

## Rural Entrepreneurship Ecosystem in Northern Regions of Iran: Key Pillars and Drivers

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### ABSTRACT

As new venture establishment has become a vital source of economic evolution and indispensable expediter for local development in current years, the ecosystem approach is considered as one of the practical solutions for reducing the gap between the economies of developed and developing regions. The concept of rural entrepreneurship ecosystems has attracted significant attention among practitioners, policymakers, and researchers during the past decade. However, the research concerning rural entrepreneurship ecosystem has been largely focused on empirics from developed regions. In order to explain the drivers of rural entrepreneurship ecosystem in a developing region, in this study, the data was collected from 103 rural entrepreneurship practitioners through a survey in northern area of Iran. The data was then analyzed using the exploratory factor analysis method. The research team considered the rural entrepreneurship ecosystem supporters in three pillars: policy-making, institution, and society. According to the results of exploratory factor analysis, each triple supporter pillar of the rural entrepreneurship ecosystem was divided into two components. The components extracted from the policy pillar included "rules and regulations" and "infrastructure." The components extracted from the institutional pillar included "networking and informing" as well as "services and support." In addition, "tendencies and characteristics of the people" and "financial participation" were assumed as the society components. These results were discussed and provided agenda for future practical and professional works.

**Keywords:** Rural entrepreneurship ecosystem, Policy making, Institutional, Society, Developing regions.

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## INTRODUCTION

Today, the policymakers have considered developing Rural Entrepreneurship (RE) in their development programs, and due to that the governments have allocated distinguished funds for its expansion (Cikic et al., 2018). The RE is a driving force for poverty reduction (Supekar and Dhage, 2022), job creation (Masoomi and Rezaei-Moghaddam, 2022), resilience, and economic development (Paynter et al., 2021); hence, it plays a crucial role in achieving global sustainable economic. A rural economy is comprehended from a systems-level view as an ecosystem of mutually valuable exchanges of information and capital among diverse market actors (Mason and Brown, 2014). This has promoted a new concept indicating the bases of an entrepreneurship systemic perspective, recognized as the entrepreneurship ecosystem (EE) (Tabares et al., 2022).

The term "entrepreneurship ecosystem" is utilized in its most general sense for referring to all "those economic, social, institutional, and all other essential factors that interactively influence the creation, detection, and exploitation of entrepreneurial openings" (Qian et al., 2013). Rural and urban entrepreneurial ecosystems (EE) enormously differ because of their respective institutional conditions. In rural areas, entrepreneurs face uncertainty and unpredictability in developing their businesses. Within the framework of an EE of a rural place, this produces the collaboration requirements and motivates a systemic relationship among rural entrepreneurs (Polbitsyn and Earl, 2019).

The northern areas of Iran, mainly Mazandaran province, have formed an excellent potential for the development of entrepreneurial activities, particularly in rural areas such as vegetable production, flower husbandry, mushroom breeding, rice packing, horticulture, agricultural services, poultry breeding, and seedling production due to its location in a noticeable geographical position between the Caspian Sea and the Alborz Mountains. But there is no suitable ecosystem for the development of such entrepreneurial activities in the region (Moumenihelali et al., 2020). Thus, a significant prerequisite to take advantage of these potentials - which reinforce the pillars of sustainable rural development - is the presence of a appropriate and efficient EE (Moumenihelali et al., 2022; Moumenihelali et al., 2021). Despite the existence of RE literature, only few studies have been conducted and focused on the elements of rural entrepreneurship ecosystem (REE) in emerging economies (Aguilar, 2021; Polbitsyn and Earl, 2019). The reason could be the novelty of this phenomenon and disproportionate focus on existing gaps of resources, infrastructure, and institutional conditions in these ecosystems. This study aimed to extend the relevance and

accessibility of RE and development theories to the contexts of less developed regions, where exogenous and endogenous resources significantly differ from advanced economies through expanding the concentration on rural areas in less developed regions. This research pursued to answer the following question: What are the most relevant driving elements of the REE in developing regions?

This research demonstrated notable progress in our theoretical comprehension of the role of supporters' pillars in REE. Because, it equips practitioners with new insights into the emerging literature on RE by identifying the items and components related to REE in the specific context. Such clarification provides REE actors and rural extension agents with helpful insights to adopt appropriate strategies for promoting and improving EE in the rural areas, especially in Mazandaran Province.

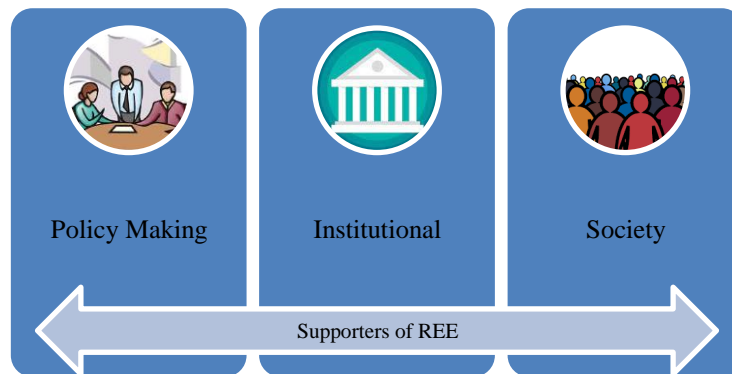
### Rural Entrepreneurship Ecosystems in Developing Regions

Based on general theory of entrepreneurship, the literature of entrepreneurship development (Shane, 2003) is separated into three parties: (a) the effect of individual factors on entrepreneurial conquest, (b) the impact of environmental factors on entrepreneurial success and performance, and (c) the effect of individual and environmental factors on entrepreneurial development. The ecosystem class is one of the third categories of the available literature for entrepreneurship development. Since, the theory of ecosystems has not yet sufficiently expanded, understanding this structure and its impact on entrepreneurial process is not easy (Spigel, 2017). Thinking about EE is actually derived from the literature associated with approaches such as industrial clusters, innovation systems, social capital, and networks. Due to this metaphor, an ecosystem is comprised of various members such as customers, suppliers, manufacturers, shareholders, business associations, government authorities, sub-governmental agencies, and other stakeholders (Zivdar and Sanaeepour, 2022). The EE Approach highlights the act of giving entrepreneurship to a society of interdependent activists who need each other. The EE consists of a set of various interrelated actors within a certain area, which includes below elements: universities and research organizations, qualified human resources, formal and informal networks, government sections, equity investors, venture capitalists, professional service providers, as well as entrepreneurship culture that is linked to all mentioned factors in a dynamic and open approach (Isenberg, 2011). Based on the nature of the components noted above, each ecosystem merges the factors in the

region in a special way; consequently, major ecosystem elements are similar given the fact that each country has its own contextual conditions (Kantis et al., 2020).

Notably, the EE literature concentrates on the role of the context in widening entrepreneurship (Ács et al., 2014). The context of this literature indicates a geographical area that can be at local, regional, and national level. This statement shows the necessity to investigate RE considering the institutional concept of REE framework. Researchers predominantly overlook ecosystems in rural areas. It has been claimed that the neglect of smaller urban centers has resulted in profound outcomes and has accentuated the REE requiremnet. A review of REE research over the past two decades shows that, with the exception of a few studies such as Zhang et al. (2024); Asmit et al. (2024); Aguilar (2021); Moumenihelali et al. (2020), academics have focused on large recognized ecosystems, particularly in developed markets (Isaga et al., 2015), and have evaluated these ecosystems to determine fundamental constituents of EE. Hence, the study of REE has been bypassed (Motoyama et al., 2016). Consequently, REE requires precise academic and policy attention.

Numerous EE studies have been accomplished with remarkable role in developing RE activities. They have also positively influenced the preparation process of appropriate legal framework through the policy (Spigel, 2017), facilitation of institutional assistance (Bahrami and Evans, 1995) and the society promotion (Dubina and Ramos, 2016). Therefore, in current study three fundamental pillars including "policy" "institutional" and "society" were distinguished, which have been underlined in the literature as the stakeholders supporting the REE (Figure 1):



**Fig. 1** Theoretical framework of the research.

### Policy Making Pillar

In entrepreneurship, the policies include the rules and regulations that provide supportive programs to encourage entrepreneurs through tax benefits, investment from general budget, or cuts in

administrative regulations. Accordingly, the rules and regulations are considered as a fundamental part of economic and political context of the entrepreneurship occurrence. This may include lowering legal barriers for starting a business, developing effective financial systems, or providing public funds to implement entrepreneurship and networking supporting programs (Spigel, 2017). Alvarez et al. (2011), argue that the governmental policies and programs, research and development transfer, and intellectual property rights are essential elements of EE that are effective in business development. Consequently, the policy are presumed as one of the critical features and pillars of EE. The role of rulers and adopted policies was detected as one of the vital pillars of EE in the research. Many researchers such as Zhang et al. (2024), Stam and van de Ven (2021), Guerrero et al. (2020), Biru et al. (2021), Harima (2021), Chen et al. (2020), Liguori et al. (2019), and Xie et al. (2019) have confirmed this phenomenon.

As already mentioned, the public policy of supporting influential institutions could be considered as one of the basic strategies used for progressing entrepreneurial activities (Walter and Block, 2016). Policymaking can serve as a considerable mechanism to address the strict macroeconomic concerns that plague many developing regions, where high levels of unemployment and poverty are prevalent (Brixiová et al., 2015). The EE does not generally possess a single distinguishable leader (e.g. Feld, 2012; Roundy, 2016). It can get benefite from local government through their supporting policies on economic and entrepreneurship development (Spigel, 2017). Governments can also contribute to the success of entrepreneurs community by restricting bureaucracy and unnecessary regulations assigned for launching a new venture, which can act as a barrier for firm creation (Audretsch et al., 2022).

### **Institutional Pillar**

Institutional support increases the chances of a successful investment and improves the ecosystem resource-base efficiency (Fuentelsaz et al., 2018). Bahrami and Evans (1995) have examined the role of universities and research institutes, private investment markets, and supporting infrastructures in the EE. Their findings acknowledged that the universities and research institutes provide scientific and technical education and create connections among individuals, which facilitate the formation of new companies. The private investment market provides management skills that facilitate the project sustainability, networking, budget monitoring, and even project-related guidelines for entrepreneurs. Supporting infrastructure is needed to keep entrepreneurs focused on their tasks and not distracted by environmental actions. These supporters consist of law

firms, human resource services, and engineering companies. The institutional role in supporting EE has been considered in the literature represented by Zhang et al., (2024), Stam and van de Ven (2021), Harima et al. (2021), Grigore and Dragan (2020), Shwetzter et al. (2019), Xie et al. (2019), and Mujahid et al. (2019).

We still have little understanding of how rural entrepreneurs interact with their institutional environment in order to generate entrepreneurial ventures. Institutional theory is traditionally concerned with the question of how organizations better secure their positions and legitimacy by conforming to the rules and norms of the institutional environment (Meyer et al., 1991). A distinct feature of entrepreneurship in transition economies is that a socially and institutionally regulated environment primarily shapes it (Kodithuwakku and Rosa, 2002; Peng, 2000). The relative scarcity of emerging economy in EE research mirrors the hardship of gaining trustworthy data due to a restricted organized framework. This underlines a considerable gap because the complicated institutional settings or market-related institutional voids in evolving economies, would hinder the direct application of discernments resulting from advanced economies, where a sound market economy functions as the prevailing institutional framework (Khanna and Palepu, 2000; Peng et al., 2000; Ramamurti and Hillemann, 2018). Furthermore, this gap requires additional consideration given the fact that emerging economies are supposed to have a progressively prevalent place in the world's economy while transitioning to a knowledge-based and entrepreneurship/innovation-driven economy over the past two decades.

### Society Pillar

Every society has its own values, norms, attitudes, and risk tolerance that can be the main determinants of entrepreneurial activity within a region. In sum, a set of common characteristics of the society members distinguish them from other societies, which can be passed from one generation to another (acquired), and is called the society culture (Jovanović et al., 2018). The culture of a society determines the risk acceptance level, willingness to use and recognize opportunities, creativity, and collectivist orientation (Dubina and Ramos, 2016). The cultural characteristics of the society can accelerate or hinder a movement at the community level (Insights, 2021). The community culture has been defined as the collective human mind programming that distinguishes one group from another. This programming influences the thinking patterns reflected in the meaning the people generally create in their minds regarding different life aspects, which are crystallized in the society institutions. Hence, having a society with a supportive culture is essential



for the entrepreneurship success. Morales and Velilla (2021) in a study citing data from Global Entrepreneurship Monitoring, reported that the cultural environment influences entrepreneurial decisions. The role of society and entrepreneurial culture has been investigated in the research of Harima et al. (2021), Liguori et al. (2019), Roundy (2019), Xie et al. (2019), Mujahid et al. (2019), Yan and Guan (2019), Aljarwan et al. (2019) and Jovanović et al. (2018). Accordingly, it is indispensable to develop the governance systems that encourage contribution based on the value systems' inclusion of those who live in rural areas and perform in formal and informal organizations (Addinsall et al., 2016; Cederholm Björklund, 2020). Cooperative societies could be a suitable resolution for RE, who have no resources and lack financial capital and land's access (Bouichou et al., 2021)

As mentioned above, in this study, the REE focused on policy-making, institutional and social pillars. The main purpose of this study was to investigate the role of each pillar to understand their relative role in a wide range of REE in developing regions, specifically in the study area.

## MATERIALS AND METHODES

### Method

A quantitative research method with a descriptive nature was used to identify the components of the three pillars supporting the REE in the northern regions of Iran. This approach was carried out using exploratory factor analysis.

### Participants

The target group of this study was all those involved who had sufficient knowledge of REE general atmosphere of the study area. Since the population of these practitioners is not known or available in any kinds of directories, the sample frame had to be developed (Barbieri and Mahoney, 2009). To identify the practitioners, the official centers connected to the rural community in Mazandaran Province were investigated, including the Rural Cooperative Organization, Agricultural Jihad Organization, and The Haraz Extension and Development of Technology Center. The identification process resulted in a frame that comprised 117 people. This initial list served as a purposive or judgmental sampling list, due to the fact that it best served the study purposes (Monette et al., 1994). Then, using the census technique, all practitioners were taken into account and eventually 103 individuals were selected as participants of the study. A researcher-made questionnaire was

used to collect the data through a survey, and three follow-up stages were conducted to ensure that the target group has been addressed appropriately.

## Measurements

The questionnaire consisted of two major parts. The first part included personal and professional characteristics of the practitioners, such as age, gender, and education level. The second part was related to investigating possible items in the framework of REE triple supporters in the study area. In addition, detailed analysis of various references along with the opinions of some practitioners and academic experts in this field was carried out. In summary, 32 items were identified and used to determine the elements of the REE. Finally, the practitioners were asked to identify the necessity of 32 possible items (10 items related to policy pillar, 13 items related to institutional pillar, and 9 items related to the society pillar) on a five-point scale ranging from “very low” (1) to “very high” (5). Descriptive statistic was used to analyze the data. In order to extract the underlying components of the policy, institutional and society pillars, exploratory factor analysis was separately performed. A principal factor analysis with the varimax rotation was performed on the rankings assigned by the practitioners on items related to each of the REE pillars. Eigenvalues over one and the loadings over 0.50 were the thresholds used in the factor analysis. The Average Variance Extracted (AVE), Composite Reliability (CR), the Cronbach’s alpha ( $\alpha$ ) reliability analysis were performed to examine the variables' internal consistency of comprising components.

## Data Analysis

The SPSS software version 27 was used to analyze the data. Mode, mean, and standard deviation were used to describe the statistical data. In order to extract the underlying components of the REE pillars, exploratory factor analysis and principal component method were used.

## RESULTS

### Demographic and Professional Characteristics

In this study the practitioners were primarily male (74%) and middle-aged (66.0%), 70% of whom had a master's degree (Table 1).



**Table 1** Demographic and professional characteristics of the rural practitioners.

Characteristics	Frequency of respondents	% of respondents	Mean/Mode	Standard deviation
<b>Practitioners' age (Year)</b>				
Less than 41 (Young adulthood)	31	30.10	44.08	7.18
41-55 (Middle age)	68	66.02		
More than 55 (Older adulthood)	4	3.88		
<b>Practitioners' gender</b>				
Male	76	73.79	Male	
Female	27	26.21		
<b>Educational level</b>				
Bachelor	31	30.10	Master	
Master	60	58.25		
Ph.D.	12	11.65		

**Descriptive Analysis of each REE Pillar's Necessity**

Investigating the necessity of REE pillars is displayed in Table 2. In the policy-making pillar: energy and physical communication infrastructures, and research and development (R&D). In the institutional pillar: distribution channels, major and minor buyers, and holding classes and workshops, as well as legal advice for creating and developing a business. In the society pillar: experience in paying attention to innovation and creativity in businesses, the local people's tendency to create and develop business, and skilled and experienced workforce were considered as the essential items for supporting REE.

**Table 2.** Descriptive statistics of suggested items in the REE context.

Pillars	Suggested items (n= 103)	Necessity mean <sup>a</sup>	Standard deviation
Policy making	Energy infrastructure (water, gas, electricity) in the region	4.56	0.812
	Physical communication infrastructure (roads, etc.) in the region	4.54	0.734
	R&D to create and develop businesses in the region	4.52	0.614
	Virtual communication infrastructure (landline, mobile and internet) in the region	4.52	0.839
	Loans and bank facilities for generating and developing businesses in the region	4.50	0.614
	Public, cultural and extensional infrastructure in the local media	4.50	0.763
	Laws to protect bankrupting the business owners in the region	4.28	0.730
	Ease of obtaining new business licenses from the relevant bodies in the region	4.16	0.976
	Providing appropriate opportunities for creating and developing business in the region (for example, the land transfer by the municipality or district)	4.12	0.961
	Tax exemption laws for business generation and development in the region (incentive laws)	4.08	0.966
Mean		4.38	0.801
Institutional	Distribution channels, major and minor buyers of the products or services	4.54	0.813
	Holding classes and workshops related to business creation and development in the region	4.44	0.787
	Legal advice for creating and developing a business (e.g. how to obtain a license, how to obtain a tax exemption, etc.)	4.40	0.808
	Introducing exemplary business owners and publish their success stories in the region	4.34	0.982
	Identifying the primary and key customers to introduce new products or services	4.30	0.886
	Financial and accounting consultation about launching and developing a business (e.g. a guide to estimation of the business creation cost)	4.26	0.853

	Technical services and supports (e.g. providing equipment) by the syndicate for business owners in the region	4.26	0.853
	Promoting the creation and development of businesses by NGOs in the region	4.26	0.899
	Forming a local entrepreneurs' network to exchange local market information	4.26	0.965
	Forming an international entrepreneurs' network to exchange international market information	4.26	1.026
	Forming a national entrepreneurs' network to exchange national market information	4.24	1.041
	Holding conferences and seminars on business creation and development in the region	4.20	0.969
	Holding competitions in ideas and plans for creating and developing businesses in the region	4.16	0.934
	Mean	4.30	0.909
Society	Experience in paying attention to innovation and creativity in businesses	4.58	0.731
	The local people's tendency for creating and developing business	4.56	0.705
	Skilled and experienced workforce	4.56	0.644
	People's belief about the effectiveness and usefulness of the businesses in the region	4.40	0.833
	Social position of the business owners	4.36	0.749
	Semi-skilled and unskilled labor (daily wage/contract)	4.36	0.827
	Investment of the outside members of the household (individual investor) in financing the creation and development of the business	4.34	0.717
	Investment of the household members (individual investor) in financing the creation and development of the business	4.20	0.808
	Risk tolerance, mistakes and failure by people	3.90	0.953
	Mean	4.36	0.774

\*Mean: very low= 1 to very high= 5.

### Exploratory Factor Analysis of the REE Triple Supporters

As mentioned in the methodology section, exploratory factor analysis was used in order to extract the components of the REE supporting pillars using the principal components method. Tables 3 to 5 show the following items: the obtained labeled components in each pillar, the items loaded in each element and their equivalent loadings, the Average Variance Extracted (AVE), Composite Reliability (CR), the Cronbach's alpha ( $\alpha$ ) reliability coefficients, eigenvalues, and the variance percentage were described by each component in the policy-making, institutional and society pillars.

Two methods were applied to estimate the reliability as following:  $\alpha$  and CR. Both methodologies display the internal persistency of the scale elements measuring an exclusive factor (Fornell and Larcker, 1981). There was an approval that the measurement scales were valid. The Cronbach's alpha ( $\alpha$ ) coefficients and CR values were all over 0.7 (Hair et al., 2011). Also, the AVE was hired to estimate the convergent validity of the hidden variables, which showed that all coefficients were over 0.50 (Fornell and Larcker, 1981).

## Policy making pillar

In the policy-making pillar, a factor solution with two components was reserved. The KMO of the final matrix was 0.787. According to the nature of the loaded items, each of the two components was given a label. These components accounted for 61.375 percent of the variance. These components were labeled as "rules and regulations" and "infrastructures" (Table 3). The ease of obtaining new business licenses from relevant bodies in the region and R&D to create and develop businesses in the region, possessed the highest factor loadings in the component of rules and regulations. In the infrastructure component, the items of physical communication infrastructure (roads, etc.) and energy infrastructure (water, gas, electricity) in the region were identified as the most critical issues.

**Table 3.** Rotated factor matrix of the policy making pillar measured for REE.

Policy making pillar	Factor loadings	AVE <sup>a</sup>	CR <sup>b</sup>	$\alpha^c$	% of explained variance	Initial Eigenvalues
<b>Rules and regulations</b>		.516	.841	.789	31.255	3.125
Ease of obtaining new business licenses from the relevant bodies in the region	.800					
R&D to create and develop businesses in the region	.727					
Providing appropriate opportunities for creating and developing business in the region (for example, the transfer of land by the municipality or district)	.713					
Loans and bank facilities for creating and developing businesses in the region	.708					
Laws to protect bankrupting the business owners in the region	.632					
<b>Infrastructures</b>		.682	.893	.877	30.120	3.012
Physical communication infrastructure (roads, etc.) in the region	.915					
Energy infrastructure (water, gas, electricity) in the region	.906					
Virtual communication infrastructure (landline, mobile and internet) in the region	.862					
Public, cultural and extensional infrastructure in the local media	.571					
Percent of the total explained variance					61.375	
Extraction method: Principal component analysis				KMO= .787		
Rotation method: Varimax with Kaiser normalization				Bartlett's Test of Sphericity= 251.845**		

\*\*99% confidence level.

<sup>a</sup>Average Variance Extracted > .5; <sup>b</sup>Composite Reliability > .7; <sup>c</sup>Cronbach's Alpha > .7.

## Institutional pillar

In this pillar, a factor solution with two components was taken. The KMO of the final matrix was 0.883. These components accounted for 68.415 percent of the variance. Two components were named with a label based on the nature of the loaded items as "networking and informing" and

"service and support" (Table 4). In the networking and informing component, the items of forming a local entrepreneurs' network to exchange local market information, forming a national entrepreneurs' network to exchange national market information, and forming an international entrepreneurs' network to exchange international market information had the highest factor loadings. The items of elevating the construction and development of businesses by NGOs in the region and technical services and support (e.g. providing equipment) by the syndicate for the business owners in the region were identified as essential factors in services and support component.

**Table 4.** Rotated factor matrix of the Institutional pillar measured for REE.

Institutional pillar	Factor loadings	AVE <sup>a</sup>	CR <sup>b</sup>	$\alpha^c$	% of explained variance	Initial Eigenvalues
<b>Networking and informing</b>		.564	.911	.938	38.727	5.034
Forming a local entrepreneurs' network to exchange market information	.856					
Forming a national entrepreneurs' network to exchange national market information	.844					
Forming an international entrepreneurs' network to exchange international market information	.824					
Distribution channels, major and minor buyers of the products or services	.792					
Identifying the primary and key customers to introduce new products or services	.745					
Holding classes and workshops for business creation and development in the region	.692					
Holding conferences and seminars for the purpose of business creation and development in the region	.607					
Holding competitions of the ideas and plans for creating and developing businesses in the region	.599					
<b>Service and support</b>		.537	.850	.858	29.688	3.859
Promoting the creation and development of businesses by NGOs in the region	.851					
Technical services and support (e.g. providing equipment) by syndicate for the business owners in the region	.820					
Financial and accounting consultation about creating and developing a business (e.g. a guide for estimating the cost of business establishment)	.783					
Introducing exemplary business owners and publish their success stories in the region	.599					
Legal advice for creating and developing a business (e.g. how to obtain a license, how to obtain a tax exemption, etc.)	.562					
Percent of the total explained variance					68.415	
Extraction method: Principal component analysis				KMO= .883		
Rotation method: Varimax with Kaiser normalization				Bartlett's Test of Sphericity= 512.758**		

\*\* 99% confidence level.

<sup>a</sup>Average Variance Extracted > .5; <sup>b</sup>Composite Reliability > .7; <sup>c</sup>Cronbach's Alpha > .7.

**Society pillar**

In the society pillar, the factor solution with two components was reserved. In the final matrix, the KMO was 0.766. These components accounted for 62.575 percent of the variance. Each of the two components was allotted a label according to the nature of the loaded items. Proposed components for the society pillar included "tendencies and characteristics of the people" and "financial participation" (Table 5). Social position of the business owners, the believes of the region's people about the effectiveness and usefulness of businesses, and the local people's tendency for creating and developing businesses in the component of tendencies and characteristics of the people had the highest factor loadings. There were two items associated with financial participation as below: 1- the investment of household members in financing business creation and development, and 2- the investment of outside members of the household (individual investors) in financing business creation and development.

**Table 5.** Rotated factor matrix of the society pillar measured for REE.

Society pillar	Factor loadings	AVE <sup>a</sup>	CR <sup>b</sup>	$\alpha^c$	% of explained variance	Initial Eigenvalues
<b>Tendencies and characteristics of the people</b>		.529	.886	.862	42.451	3.821
Social position of the business owners	.865					
Believes of the people in the region about the effectiveness and usefulness of the businesses	.822					
Local people's tendency for creating and developing business	.741					
Experience in paying attention to innovation and creativity in the businesses	.697					
Semi-skilled and unskilled labor (daily wage/contract)	.674					
Skilled and experienced workforce	.648					
Risk tolerance, mistakes and failure by people	.609					
<b>Financial participation</b>		.736	.847	.734	20.123	1.811
Investment of the household members (individual investor) in financing business creation and development	.913					
Investment of the outside members in the household (individual investor) in financing business creation and development	.799					
Percent of the total explained variance					62.575	
Extraction method: Principal component analysis				KMO= .766		
Rotation method: Varimax with Kaiser normalization				Bartlett's Test of Sphericity= 197.253**		

\*\* 99% confidence level.

<sup>a</sup>Average Variance Extracted > .5; <sup>b</sup>Composite Reliability > .7; <sup>c</sup>Cronbach's Alpha > .7.

In order to comprehensively understand the results of this study, the triple supporter pillars were recalculated based on a percentage out of 100 (Table 6). According to results, the institutional, society, and policy pillars were ranked from first to third with 35.56%, 32.53%, and 31.90%, respectively.

Table 6. Structural triple affecting REE.

Pillars	Components	% explanation	% of explanation out of 100
Policy making	Rules and Regulations	31.26	16.25
	Infrastructures	30.12	15.66
	Total	61.375	31.90
Institutional	Networking and informing	38.73	20.13
	Service and Support	29.69	15.43
	Total	68.415	35.56
Society	Tendencies and characteristics of the people	42.45	22.07
	Financial participation	20.12	10.46
	Total	62.575	32.53

## DISCUSION

A suitable EE in rural areas ensures the sustainability of the rural businesses. Accordingly, in this study the necessity of three pillars (policymaking, institutional and social) in the REE was analyzed by adapting the existing literature. The results of exploratory factor analysis revealed the fact that each of the triple supporter pillars of the REE in the study region could be classified into two components. The components extracted from the policymaking pillar included the rules, regulations, and infrastructure. Similarly, the rules and regulations were considered and examined in the research of Biru et al. (2021). Also, Stam and van de Ven (2021), Guerrero et al. (2020), and Liguori et al. (2019) pointed out the necessity of having a proper infrastructure for the entrepreneurship development.

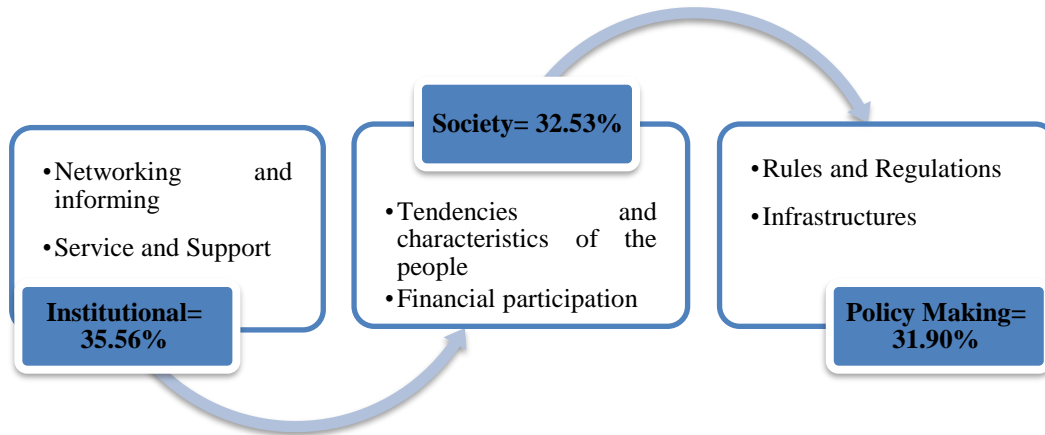
The components extracted from institutional pillar include networking and informing, as well as services and support. Networking and informing have been accentuated by Stam and van de Ven (2021), Grigore and Dragan (2020), Shwetzter et al. (2019), and Mujahid et al. (2019) in their studies. Furthermore, Biru et al. (2021), and Mujahid et al. (2019) indicated the importance of appropriate services and support for the entrepreneurship development. It has been revealed that the domination and institution interrelation is connected to the interactions among entrepreneur and environment (Deng et al. 2020), the conjunction of local institutions and an surrounding institutional environment (Kumar et al. 2019), as well as horizontal and vertical relationships (Lang and Fink 2019). Furthermore, formal and informal associations, policies and government programs (Otoijamun et al. 2021) must be deliberated in the analysis (Escandón-Barbosa et al. 2019). Developing more interconnected entrepreneurial networks within these regions should be obligatory for materializing these opportunities. In rural ecosystems, entrepreneurship can be assumed as a catalyst for the regional transformation via providing required structure. This could



339 facilitate the access to creative capital resources, incubation and retail space, mentorship, and social  
340 opportunities and eventually could bring about a more connected entrepreneurial community.

341 Tendencies and characteristics of the people, and financial participation are two components  
342 extracted from the society pillar. The tendencies and characteristics of the people were investigated  
343 by Liguori et al. (2019) in their experiment as well. Besides, in the research of Harima et al. (2021),  
344 Liguori et al. (2019) the necessity of the community members' financial participation for  
345 entrepreneurship development, has been pointed out.

346 In general, each of the pillars and components of the present research seems to be necessary in  
347 the process of forming a favorable local entrepreneurship ecosystem (Figure 2). The role of policy  
348 has been emphasized in the entrepreneurship literature in a particular way. However, according to  
349 the findings of this study, first, the role of networking and informing component was meaningfully  
350 related to the institutional pillar. This demonstrates that in parallel or even before adopting policies  
351 to facilitate entrepreneurial activities, it is essential to create a communication network among  
352 entrepreneurs at different levels, and training and marketing entrepreneurial products. Then, it was  
353 confirmed that the tendencies and characteristics of the component are associated with the society  
354 pillar. Finally, the role of rules and regulations, as well as the infrastructure were attributed to the  
355 policy-making pillar. Therefore, it can be concluded that despite the necessity of the rules and  
356 regulations and infrastructure (Elert et al., 2019), attention to networking and informing, and  
357 people's tendencies of a region, can be more crucial in the process of forming a suitable  
358 entrepreneurship ecosystem. Therefore, these components can play a significant role beyond the  
359 rules and regulations, as well as the infrastructure in creation and development of local  
360 entrepreneurship, and may act as reasonable incentives for policymakers to legislate and provide  
361 required infrastructure for entrepreneurs.



**Fig. 2.** The pillars of the rural entrepreneurship ecosystem

To explore the differences between EEs in large urban centers and rural areas, researchers have identified three common strategies that enable REEs to overcome constraints related to size, resources, and geographic location. The REEs can focus on their distinct characteristics such as reduced congestion, lower labor and housing costs as well as their place-specific advantages (Mason and Brown, 2014). These elements can be strategically leveraged to attract talent and investment. Rather than adhering to strict municipal boundaries, REEs are encouraged to define their geographic scope more broadly. This approach allows them to expand their influence and tap into resources that may lie outside the immediate city limits. For instance, by conceptualizing their boundaries as encompassing a one-hour drive from the ecosystem's center and forming connections with neighboring towns, REEs can establish a regional resource network. This network can integrate supportive services, stakeholders, and other assets from the nearby communities (Roundy, 2017). A defining feature of REEs, and the asset that most clearly distinguishes them from larger ecosystems, are the strengths of their social networks. These networks tend to be more cohesive and are characterized by stronger interpersonal connections than those found in larger urban ecosystems. Such density enhances the information and resources' flow, reinforces shared values, and shapes the nature of participant interactions. Individuals interested in identifying and developing REEs should be able to harness the unique strengths of rural social networks.

In addition to these general strategies, this study proposes several detailed practical implications for practitioners. First, rural areas may face a shortage of physical and property resources compared to the cities (larger areas) suggesting a focus on strengthening imperceptible resources that may not require substantial investment in financial resources. The development of comprehensible narratives to represent and encourage an EE describes one path to make the culture of a system.

Meetings, events, and projects that bring ecosystem participants together should be stimulated and supported. Because, such actions can facilitate the culture unity among ecosystem participants, and could offer them the opportunity to understand how to work together and get the experience of “small wins. These measures could encourage the critical values of an EE, such as innovation, risk-taking, accepting failure, and cooperation. In addition to these explicit values, rural areas may require stimulating the common sense that entrepreneurship is a suitable occupation style that could be a mechanism of community building and even rejuvenation of a small rural economy. In this regard, ecosystem participants might materialize collaborating with some organizations such as civil and spiritual institutions, which are not precisely associated with the EE but may share common interests in constructing society and enhancing the city's quality. In conclusion, rural areas trying to motivate entrepreneurial activities, should understand that entrepreneurship is the ecosystem consequence resulted from interactions among agents, values, and institutions. Spending resources in any of these constituents, while, ignoring others is likely to be unsuccessful. Service providers in rural regions must have an intimate knowledge of resources and related systems in order to meet the requirements of these clients of businesses effectively.

Theoretically, this study contributes to addressing the gap in REE study by enhancing the perception of the issues influencing entrepreneurship and new venture creation in developing regions. So, inclusion of developing regions in the literature can enhance the theoretical understanding of REE in general. Reflecting and integrating outstanding features of developing regions permits the adaption and extension of existing theories by incorporating new context-specific variables.

In terms of policy implications, the authors would suggest that a shortage of collaboration opportunities, access to investment, and low emphasis on policy initiatives pose substantial challenges on rural businesses. An entrepreneurship governance structure with the aim of regional policy can be implemented to overcome obstacles and to accelerate entrepreneurship development.

## CONCLUSIONS

This study attempted to formulate the REE pillars and to build a theoretical framework to address the question of what elements of policy, institutional, and society pillars support REE. Institutional gaps have been recognized as a fundamental obstacle for entrepreneurs in the REE of developing regions. In addition, the lack of resources, including financial, human, knowledge, and physical infrastructure, was emphasized as a barrier for entrepreneurial activities in developing regions.

Finally, structural gaps were brought out to show the scarcity of performers and networks in the REE of developing regions. Together, abovementioned three characteristics in the REE create significant obstacles in their transition to a knowledge-based economy with market-related institutions. In general, the lack of institutional support in the form of training and using new technology adversely affected farmer-entrepreneurs and their businesses. This research had three specific limitations. First, REE depends on local and regional characteristics and advantages (Butler et al., 2020; Moumenihelali et al., 2021). Therefore, in further studies should consider that the items and components identified in this study are customized based on the context. Second, in this study, the driving components of each REE pillar were explained independently. Hence, researchers are recommended to study the interaction effects of REE pillars on each other in the future. Finally, since the statistical population of this study was not detectable in any organizational list, their identification procedure was purposefully carried out through referring to government centers. Nevertheless, it is likely that other practitioners who were active outside of the government centers and were not included in this study. Therefore, it is recommended that this issue is carefully considered in future studies.

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اکوسیستم کارآفرینی روستایی در مناطق شمالی ایران: ارکان و پیشران‌های کلیدی

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چکیده

از آنجایی که ایجاد سرمایه‌گذاری جدید به یک منبع حیاتی تحول اقتصادی و تسریع‌کننده ضروری برای توسعه محلی در سال‌های جاری تبدیل شده است، رویکرد اکوسیستمی به عنوان یکی از راحل‌های عملی برای کاهش شکاف بین اقتصاد مناطق توسعه یافته و در حال توسعه در نظر گرفته می‌شود. مفهوم اکوسیستم کارآفرینی روستایی در دهه گذشته توجه فزاینده‌ای را در میان دست‌اندرکاران، سیاست‌گذاران و محققان به خود جلب کرده است. با این حال، تحقیقات در مورد اکوسیستم کارآفرینی روستایی تا حد زیادی بر تجربیات مناطق توسعه یافته متمرکز شده است. به‌منظور تبیین محرک‌های اکوسیستم کارآفرینی روستایی در یک منطقه در حال توسعه، در این پژوهش، داده‌های 103 نفر از فعالان حوزه کارآفرینی روستایی از طریق پیمایش در شمال ایران جمع‌آوری شد. داده‌های جمع‌آوری شده با استفاده از روش تحلیل عاملی اکتشافی مورد تجزیه و تحلیل قرار گرفت. تیم تحقیق حامیان اکوسیستم کارآفرینی روستایی را در سه رکن سیاست‌گذاری، نهاد و جامعه در نظر گرفتند. بر اساس نتایج تحلیل عاملی اکتشافی، هر یک از ارکان سه‌گانه اکوسیستم کارآفرینی روستایی در دو مولفه طبقه‌بندی شد. مولفه‌های استخراج شده از رکن سیاست شامل «قوانین و مقررات» و «زیرساخت» بود. مولفه‌های استخراج شده در رکن نهادی شامل «شبکه‌سازی و اطلاع‌رسانی» و همچنین «خدمات و پشتیبانی» بود. همچنین «گرایش‌ها و ویژگی‌های مردم» و «مشارکت مالی» به عنوان مؤلفه‌های جامعه در نظر گرفته شد. این نتایج مورد بحث قرار گرفت و دستور کار برای کارهای عملی و حرفه‌ای آینده ارائه شد.