar regions were in a more appropriate situation in terms of support, respectively, but MahmudAbad entrepreneur PRFs were in an inappropriate situation. Results demonstrate that the FereydonKenar region was in a more appropriate condition in terms of human capital, but Nur, Amol and Babolsar regions did not have appropriate human capital. Regarding the market criteria, the Nur region was in an appropriate situation, but MahmudAbad and FereydonKenar regions were not in an appropriate situation.

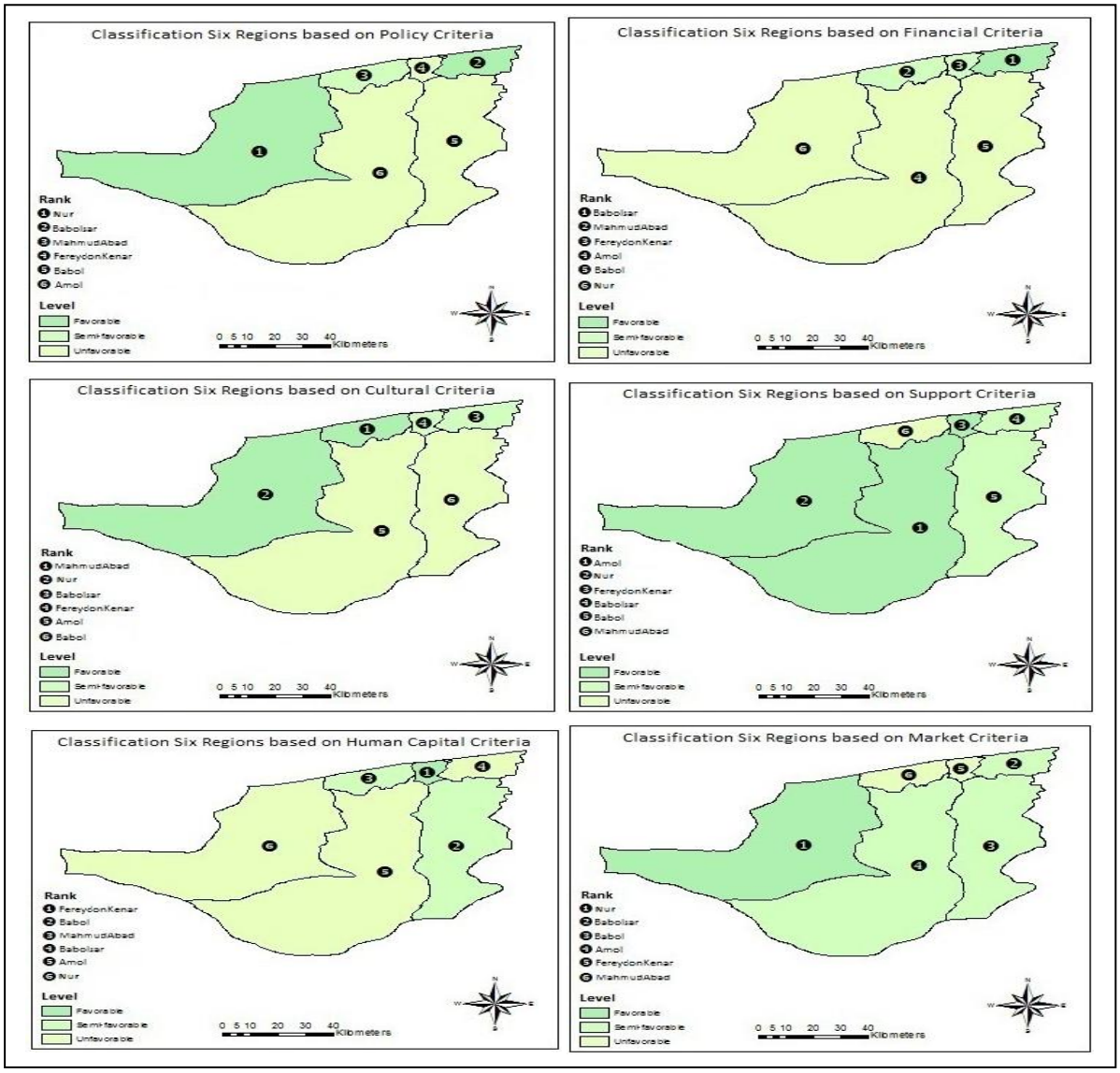

Figure 3. Ranking (relative assessment) and classifying the six regions in the WHP based on each component

Ranking (relative assessment) and classifying the six regions in the WHP based on the combined criteria of REE-According to Figure 4 and 5, Nur and Babolsar regions were ranked first and second and

were identified as the most appropriate regions in term of REE, respectively. However, the REE in the Amol, MahmudAbad and Babol regions was not in an appropriate situation in comparison with other regions, respectively. In the meantime, the Fereydonkenar region was in a more appropriate situation than the three regions mentioned above in terms of REE.

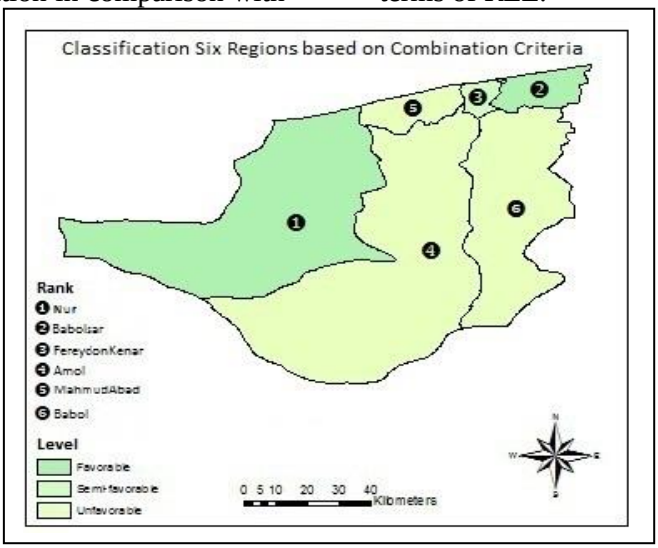

Figure 4. Ranking (relative assessment) and classifying the six regions in the WHP based on a combination criteria

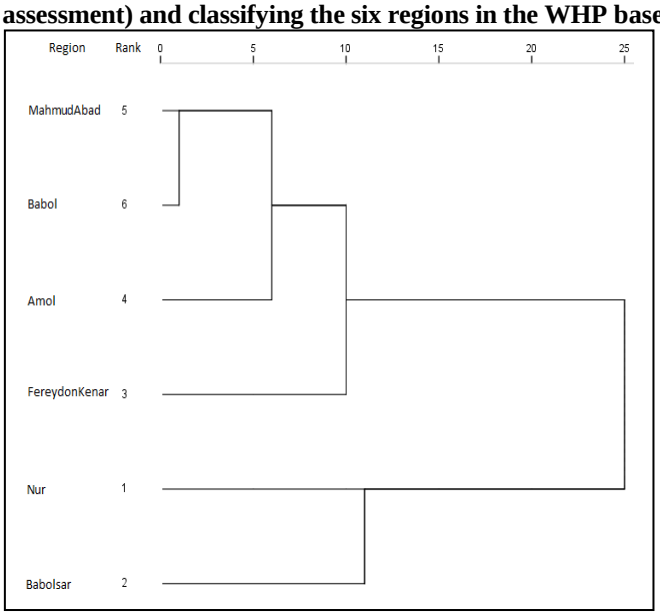

Figure 5. Chart of agglomerative HCA of six regions in the WHP based on combination criteria

5. Discussion and Conclusion

In general, the situation of REE in the studied region is good. The GEM (2018) confirms this issue. The evaluation of the criteria showed that a support component was ranked first with a relatively large difference compared with other components. So that this component in Amol, Nur and FereydonKenar regions has been in an appropriate situation. This result was largely due to the access to centres in need of receiving scientific and technical advice on a specific business. The access of PRFs to infrastructures such as water, gas and electricity, and also, the efforts of NGOs promotes and expands businesses in these regions and these infrastructures are reasons for the appropriate situation of the support component. Based on the support component, the inadequate tendency of NGOs promotes and expands the CDB. Lack of proper idea contests and plan for the CDB, inappropriate access to the infrastructure of virtual communication (Internet, etc.), physical (road, etc.), and energy infrastructure (gas, etc.), to a large extent, have caused the

inappropriate situation in the MahmudAbad region. Lordkipanidze et al. (2005) believe that designing and developing mechanisms to support entrepreneurship and providing the necessary support infrastructure for entrepreneurship are the main elements of entrepreneurship development programs. Therefore, according to results, it is recommended authorities take the creation and provision of physical, virtual and energy infrastructure into consideration. This issue, however, should first be considered and followed by rural municipalities in different regions, especially regions with an inappropriate situation of REE. Moreover, it should be considered and pursued the idea contests and plan for the CDB in rural areas with the presence of rural entrepreneurs by the activists and experts of this field.

Based on the evaluation of the criteria, the market component was ranked second. Based on this component, the Nur region was in an appropriate situation. This result was largely due to the access to local entrepreneurs' network and business owners in the region for the exchange of market information. Access to local entrepreneurs' network is an issue that helps acquire market information across the region. This enables entrepreneurs to meet the basic needs of people in the region, or create changes in their products based on market requirements. Networks have a great impact on their entrepreneurial activities through their impact on entrepreneurial decisions (Klyver & Foley, 2012). In general, networks help entrepreneurs recognize the market, acquire the necessary technical knowledge, obtain the necessary resources for business start-ups, and have access to distribute channels, customers, and suppliers (Greve & Salaff, 2003; Spigel, 2017). The presence of primary and key customers in introducing new produced products/services is another important criterion of the market component. It is very important in the initial formation of a business and its continuity. Primary customers and key customers help introducing produced products/services on the level of the region. The basic market component, lack of proper access to entrepreneurs' network and business owners for the exchange of market information have largely led to the inappropriate situation in the MahmudAbad and FereydonKenar regions. Therefore, it is recommended that entrepreneurs create an information exchange network among themselves in the regional, countrysides and potential Iranian entrepreneurs abroad. Moreover, in these regions (the regions with the inappropriate situation in the market component) at first entrepreneurs have to identify key customers, and then concentrate on the production/supply of products/services based on their views.

Based on the criteria evaluation, the human capital component was ranked third with a little difference compared to the market component. Therefore, the Fereydonkenar region was in an appropriate situation, because the access to semi-skilled workforce and the training courses and workshops related to the CDB provided in the region made mental and skillful readiness in manpower. On the other hand, the lack of access to the semi-skilled workforce in the region and the lack of proper training courses and workshops related to the CDB in the region have largely led to the inappropriate situation of REE -in the human capital component- in the Nur, Amol and Babolsar regions. Marshall and Samal (2006) argue that in the entrepreneurial process, one of the important problems that entrepreneurs face is the lack of knowledge and skills. It is basically suggested that training courses and workshops related to the CDB in the region should be considered due to mental and skilful readiness in manpower. This problem can be solved if private sectors, including Rural Production Cooperating groups, consulting firms, engineering and technical institutions take appropriate actions (in both agriculture and non-agricultural).

The policy component was ranked fourth with little difference compared to the market and human capital components based on criteria evaluation. Thus, Nur and Babolsar regions were in an appropriate situation. This result was largely due to the local government support from R&D sectors for the CDB and the ease of obtaining necessary permissions for the CDB from related organizations. On the other hand, based on the policy component, the weakness of the local government in support of the R&D sectors for the CDB, the unsupportable process for obtaining permissions necessary for the CDB from related organizations, and the lack of local government support for bankrupt business owners have largely led to the inappropriate situation of REE in the Amol, Babol and FereydonKenar regions. In the field of entrepreneurship, policies include rules and regulations. The policy function is to provide supportive programs to encourage entrepreneurs through tax benefits, public investments, or reductions in administrative regulations. Therefore, rules and regulations are key to the economic and policy context in which entrepreneurship takes place. This may include reducing the legal barriers to setting up a firm,

developing financial systems or providing public funds for implementing support programs of entrepreneurship and networking (Spigel, 2017). Therefore, it is suggested that legislator institutions facilitate the following issues: a) activating R&D sectors; b) facilitating the process of obtaining permissions for the creation and development business; and c) supporting activities for bankrupt entrepreneurs through creating simple and transparent rules or modifying existing laws. The bankrupt entrepreneurs have high experience and work networks and their probability of success is higher (Davari et al., 2017). On the other hand, there may be some appropriate rules, which do not function properly in these sections. Therefore, it is necessary that the monitoring authorities have the necessary and proper control over the right implementation of the rules.

Based on the criteria evaluation, the culture component was ranked fifth with little difference compared to the market, human capital, and policy components. Therefore, MahmudAbad and Nur regions were in an appropriate situation. This result was largely due to the prominence of successful business owners in the regions, the proper social situation of business owners in the regions and people's tendency for the CDB in the regions. On the other hand, inappropriate social status of business owners, lack of tolerance of risk, mistake and failure by business owners, unidentified staying successful business owners and failure to introduce exemplary business owners and their success have largely led to the inappropriate situation of REE -in the culture component- in the Amol and Babol regions. Spigel (2017) believes that culture includes beliefs and perspectives on entrepreneurship in each region. Cultural attitudes and the history of entrepreneurship are main characteristics of every cultural entrepreneurial ecosystem. The business culture should provide the opportunity and possibility to start again for failed entrepreneurs (Davari et al., 2017). Therefore, it is suggested that executives and authorities introduce successful rural business owners through local media and social networks. Moreover, it is necessary to take the steps to host a successful village entrepreneurship festival. On the other hand, it is suggested that the development and expansion of risk aversion and lack of fear of failure be considered the most important missions of educational centers in the region level. Futhermore, all components of the EE are needed in a region; in other words, these components depend on each other. Ranking components were used to determine their relative importance in the WHP and six regions.

The financial component was ranked as the lowest component compared to other components. Thus, the Babolsar regions was in an appropriate situation. This result was largely due to the participation of private sector (legal entities) in financing for CDB and the participation of investors (natural persons), friends and family in order to invest for the CDB. The issue of financing has been emphasized in most entrepreneurship researches including Liguori et al. (2018), Davari and Najmabadi (2018), Spigel (2017), Movahedi et al. (2017), and Davari et al. (2017).

In general, the REE in the WHP is not in a favourable situation. Therefore, with a focus on improving the different dimensions of EEs with an emphasis on the weakness of the components and items related to each of the six regions, can be expected that many more rice farmers start up the different businesses alongside rice farming. On the other hand, the improvement of REEs in different dimensions can lead to the creation and development of modern businesses (businesses with controllable situations such as a greenhouse) in six regions. Initial field survey in this area showed that most businesses have been created in open spaces and without roofs. This type of businesses usually comes with constraints such as climate change, pest and disease problems, lack of proper cost management, lack of water management, etc. Therefore, creating and developing modern businesses, such as horticulture in the greenhouse can be effective and useful in various aspects, including climate control, cost management, pest and disease management, water management, increase in production per unit area, increase in income, etc. Accordingly, the improvement of REEs in the six regions should be seriously considered and pursued by policy makers. At the same time according to this research and creating mental ideas for the authors, it is suggested that researchers study the REE and introduce the types of rural businesses appropriate to the situation of the EE in each region of the world, the topic that is not covered in this article. In addition, the method, model, and strategy used in this study provide an appropriate pattern for future researches in entrepreneurial activities development in different regions of the world.

Acknowledgments: The current paper is extracted from the doctoral dissertation of the first author (Hadi Moumenihelali) in the Department of Agricultural Extension and Education, Faculty of Agriculture, Tarbiat Modares University, Tehran, Iran.

References

1. Alvarez, C., Urbano, D., Coduras, A., & Ruiz-Navarro, J. (2011). Environmental conditions and entrepreneurial activity: a regional comparison in Spain. *Journal of Small Business and Enterprise Development*, *18*(1), 120-140. https://doi.org/10.1108/14626001111106460
2. ANDE. (2013). Entrepreneurial ecosystem diagnostic toolkit. URL: https:// assets.aspeninstitute.org/ content/uploads/files/content/docs/pubs/FINAL%20Ecosystem%20Toolkit%20Draft_print%20version.pdf
3. Asheim, B. T., Boschma, R., & Cooke. P. (2011). Constructing regional advantage: platform policies based on related variety and differentiated knowledge bases. *Regional Studies*, *45*(7), 893-904. https:// doi.org/ 10.1080/00343404.2010.543126
4. Bagheri Moghaddam, N., Nasiri, M., & Mousavi, S. M. (2011). An appropriate multiple criteria decision-making method for solving electricity planning problems, addressing sustainability issue. *International Journal of Environmental Science and Technology*, *8*(3), 605-620. https://doi.org/10.1007/BF03326246
5. Biru, A., Gilbert, D, & Arenius, P. (2020). Unhelpful help: the state of support programmes and the dynamics of entrepreneurship ecosystems in Ethiopia. *Entrepreneurship & Regional Development*, *33*(1-2), 108-130. https://doi.org/10.1080/08985626.2020.1734267
6. Bosma, N., & Sternberg, R. (2014). Entrepreneurship as an urban event? Empirical evidence from European cities. *Regional Studies*, *48*(6), 347-358. https://doi.org/10.1080/00343404.2014.904041
7. Butler, J. Garg, R., & Stephens, B. (2015). Social networks, funding, and regional advantages in technology entrepreneurship. *Information Systems Research*, *31*(1), 1-19. http://dx.doi.org/10.2139/ssrn.2668918
8. Chatterjee, P., & Chakraborty, S. (2013). Advanced manufacturing systems selection using ORESTE method. *International Journal of Advanced Operations Management*, *5*(4), 337-361. https:// doi.org/ 10.1504/ IJAOM.2013.058896
9. Davari, A., & Najmabadi, A. D. (2018). Entrepreneurial ecosystem and performance in Iran. In N. Faghih & M. Zali (Eds), *Entrepreneurship ecosystem in the Middle East and North Africa (MENA)* (pp. 265-283). Springer, Cham. https://doi.org/10.1007/978-3-319-75913-5_8
10. Davari, A., Sefidbari, L., & Baghersad, V. (2017). The factors of entrepreneurial ecosystem in Iran based on Isenberg's model. *Journal of Entrepreneurship Development*, *10*(1), 101-120. [In Persian] https:// jed.ut.ac.ir/article_62306_en.html
11. Delhaye, C., Teghem, J., & Kunsch, P. (1991). Application of the ORESTE method to a nuclear waste management problem. *International Journal of Production Economics*, *24*(1–2), 29-39. https:// doi.org/ 10.1016/0925-5273(91)90150-R
12. Dodd, S. D., & Anderson, A. R. (2007). Mumpsimus and the mything of the individualistic entrepreneur. *International Small Business Journal: Researching Entrepreneurship*, *25*(4): 341-360. https://doi.org/10.1177/0266242607078561
13. Dries, L., Pascucci, S., & Gardebroek, C. (2011). *Pluriactivity in Italian agriculture: Are farmers using interlinked strategies?* EAAE 2011 Congress Change and Uncertainty, Challenges for Agriculture, Food and Natural Resources, August 30-September 2, 2011, Zurich, Switzerland. URL: http:// purl.umn.edu/ 114429
14. Faraji Sabokbar, H., Badri, S. A., Sojasi Qidari, H., Sadeghloo, T., & Shahdadi Khaje Asgar, A. (2011). Entrepreneurship development ranking (gradation) in rural area by using of PROMETEE technique. *Human Geography Research Quarterly*, *43*(75), 53-68. [In Persian] https://jhgr.ut.ac.ir/article_24486_en.html
15. GEM. (2018). Global report 2017/18. URL: https://www.gemconsortium.org/report
16. Ghambarali, R., Agahi, H., Alibaygi, A. H., & Zarafshani, K. (2015). Entrepreneurship ecosystem strategy: a new paradigm for entrepreneurship development. *Journal of Entrepreneurship in Agriculture*, *1*(3), 21-38. [In Persian] https://jead.gau.ac.ir/article_2272.html
17. Ghambarali, R., Agahi, H., Alibaygi, A. H., & Zarafshani, K. (2016). Content analysis of policies being appropriate to the entrepreneurial ecosystem. *Journal of Entrepreneurship Development*, *9*(1), 39-58. [In Persian] https://jed.ut.ac.ir/article_59861.html?lang=en
18. Gholami, A., & Moohamadzadeh, F. (2017). The assessment of utility and the role of rural entrepreneurship ecosystem in West Azerbaijan Province. *Geography and Sustainability of Environment*, *7*(23), 83-101. [In Persian] http://ges.razi.ac.ir/article_789_en.html

19. Greve, A., & Salaff, J. (2003). Social networks and entrepreneurship. *Entrepreneurship Theory and Practice, 28*(1), 1–22. https://doi.org/10.1111/1540-8520.00029
20. Guesnier, B. (1994). Regional variations in new firm formation in France. *Regional Studies*, *28*(4), 347-358. https://doi.org/10.1080/00343409412331348316
21. Haugen, M. S., & Vik, J. (2008). Farmers as Entrepreneurs: The Case of Farm-based Tourism. *International Journal of Entrepreneurship and Small business, 6*(3), 321- 336. https://doi.org/10.1504/IJESB.2008.01913
22. Isenberg, D. J. (2011). *The entrepreneurship ecosystem strategy as a new paradigm for economic policy: principles for cultivating entrepreneurship*. Institute of International European Affairs, Dublin, Ireland. https://www.slideshare.net/DanIsenberg/the-entrepreneurship-ecosystem-strategy-for-economic-growth-policy-iiea-dublin-2011-1?from_action=save
23. Izadi, B. H., Rezaei Moghaddam, K., & Asadollahpour, A. (2016). Influencing factors and obstacles for accomplishing entrepreneurship development in agricultural home-based businesses in villages of Shiraz. *Iranian Agricultural Extension and Education Journal*, *12*(1), 39-51. [In Persian] http:// www.iaeej.ir/ article_32133_en.html
24. Jafari, H. (2013) Identification and prioritization of grain discharging operations risks by using ORESTE method. *American Journal of Public Health Research, 1*(8), 214-220. URL: http:// pubs.sciepub.com/ ajphr/1/8/4/index.html#
25. Kalantari, K. (2013). *Data processing and analysis in socio-economic research*. Tehran: Sharif Publishing. [In Persian].
26. Klyver, K., & Foley, D. (2012). Networking and culture in entrepreneurship. *Entrepreneurship & Regional Development, 24*(7-8), 561-588. http://dx.doi.org/10.1080/08985626.2012.710257
27. Leeneer, I. D., & H. Pastijn. (2002). Selecting land mine detection strategies by means of outranking MCDM techniques. *European Journal of Operations Research, 139*(2), 327-338. https:// doi.org/ 10.1016/ S0377-2217(01)00372-1
28. Liguori, E., Bendickson, J., Solomon, S., & McDowell, W. C. (2018). Development of a multi-dimensional measure for assessing entrepreneurial ecosystems. *Entrepreneurship & Regional Development, 31*(1-2): 7-21. https://doi.org/10.1080/08985626.2018.1537144
29. Lordkipanidze, M., Brezet, H., & Backman, M. (2005). The entrepreneurship factor in sustainable tourism development. *Journal of Cleaner Production, 13*(8), 787-798. https:// doi.org/ 10.1016/ j. jclepro. 2004.02.043
30. Lu, J., & Tao, Z. (2010). Determinants of entrepreneurial activities in China. *Journal of Business Venturing, 25*(3), 261-273. https://doi.org/10.1016/j.jbusvent.2008.10.005
31. Manimala, M. J., Thomas, P., & Thomas, P. K. (2019). Perception of Entrepreneurial Ecosystem: Testing the Actor–Observer Bias. *The Journal of Entrepreneurship, 28*(2), 316-342. https:// doi.org/ 10.1177/ 0971355719851908
32. Marshall, M. I., & Samal, A. (2006). *The effect of human and financial capital on the entrepreneurial process: an urban-rural comparison of entrepreneurs in Indiana* (Working Papers No. 06-13). Purdue University: College of Agriculture, Department of Agricultural Economics. https:// ageconsearch.umn.edu/ bitstream/ 28651/1/wp060013.pdf
33. Mason, C., & Brown, R. (2014). *Entrepreneurial ecosystems and growth-oriented entrepreneurship*. OECD Publishing. http://www.oecd.org/cfe/leed/entrepreneurial-ecosystems.pdf
34. McKague, K., Wong, J., & Siddiquee, N. (2017). Social franchising as rural entrepreneurial ecosystem development: the case of Krishi Utsho in Bangladesh. *The International Journal of Entrepreneurship and Innovation, 18*(1), 47-56. https://doi.org/10.1177/1465750316686240
35. Meyer, M. H., Lee, C., Kelley, D., & Collier, G. (2020). An assessment and planning methodology for university-based: entrepreneurship ecosystems. *The Journal of Entrepreneurship, 29*(2), 259-292. https:// doi.org/10.1177/0971355720930571
36. Moore, J. (1993). Predators and prey: a new ecology of competition. *Harvard Business* Review, 71(3): 75-86. https://www.ncbi.nlm.nih.gov/pubmed/10126156
37. Morales, M., & Velilla, J. (2018). The effect of cultural environment on entrepreneuria*l decisions* (MPRA Paper No. 83835). Munich: Personal RePEc Archive. https://mpra.ub.uni-muenchen.de/83835/

38. Moumenihelali, H., Sadighi, H., Abbasi, E., & Chizari, M. (2022). Mediating role of rural entrepreneurship ecosystem in the relationship between pluriactive rice farmers' motives and pluriactivity consequences. *Journal of Agricultural Science and Technology*, 24(1). https://jast.modares.ac.ir/article-23-45245-en.html
39. Movahedi, R., Samian, M., Yaghoubi Farani, A., & Mirzaei, K. (2017). Factors affecting the development and strengthening of rural women enterprises in Iran. *International Journal of Agricultural Management and Development, 7*(2): 155-164. [In Persian] http://ijamad.iaurasht.ac.ir/article_527214.html
40. Najafi Kani, A. A., Hesam, M., & Ashor, H. (2015). The assessment of entrepreneurship status in rural areas- case: southern Astarabad in Goragan. *Journal of Space Economy & Rural Development, 4*(11), 37-56. [In Persian] https://serd.khu.ac.ir/article-1-2237-fa.html
41. NWBC. (2017). *Accelerating the future of women entrepreneurs- the power of the ecosystem*. *Annual Report*, 31 Dec 2017. https://www.nwbc.gov/2017/12/31/2017-annual-report-accelerating-the-future-of-women-entrepreneurs-the-power-of-the-ecosystem/#more-912
42. OECD. (2015). *New approaches to SME and entrepreneurship financing: broadening the range of instruments*. OECD Publishing. https:// www.oecd.org/ publications/ new- approaches -to- sme- and-entrepreneurship -financing-9789264240957-en.htm
43. Pastijn, H., & Leysen, J. (1989). Constructing an outranking relation with ORESTE. *Mathematical and Computer Modelling, 12*(10-11), 1255-1268. https://doi.org/10.1016/0895-7177(89)90367-1
44. Pishbin, S. A. R., Alambeigi, A., & Iravani, H. (2015). Investigation of the role of structural, leadership, and strategy factors in cooperatives entrepreneurship. *Journal of Agricultural Science and Technology, 17*(5), 1115-1125. http://journals.modares.ac.ir/article-23-2143-en.html
45. Portaheri, M., Dayyani, L., & Firouznia, G. (2015). Appraisal of consequences and rural settlements ranking affected of residential lands assignment by use MADM method of ORESTE. *The Journal of Spatial Planning, 19*(3), 39-72. [In Persian] http://hsmsp.modares.ac.ir/article-21-6140-en.html
46. Prieger, J. E., Bampoky, C., Blanco, L. R., & Liu, A. (2016) Economic growth and the optimal level of entrepreneurship. *World Development, 82*, 95–109. https://doi.org/10.1016/j.worlddev.2016.01.013
47. Raj A S Sekar Vinodh, A. (2016). A case study on application of ORESTE for agile concept selection. *Journal of Engineering, Design and Technology, 14*(4), 781-801. https://doi.org/10.1108/JEDT-08-2014-0053
48. Rezaei, R., Karimi, A., Mangeli, N., & Safa, L. (2017). Effect of entrepreneurial orientation and marketing capabilities on greenhouse businesses performance in Jiroft County, Iran. *Journal of Agricultural Science and Technology, 19*(4), 771-783. http://journals.modares.ac.ir/article-23-11601-en.html
49. Rezaei, S., Hill, V., & Liu, Y. (2018). In search of the ideal entrepreneurial ecosystem. In N. Faghih, & M. Zali (Eds.), *entrepreneurship ecosystem in the Middle East and North Africa (MENA)* (pp. 11-51). Springer, Cham. https://doi.org/10.1007/978-3-319-75913-5_2
50. Ronning, L., & Kolvereid, L. (2006). Income diversification in Norwegian farm households; reassessing pluriactivity. *International Small Business Journal, 24*(4), 405-420. https:// doi.org/ 10.1177/ 0266242 606065510
51. Roubens, M. (1982). Preference relations on actions and criteria in multicriteria decision making. *European Journal of Operational Research, 10*(1), 51-55. https://doi.org/10.1016/0377-2217(82)90131-X
52. Roundy, P. T., & Fayard, D. (2019). Dynamic capabilities and entrepreneurial ecosystems: the micro-foundations of regional entrepreneurship. *The Journal of Entrepreneurship, 28*(1), 94-120. https:// doi.org/ 10.1177/0971355718810296
53. Roundy, P. T., & Bayer, M. A. (2019). Entrepreneurial ecosystem narratives and the micro-foundations of regional entrepreneurship. *The International Journal of Entrepreneurship and Innovation, 20*(3), 47-56. https://doi.org/10.1177/1465750318808426
54. Shao-quan, L., Hai-qin, Z., Fang-ting, X., & Shi-li, G. (2013). Current situation and influencing factors of pluriactivity in mountainous and Hilly rural areas of Sichuan Province, China. *Journal of Mountain Science, 10*(3), 445–454. https://doi.org/10.1007/s11629-013-2415-6
55. Shwetzer, C., Maritz, A., & Nguyen, Q. (2019). Entrepreneurial ecosystems: a holistic and dynamic approach. *Journal of Industry - University Collaboration, 1*(2), 79-95. https://doi.org/10.1108/JIUC-03-2019-0007

56. Spigel, B. (2017). The relational organization of entrepreneurial ecosystems. *Entrepreneurship Theory and Practice, 41*(1), 49-72. https://doi.org/10.1111/etap.12167
57. Stam, E. & van de Ven, A. (2021). Entrepreneurial ecosystem elements. *Small Business Economics, 56*, 809–832. https://doi.org/10.1007/s11187-019-00270-6
58. Stam, E. (2015). Entrepreneurial ecosystems and regional policy: a sympathetic critique. *European Planning Studies, 23*(9), 1759-1769. https://doi.org/10.1080/09654313.2015.1061484
59. Stam, E., & Spigel, B. (2016). *Entrepreneurial ecosystems* (Discussion Paper Series 16-13). Utrecht: Tjalling C. Koopmans Research Institute School of Economics Universiteit Utrecht. https:// www.uu.nl/ en/ file/55729/download?token=dzRMYt-t
60. Statistical Center in Iran. (2016). *Data and Statistical Information*. Statistical Center in Iran. [In Persian] https://www.amar.org.ir
61. Taghdisi, A., Hashemi, S., & Hashemi, M. M. (2015). Analysis of effective factors in the fields of entrepreneurial development of Abadeh. *Journal of Geography and Environmental Studies, 4*(14), 83-98. [In Persian] http://ges.iaun.ac.ir/article_10622_en.html
62. Tan, P. N., Steinbach, M., Karpatne, A., & Kumar, V. (2019). *Introduction to data mining* (2th ed.). https://www-users.cs.umn.edu/~kumar001/dmbook/index.php
63. Valerio, A., Parton, B., & Robb, A. (2014). *Entrepreneurship education and training programs around the world: dimensions for success*. Washington DC: The World Bank. https:// openknowledge. worldbank.org/ handle/10986/18031
64. Yaribeigi, E., Hosseini, S. J., Lashgarara, F., Mirdamadi, S. M., & Omidi Najafabadi, M. (2014). Development of entrepreneurship ecosystem. *International Journal of Advanced Biological and Biomedical Research, 2*(12), 2905-2908. http://www.ijabbr.com/article_11596.html
65. Zhang, C., Wu, X., Wu, D., Liao, H., Luo, L., & Herrera-Viedma, E. (2018). An intuitionistic multiplicative ORESTE method for patients' prioritization of hospitalization. *International Journal of Environmental Research and Public Health, 15*(777), 2-18. https://doi.org/10.3390/ijerph15040777

Journal of Research and Rural Planning
Volume 11, No. 2, Spring 2022, Serial No. 37, Pp. 61-79
eISSN: 2783-2007 **ISSN: 2783-2791**
http://jrrp.um.ac.ir

Original Article

تحلیل منطقه‌ای اکوسیستم کارآفرینی در نواحی روستایی شمال ایران (مطالعه موردی: حوضه آبریز دشت هراز)

هادی مومنی هلالی[۱]- عنایت عباسی*[۲]- اوتو کرویسن[۳]

۱- دکتری ترویج و آموزش کشاورزی، دانشگاه تربیت مدرس، تهران، ایران.
۲- دانشیار ترویج و آموزش کشاورزی، دانشگاه تربیت مدرس، تهران، ایران.
۳- استادیار کارآفرینی میان فرهنگی، دانشگاه صنعتی دلفت، دلفت، هلند.

چکیده مبسوط

۱. مقدمه

هدف هر جامعه‌ای دستیابی به رشد و توسعه پایدار است. یکی از مهمترین تسهیل کننده‌ها در جهت دستیابی به اهداف توسعه اقتصادی و اجتماعی از جمله رشد، نوآوری، اشتغال و برابری کارآفرینی است. کارآفرینی می‌توانند به عنوان منبع مهم درآمد و اشتغال برای افراد آسیب‌پذیر روستایی عمل کند. به‌طوری‌که دولت‌ها از کارآفرینی به عنوان یک ابزار مهم برای دستیابی به توسعه پایدار استفاده می‌کنند. در طی دهه‌های اخیر، کشورهای توسعه یافته و در حال توسعه از جمله ایران برای موفقیت و پیشرفت و توسعه پایدار به سوی کارآفرینی گام برداشتند. اما در ایران به‌رغم تلاش‌هایی که در جهت توسعه کارآفرینی انجام شده است، متاسفانه رشد مناسب و پایداری در زمینهٔ کارآفرینی و کسب و کارهای کوچک و متوسط مشاهده نشده است. بسیاری از کارآفرینان در ایران با موانعی همچون دگرگونی سیاست‌های دولت و به کارگیری سیاست‌های سلیقه‌ای؛ وجود قوانین نامناسب و غیرحمایتی، فقدان زیرساخت‌های تجاری؛ عدم حمایت هنجارهای اجتماعی و فرهنگی از کارآفرینی؛ نامناسب بودن بازار؛ بهره بالای وام‌های بانکی و غیر روبرو هستند که فضای نامساعد کسب و کار را پیش‌روی آن‌ها قرار داده است. توجه به واقعیت روستاها در ایران حاکی از آن است که فرصت‌های شغلی در مناطق روستایی ایران محدود شده است؛ به طوری که مردم فقیر برای خروج از فقر، به ناچار به شهرهای بزرگ مهاجرت می‌کنند. این موضوع تا حد زیادی حاصل عملکرد نامطلوب اکوسیستم کارآفرینی در مناطق روستایی است. وضعیت نامطلوب اکوسیستم کارآفرینی در حوضه آبریز دشت هراز (واقع در استان مازندران) موجب مشکلات بیکاری، عدم بهره‌برداری مناسب از ظرفیت‌های اقتصادی و مهاجرت گسترده روستا-شهری شده است. موضوعی که در دهه‌های اخیر شاهد رشد فزایندهٔ آن‌ها در این منطقه هستیم.

۲. مبانی نظری تحقیق

رویکرد اکوسیستم کارآفرینی بر اهمیت محیطی که در آن کارآفرین ظهور می‌کند و کسب و کارش رشد می‌کند و ویژگی‌های اکوسیستم یک منطقه خاص را متمایز می‌کند، تأکید دارد. اهمیت بررسی اکوسیستم کارآفرینی و نقش آن در توسعهٔ فعالیت‌های کارآفرینانه، توجه اندیشمندان، نهادها و مؤسسات بین‌المللی را نیز به خود معطوف کرد. یکی از مهمترین مدل‌هایی که در زمینه اکوسیستم کارآفرینی در طی سال‌های اخیر مورد توجه و استفاده محققان قرار گرفت، مدل اکوسیستم کارآفرینی آیزنبرگ (۲۰۱۰) است. فعالیت‌ها بر روی اکوسیستم کارآفرینی در مراحل اولیه توسعه بوده و تعریف مشترک و جامعی از حیطه‌های اکوسیستم کارآفرینی در میان محققان و موسسه‌ها وجود ندارد. بنابراین، با توجه به قابلیت اجرا و انعطاف‌پذیری مدل اکوسیستم کارآفرینی آیزنبرگ در ارزیابی اکوسیستم و پوشش نسبی حیطه‌های سایر مدل‌ها و رویکردها و نیز محبوبیت و شهرت در میان سیاست‌گذاران، رهبران، محققین و اندیشمندان و شناخته شدن به عنوان رویکردی تاثیرگذار در طی سال‌های اخیر مورد توجه این پژوهش قرار گرفت.

آیزنبرگ معتقد است، اکوسیستم کارآفرینی شامل صدها عنصر است که می‌توانند در شش قلمرو اصلی گروه‌بندی شوند. حوزه‌های اصلی اکوسیستم کارافرینی از دیدگاه آیزنبرگ شامل؛ سیاست، منابع مالی، فرهنگ، حمایت‌ها، سرمایه انسانی و بازار است. مزیت‌های منطقه‌ای، برتری‌های مطلق، نسبی و یا رقابتی موجود در یک منطقه بسترساز فرصت‌های کارآفرینانه هستند.

*. نویسندهٔ مسئول:
دکتر عنایت عباسی
آدرس: گروه ترویج و آموزش کشاورزی، دانشکده کشاورزی، دانشگاه تربیت مدرس، تهران، ایران.
پست الکترونیکی: Email: enayat.abbasi@modares.ac.ir

به طوری که هر منطقه فرآیندهای کارآفرینی مختص به خود را دارد. لذا توسعه فعالیت‌های کارآفرینی باید بر اساس ظرفیت‌ها و پتانسیل‌های موجود در مناطق مختلف انجام گیرد تا به موفقیت دست یابد. اساسی‌ترین گام در این راه، ارزیابی اکوسیستم کارآفرینی به منظور شناسایی پتانسیل‌های مناطق مختلف است، تا از هدر رفت سرمایه و زمان جلوگیری شود. یکی از روش‌های مناسب برای ارزیابی اکوسیستم کارآفرینی در مناطق مختلف، استفاده از روش اُرسته می‌باشد که جزو روش‌های شناخته شده و پیشرفتهٔ تصمیم‌گیری چندشاخصه است.

۳. روش تحقیق

پژوهش حاضر از منظر هدف، کاربردی بوده و بر حسب روش گردآوری داده‌ها از نوع توصیفی-پیمایشی است. ابزار گردآوری داده‌ها، پرسشنامه بود. جامعه آماری پژوهش شامل خبرگان و شالیکاران کارآفرین در حوضه آبریز دشت هراز در استان مازندران بودند. در این تحقیق ۵۰ کارشناس آشنا با مسائل کارآفرینی روستایی و ۱۸۲ شالیکار کارآفرین از شش منطقه حوضه آبریز دشت هراز (شامل؛ آمل، بابل، بابلسر، فریدونکنار، محمودآباد و نور) مشارکت داشتند. در این تحقیق برای تحلیل و مقایسه اکوسیستم کارافرینی مناطق شش‌گانه از ترکیب تکنیک‌های آنتروپی شانون، اُرسته و تحلیل خوشه‌ای سلسله‌مراتبی استفاده شده است.

۴. یافته‌های تحقیق

نتایج نشان داد که مناطق مورد مطالعه از نظر اکوسیستم کارآفرینی روستایی در وضعیت نامناسبی قرار دارند. ارزیابی نسبی با استفاده از آنتروپی شانون نشان داد که مؤلفه پشتیبانی با اختلاف زیادی در مقایسه با سایر مؤلفه‌ها در بالاترین سطح قرار دارد .مؤلفه مالی در مقایسه با سایر مؤلفه ها در پایین ترین سطح قرار دارد. نتایج با استفاده از تکنیک اُرسته و تحلیل خوشه‌ای سلسله مراتبی نشان داد که مناطق نور و بابلسر به‌ترتیب مناسب‌ترین مناطق از نظر اکوسیستم کارآفرینی روستایی برای توسعه کسب‌وکار روستایی هستند.

۵. بحث و نتیجه‌گیری

نتایج نشان داد که شالیکاران کارآفرین بر اساس وضعیت محیطی خود، در کنار کشت برنج، کسب و کاری راه اندازی کردند. به عبارت دیگر، آنها کسب و کار خود را بر اساس وضعیت اکوسیستم کارآفرینی منطقه راه اندازی کردند. به طور کلی، اکوسیستم کارآفرینی در حوزه آبریز هراز در وضعیت مطلوبی قرار ندارد. بنابراین، با تمرکز بر بهبود ابعاد مختلف اکوسیستم کارآفرینی با تاکید بر ضعف مؤلفه‌ها و موارد مربوط به هر یک از مناطق شش گانه، می توان انتظار داشت که تعداد بیشتری از شالی‌کاران، مشاغل مختلف را در کنار کشت برنج راه‌اندازی کنند. از سوی دیگر، بهبود اکوسیستم کارآفرینی روستایی در ابعاد مختلف می‌تواند منجر به ایجاد و توسعه کسب و کارهای مدرن (کسب و کار با موقعیت های قابل کنترل مانند گلخانه) در شش منطقه شود. بررسی میدانی اولیه در این منطقه نشان داد که بیشتر مشاغل در فضاهای باز و غیرمسقف ایجاد شده‌اند. این نوع کسب‌وکارها معمولاً با محدودیت‌هایی مانند تغییرات آب و هوایی، مشکلات آفات و بیماری‌ها، عدم مدیریت صحیح هزینه‌ها، عدم مدیریت آب و غیره همراه هستند، بنابراین ایجاد و توسعه کسب‌وکارهای مدرن مانند ایجاد کسب و کار در فضای گلخانه می‌تواند در ابعاد مختلف از جمله کنترل شرایط جوی، مدیریت هزینه، مدیریت آفات و بیماری ها، مدیریت آب، افزایش تولید در واحد سطح، افزایش درآمد و غیره مؤثر و مفید باشد.

کلیدواژه‌ها: اکوسیستم کارآفرینی روستایی، تکنیک اُرسته، آنتروپی شانون، حوضه آبریز دشت هراز.

تشکر و قدرانی

پژوهش حاضر برگرفته از رساله دکتری نویسنده اول (هادی مؤمنی هلالی)، گروه ترویج و آموزش کشاورزی، دانشکده کشاورزی، دانشگاه تربیت مدرس، تهران، ایران است.

Use your device to scan and read the article online

How to cite this article:
Moumenihelali, H., Abbasi, E. & Kroesen, O. (2022). A regional analysis of the entrepreneurship ecosystem in rural areas of northern Iran (Case study: Watershed of the Haraz Plain). *Journal of Research & Rural Planning*, *11*(2), 61-79.
http://dx.doi.org/10.22067/jrrp.v11i2.2112-1035

Date:
Received: 29-12-2021
Revised: 13-04-2022
Accepted: 20-04- 2022
Available Online: 12-05-2022