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Dimensions and Strategies of Sustainable Rural Entrepreneurship Ecosystem: An Explorative-Mixed Research Study

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Abstract

With regards to the concept of sustainability, the dimensions and strategies of the rural entrepreneurship ecosystem have not been identified in most of valid literature of entrepreneurship discipline yet. The aim of this study is to conceptualize dimensions and strategies of Sustainable Rural Entrepreneurship Ecosystem (SREE) phenomenon for clarifying its dimensions and proposing regarding strategies for development of SREE. This study was conducted in two stages using an explorative mixed research design. In the first step, using a qualitative design, SREE was conceptualized, and its dimensions and strategies were developed. Therefore 6 dimensions and 36 strategies were conceptualized based on the analysis on the qualitative gathered data from the semi-structured interviews with the field experts of the research theoretical sample. In the second step, by pairwise comparisons of the quantitative method of Analytic Hierarchy Process (AHP), the weights of the dimensions were determined relative to each other, and the strategies were also prioritized. As a result of the study, the SREE was conceptualized so that some differences between this specific ecosystem and other ecosystems were identified. Rural entrepreneurship can be considered as a unique ecosystem that has its own characteristics and requirements in a context. Especially since the issue of bio-resources conservation has several public concerns, the importance of the SREE is greater than ever. The SREE as an independent phenomenon can provide new insights for the development of rural areas through the entrepreneurship process. Besides, from the contribution perspective, the contextualized dimensions and strategies as the developed concepts contribute to the body of knowledge in the entrepreneurship discipline based on the prominence of the context element in contemporary and future research of the entrepreneurship discipline. However, the substantive and context specific nature of the developed concepts and strategies requires future researchers to design variables according to these constructs for investigating the generalizability of these findings in more and different population frames.

Keywords

entrepreneurial ecosystem, sustainable development, rural entrepreneurship, explorative mixed research design

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With regards to the concept of sustainability, the dimensions and strategies of the rural entrepreneurship ecosystem have not been identified in most of valid literature of entrepreneurship discipline yet. The aim of this study is to conceptualize dimensions and strategies of Sustainable Rural Entrepreneurship Ecosystem (SREE) phenomenon for clarifying its dimensions and proposing regarding strategies for development of SREE. This study was conducted in two stages using an explorative mixed research design. In the first step, using a qualitative design, SREE was conceptualized, and its dimensions and strategies were developed. Therefore 6 dimensions and 36 strategies were conceptualized based on the analysis on the qualitative gathered data from the semi-structured interviews with the field experts of the research theoretical sample. In the second step, by pairwise comparisons of the quantitative method of Analytic Hierarchy Process (AHP), the weights of the dimensions were determined relative to each other, and the strategies were also prioritized. As a result of the study, the SREE was conceptualized so that some differences between this specific ecosystem and other ecosystems were identified. Rural entrepreneurship can be considered as a unique ecosystem that has its own characteristics and requirements in a context. Especially since the issue of bio-resources conservation has several public concerns, the importance of the SREE is greater than ever. The SREE as an independent phenomenon can provide new insights for the development of rural areas through the entrepreneurship process. Besides, from the contribution perspective, the contextualized dimensions and strategies as the developed concepts contribute to the body of knowledge in the entrepreneurship discipline based on the prominence of the context element in contemporary and future research of the entrepreneurship discipline. However, the substantive and context specific nature of the developed concepts and strategies requires future researchers to design variables according to these constructs for investigating the generalizability of these findings in more and different population frames.

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Introduction

In recent decades, the acceleration of changes in the business world has been increasing. In line with these changes, new approaches and methods have been proposed by scholars (e.g., Isenberg, 2010; Newell, 2020; Pieroni et al., 2019). One of these concepts is the business ecosystem approach that emerged as a dimension of the business world changes. According to this approach, the business world is like an ecosystem in which businesses from different industries interact with other's factors and their survival is largely dependent on other elements. The adoption and application of this approach is accompanied by changes in the business attitudes. In fact, the business ecosystem approach encourages people to respond to environmental changes with an open, dynamic mindset, and where appropriate, make significant changes on themselves and change the rules of the game.

Planning for rural development is a part of the development plans of each country that is used to transform the socio-economic structure of rural society. So that national development would not be possible without regard to rural development (Kvartiuk & Curtiss, 2019). A review of previous plans and policies in Iran shows that the local and the regional development programs have mostly and traditionally been economical. Therefore, the inability of the classical approaches and top-down policymaking has increased the gap between rural and city regions, causing environmental, social, cultural, economic, and physical-spatial problems in rural areas (Jafari-Moghadam et al., 2016; Soleymani et al., 2021).

Ineffectiveness of the implementation of traditional policies such as developing policies outside the rural areas, designing and implementation of policies in line with standard policies (despite rural diversity), disregard for economic, political, social, environmental and institutional conditions and content, spatial dichotomies, internal inequalities, abandoned spaces and increased consumerism has led to emerging new attitudes in decision making, policy-making and planning in development programs. In this regard, Entrepreneurial Ecosystem is one of the approaches, which has generally been used in entrepreneurship planning and development programs. In this approach, entrepreneurship is defined and designed as an ecosystem that encompasses the various dimensions that we consider in each dimension of entrepreneurship development. These are diverse and unique in each region, but generally include market, policy, financial capital, cultural supports, and the human capital that interact in complex ways (Isenberg, 2011). Therefore, the promotion of entrepreneurship in any region depends on the promotion, interaction, dynamics, and systematic synergy of these dimensions with each other (Isenberg, 2011; Spigel, 2017).

One of the issues that governments and scholars have been focusing on in the last few years is the development of rural areas through entrepreneurship, which is called the concept of rural entrepreneurship. Achieving sustainable rural development is one of the main goals of macro policymaking (Jafari-Moghadam et al., 2017; Soleymani et al., 2021).

Accordingly, experts and institutions consider rural entrepreneurship as a strategic intervention to promote and accelerate rural development. The goal of Rural Entrepreneurship is also providing innovation and value creation through entrepreneurial activities while maintaining the specific cultural characteristics of rural areas and the sustainability of the rural environment.

According to the above-mentioned contents and despite the importance of sustainable rural entrepreneurship ecosystems, dimensions and they're regarding strategies of this phenomenon have not yet been conceptually clarified in the existing valid literature of entrepreneurship discipline. Besides, contextualizing based on adopting qualitative and mixed research designs contributes to the field of entrepreneurship by expansion of contextualized concepts (Welter & Gartner, 2016; Zahra et al., 2014). Therefore, the purpose of this study is

to conceptualize SREE by implementing an exploratory-mixed research design to answer the question of what the dimensions of SREE are, and strategies which are appropriate for the development of SREE in Iranian rural areas as a specific context.

Literature Review

Entrepreneurship is one of the main factors in the stability of the rural areas. In recent decades, to overcome the socio-economic problems facing rural communities, the entrepreneurship approach has been considered as one of the most important rural development strategies (Chowdhury, 2007). In the present section, some main elements of sustainable rural entrepreneurship ecosystem have been reviewed.

Rural Entrepreneurship

Entrepreneurship is the creation and search for innovative opportunities to generate value for society and is recognized by researchers and policymakers as a powerful mechanism for economic and social development (Roundy & Fayard, 2019). At present, new perspectives on entrepreneurship development planning are focused on formulating policies for the systematic development of entrepreneurship, the most important of which is the entrepreneurial ecosystem. The development of the entrepreneurial ecosystem in each region requires identifying the constituent factors of the ecosystem and providing an appropriate model for the development, improvement and promotion of these elements, and their interactions (O'Connor et al., 2018).

The entrepreneurial event also depends on the context in which entrepreneurship takes place (López et al., 2019). Currently, studies on rural entrepreneurship as a special type of entrepreneurship have attracted more attention (Polbitsyn, 2019). Policymakers have also realized that no progress would be meaningful unless rural communities thrive and develop (Okeke & Nwankwo, 2017).

Rural Entrepreneurship intends to overcome the social problems of rural areas. Today, there is a growing need for rural entrepreneurs to create industrial units with many job opportunities. Accordingly, development experts consider rural entrepreneurship as a strategic intervention to promote and accelerate the rural development (Saxena, 2012).

In view of Petrin and Gannon (1997), rural entrepreneurship has fundamentally no difference from urban entrepreneurship, except that it should be conceived in rural areas. They also define rural entrepreneurship as the sum of the following three statements: (1) the force that mobilizes resources to meet unmet market demands, (2) the skill to make something out of nothing, and (3) the process of value creation by a set of resources to seize opportunity. In sum, the definition of rural entrepreneurship is the innovative use of rural resources and opportunities to catch business opportunities (Petrin & Gannon, 1997).

The concept of rural entrepreneurship is not limited to agriculture and related activities and covers industrial development. Moreover, rural entrepreneurship does not merely mean as the employment in the vast majority of the rural population and could also be a step towards rural and economic development (Kader et al., 2009).

Rural Entrepreneurship and Sustainable Development

Results of the comparative studies of the Global Entrepreneurship Monitor (GEM) show that there is a significant positive relationship between entrepreneurial activities and economic growth (Bosma et al., 2021). Likewise, countries with low entrepreneurial activity have low economic growth (Macke & Markley, 2006). In fact, economic development is due

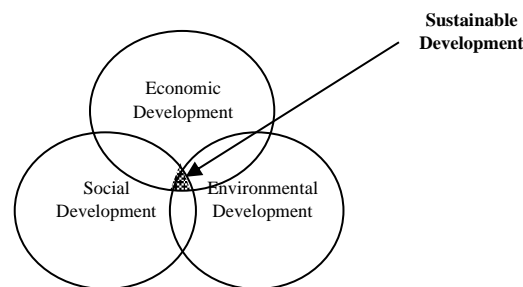
to entrepreneurs and entrepreneurial activities. Therefore, entrepreneurial development is required to achieve economic development. Entrepreneurship development is intended to increase the willingness, intention, and action of entrepreneurs (Acs, 2006).

Entrepreneurship development is a complex, long-term, and inclusive process that, of course, plays a significant role in economic development. Entrepreneurship, nowadays, becoming the most strategic and important economic tool of advanced societies embraces a great deal of agreement between policymakers as entrepreneurship has various benefits for innovation, job creation and development (Islam, 2015).

Sustainable development comprises three categories: economic, social, and environmental (Adamo, 2003; Mieszajkina, 2016). This development is a process in which sustainability could be achieved and occurs when economic, social, and environmental capacities are maintained (Figure 1). Therefore, in rural communities, it is merely a short-term view of economic development that ultimately destroys rural ecosystems and irreversible social change. Sustainability is accepted as a fundamental approach to any type of development, including sustainable rural development. Thus, simultaneous attention to the three dimensions of sustainable development helps policymakers to take measures to mitigate inequalities and achieve effective harmonious development (Department of Economic and Social Affairs, 1996).

Figure 1

Sustainable Development Dimensions (Mieszajkina, 2016)



Sustainable development is a harmonious combination of economic (productivity, employment, income generation, etc.), social (self-reliance, participation, equality, etc.), and environmental (biodiversity, natural resources, etc.) subjects (Mieszajkina, 2016).

Sustainable development enables human beings to benefit from a variety of socio-economic, political, and environmental dimensions, and to sustain the process of economic development and socio-economic growth (Ruth, 2001). Considering the sustainable development approach, entrepreneurship offers innovative ways to reap its benefits and preserve social and environmental capital. Entrepreneurship as an engine of economic growth and social development is not only an impetus for economic development and employment creation, but also a vehicle for individual development and social problem solving (Tsai & Kuo, 2011).

Entrepreneurs, in addition to creating employment, diversity and economic stability, contribute to increasing levels of social development. The empowerment of rural residents also has an impact on the development of rural entrepreneurship. Therefore, the development of comprehensive programs such as the entrepreneurial ecosystem in rural areas is an attempt to use the philosophy of entrepreneurship in rural sustainability (Rigby & Ramlogan, 2016).

Entrepreneurial Ecosystem: Definitions and Elements

Thinking about entrepreneurial ecosystems is derived from the literature on approaches such as industrial clusters, innovation systems, social capital, and networks. Although these approaches differ in their conceptual and methodological perspectives, there is a common belief that there are characteristics in the external environment of organizations and businesses that affect their growth and competitiveness. The metaphor of the entrepreneurial ecosystem was first put forward by Moore (1993). According to this metaphor, today, organizations are operating in an entrepreneurial ecosystem. An ecosystem composed of members such as customers, suppliers, manufacturers, shareholders, business associations, government, and sub-governmental agencies, and other stakeholders. In the entrepreneurial ecosystem, there is a complex interplay between these members and their success and survival are interdependent.

The term of ecosystem is one of the applied concepts in the field of biological sciences. Ecosystems are not just a collection of species, they are systems composed of living, abiotic components, and natural forces that interact with each other and are constantly changing.

In an ecosystem, the behavior of one organism affects other organisms and the ecosystem environment, and the survival of the ecosystem depends on the behaviors of all its members (Chapin III et al., 1996). On the one hand, with the increasing interconnectedness of organizations and the complexity of business relationships, and on the other hand, with the increasing acceleration of environmental change in the business world, the behavior of organizations is like the behavior of organisms in an ecosystem.

The entrepreneurial ecosystem creates an environment that encourages entrepreneurial endeavors. There may be many combinations that lead to creation of different ecosystems that are associated with success and progress (Cohen, 2006).

Entrepreneurial ecosystem consists of a set of different interrelated actors within a particular area that includes at least these elements: universities and research organizations, qualified human resources, formal and informal networks, government sections, equity investors, venture capitalists, professional service providers, and the culture of entrepreneurship that is linked to all these factors in a dynamic and open way (Cohen, 2006; Isenberg, 2011; Roberts & Eesley, 2011).

Entrepreneurship Ecosystem and Regional Development

Thinking about entrepreneurial ecosystems is derived from the literature on approaches such as industrial clusters, innovation systems, social capital, and networks. Although these approaches differ in their conceptual and methodological perspectives, there is a common belief that there are characteristics in the external environment of organizations and businesses that affect their growth and competitiveness. The Entrepreneurial Ecosystem Approach emphasizes giving entrepreneurship to a community of interdependent activists who need each other. Specifically, the literature on entrepreneurial ecosystems focuses on the role of the context in broadening entrepreneurship (Acs et al., 2014).

According to Harrison and Leitch (2010), the ecosystem is a vital tool for creating resilient economies based on entrepreneurial innovation. In addition, ecosystems contain a diverse set of perspectives on entrepreneurial geography to presenting a concept. This leads politicians to seek to incorporate the experience of successful ecosystems without regard to underlying cultural and economic characteristics (Spigel, 2017). Overall, the Entrepreneurial Ecosystem Strategy is a new and cost-effective strategy for entrepreneurship development and ultimately economic development (Isenberg, 2011).

Entrepreneurial Ecosystem Models and Dimensions

Cohen (2006) identified seven key factors in the formation of a sustainable entrepreneurial ecosystem: formal network, informal network, university, government, support and professional services, financial services, and existing talent. Based on the nature of many of the components mentioned above, each ecosystem combines the factors in the region in a particular way; therefore, the main components of the ecosystem are the same, but given that each country has its own contextual conditions (Kantis et al., 2014).

Since there was no integrated framework of research for entrepreneurship growth in geographic areas until then, Gnyawali and Fogel (1994) presented a five-dimensional framework of entrepreneurial environment in which environmental dimensions are associated with the process of creating risky businesses. Emphasis in this context is on the role of the environmental situation on the development of opportunities, creating the willingness, and the ability of individuals to entrepreneurial task. These five dimensions are embedded in a process model alongside five parts of the process of creating a startup business. These dimensions include government policies and procedures, socio-economic status, business and entrepreneurship skills, financial and non-financial assistance, and the five parts of the business creation process presented in an environmental context, including entrepreneurial opportunity, ability of economic activity, tendency for economic activity, the likelihood of economic activity, and the creation of new risky businesses (Gnyawali & Fogel, 1994).

Stam (2015) based on the report of InBev et al. (2013) also clarify eight dimensions of the entrepreneurial ecosystem, including accessible domestic and foreign markets, human capital, managerial and technical talents, and entrepreneurial experiences; legal and infrastructure frameworks, entrepreneurial education and quality of the workforce, universities, cultural support and role modeling of successful entrepreneurs; support and advisory system, and the investment and financing.

Comprehensive Entrepreneurial Ecosystem Model

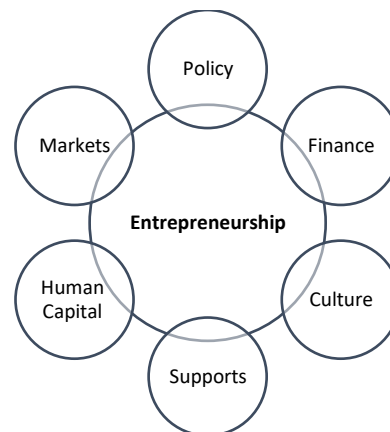
The Entrepreneurial Ecosystem Model presented by Professor Daniel Isenberg (2010) is the result of the Babson Entrepreneurship Ecosystem Project (BEEP), which aims to develop the entrepreneurial ecosystem. Isenberg (2010) developed a comprehensive model of the entrepreneurial ecosystem that has been the basis of other research in these field, and numerous researchers in different and numerous fields of entrepreneurship have used this model to develop other ecosystems. In his opinion, entrepreneurs are successful when they have access to the required resources. In this process, government strategies are helpful and inspiring. In this model, based on a review of countries' successful and failed entrepreneurial experiences, Isenberg (2010) describes an environment in which entrepreneurship tends to succeed. In his opinion, entrepreneurs would be successful while they have access to the human, financial, and professional resources that they want and work in an environment where government strategies are helpful and inspiring.

He describes this network as an entrepreneurial ecosystem. Isenberg (2010) has provided a comprehensive framework for entrepreneurial ecosystems (Figure 2). In his view, the entrepreneurial ecosystem consists of hundreds of elements that interact in some complex ways and can be grouped into six main areas: market, politics, financial capital, culture, support, and human capital (Isenberg, 2010, 2011, 2012). This model is far more comprehensive than other research approaches to entrepreneurial ecosystems. Although it has practical and theoretical complexities, it has a particular view of the business environment and the creation of new businesses in the environment.

Isenberg believes that the entrepreneurial ecosystem is relatively homeostasis, as success can creates success. When all six ecosystem territories are upgraded, they mutually reinforce each other. It is due to features such as homogeneity, equilibrium, and synergy that the ecosystem can introduce successful entrepreneurs. So, ecosystem mapping and keeping up-to-date information on everything that is done by anyone in this ecosystem, and possible forms of collaboration and possible synergy between these organizations, are essential steps to achieve the desired outcome of entrepreneurship.

Figure 2

Domains of the Entrepreneurial Ecosystem Model (Isenberg, 2010)



Characteristics of the Entrepreneurial Ecosystem and Performance Criteria

The literature on entrepreneurship development based on the general theory of entrepreneurship (Shane, 2003) is divided into three groups: (a) the impact of individual factors on entrepreneurial success, (b) the impact of environmental factors on entrepreneurial success and entrepreneurial performance, and (c) the impact of individual and environmental factors on entrepreneurial development.

The category of ecosystem is one of the third categories of literature available for entrepreneurship development. Entrepreneurial ecosystems are known to be a prominent aspect of describing the viability or durability of high-growth entrepreneurship in societies. Although the theory of ecosystems has not yet expanded, understanding this structure and its impact on the entrepreneurial process is difficult (Spigel, 2017). Decision for entrepreneurial activities is not undertaken in an isolated environment outside the local or regional context in which the individual is present (Spigel, 2017; Stam, 2015)

The Entrepreneurial Ecosystem is a set of network entities aimed to help entrepreneurs at different stages of their business developments. In other words, the underlying factor must be considered in addition to the entrepreneurial activity of individuals (Acs et al., 2014). Entrepreneurship can be seen as the result of the interaction of these factors, phenomena resulting from the interaction of individual characteristics and environmental events - Events that take place in the environment and influence people decisions about entrepreneurial activity (Stam & Bosma, 2014).

The context of this literature refers to a geographical area that can be in a local, regional, and national level. The way these two factors, namely the individual and the environment, work to develop entrepreneurship is that individuals perceive and identify opportunities in the context they live and work (Szerb et al., 2013). On the other hand, this

platform determines types of the availability of businesses and the opportunities (Stam, 2015).

The entrepreneurial ecosystem generally has four characteristics (Isenberg, 2011):

- The ecosystem consists of six dimensions
- Each entrepreneurial ecosystem is unique and not copyrightable
- Determining the root causes of an entrepreneurial ecosystem's success due to multidimensional relationships that cause and effect would be impossible
- The efficiency of an entrepreneurial ecosystem depends on strengthening all six dimensions

Iansiti and Levien (2004) have identified three measures of productivity, robustness, and opportunity creation as measures of the performance of a successful ecosystem. Productivity is the crucial factor for achievement in any business. Competition in the modern world depends more on productivity than on the access to the inputs or the scale of a business. Businesses can (and should) be productive in any industry if they adopt advanced methods and technologies and deliver unique products and services. The efficiency of an ecosystem in converting inputs into valuable outputs is called productivity.

To conceptualize SREE, topics that could be related to this new concept were presented and reviewed in this section: items such as rural entrepreneurship, sustainable development, and the entrepreneurial ecosystem. The models and the characteristics related to these items were also presented which can provide a proper intellectual framework for explaining a new phenomenon.

A review of the above existing valid literature shows a significant theoretical gap in the subject of SREE. Despite many studies in various fields of rural entrepreneurship, the dimensions, and strategies of SREE have not been considered by previous researchers in the subject areas of entrepreneurial ecosystem and sustainable development. Therefore, conducting this research can open new perspectives on rural development with entrepreneurship approach for policymakers and rural development planners as well as researchers.

Research Methodology

The research is basic from an orientation view and explorative in purpose and has been constructed on a mixed method design according to provided principles of Tashakkori and Teddlie (1998, 2003) for mixed methodologies in combining qualitative and quantitative approaches. Basic research seeks to discover the facts and to understand phenomena to develop the boundaries of the general human knowledge and to explain the concepts, relationships, characteristics, and attributes of a reality or phenomenon (Birks & Mills, 2015; Creswell, 2013).

Since the purpose of the present study is to explain the concept of SREE and its dimensions, the present research is a kind of basic research. Since this study explains the concept and dimensions of SREE, a mixed-qualitative research design is implemented. A variety of methods such as multiple data sources, interviews, observation, documentary research, etc. are used to conduct the qualitative phase of these kinds of research. Accordingly, In the First step of the current research, the exploratory-qualitative phase was carried out through semi-structured interviews aimed at adopting the qualitative conventional content analysis method. Essentially, qualitative research is mostly contextualized (Zivdar et al., 2017) so that in explorative-qualitative research, instead of using available variables or

hypothesizes obtained from different populations of interests in the literature for statistical testing, researcher actively aims to develop concepts for a specific context by gathering data from the same specific context. In other words, he/she collects valid grounded data arising from the minds of research participants. These participants are selected theoretically (not statistically) and have necessarily theoretical relevancy as for the research subject matter (Zivdar & Imaniour, 2017). They live or work in that specific context and have active participation in the process of research (Creswell, 2013; Zivdar et al., 2017). As an outstanding result, research findings and implications would be substantive and context specific. These findings are prone for conceptualization and in some conditions are also applicable for testing to be generalized as essential elements of developing conceptual or even theoretical frameworks or models. The important issue about the qualitative content analysis method is its applicability in interpretation of subjective meanings from an underlying context (Cavanagh, 1997; Hsieh & Shannon, 2005). Hence as it was mentioned that we have focused on the conceptualization of dimensions and strategies of SREE arising from a rural entrepreneurship ecosystem context, this qualitative method has been chosen for the first explorative-qualitative phase of the mixed research design.

In the quantitative stage as the second phase of our mixed research design, the Analytic Hierarchy Process (AHP) based on the provided method of Saaty (1980) was used as the quantitative stage of the research. The AHP method illustrates how the relative importance of multiple activities, options, alternatives, and so on should be determined in a multi-criteria decision-making (Saaty, 1980). The AHP method is one of the multi-criteria decision-making methods that solve complex decisions by structuring the criteria into a hierarchical framework.

As mentioned above, we used a qualitative content analysis method for the qualitative stage of the field study. In this method, we attempted to systematically use qualitative data collected from numerous semi-structured interviews with the research participants to discover, extract, classify, and evaluate relevant content to the research topic. Accordingly, in this stage of the study, due to the triangulation principle, major parts of the data (grounded data) were collected from interviews with the research participants. These participants were the academic and top level managerial key experts of the subject matter of entrepreneurship development. The required permits for recruiting the participants (based on the research theoretical sampling process) were provided by the Iran's Ministry of Cooperatives, Labour, and Social Welfare. This study was conducted, and its findings were approved by the reviewers' board of the Entrepreneurship Department of the University of Sistan and Baluchestan and the Management Department of the Gonbad Kavous University. The number of the theoretical sample of the interviewees is 22 which was determined based on a non-probability sampling method, and the theoretical adequacy principle, such a way that the sampling was continued until the theoretical adequacy which was obtained during the interviews with the 20th to the 22nd samples.

Besides, the written and electronic documents published on entrepreneurship ecosystem and rural entrepreneurship development were analyzed for validation of the findings. The process at first was to gather the published sources on rural entrepreneurship, to explain the concept of sustainable rural entrepreneurship ecosystem in detail and then comparisons of the findings with the valid existing literature of the subject matter for the validation procedure in the qualitative stage.

The collected data from the semi-structured interviews were analyzed by the two dynamic and integrated phases of substantive and selective coding which are introduced by Glaser (1992) and the coding procedure of Hsieh and Shannon (2005) for conventional content analysis as the methods of analyzing the qualitative data in the qualitative stage of the research. As to the lack of theoretical concepts regarding to SREE's strategies and

dimensions, we aimed to avoid preconceived categories for analyzing the gathered qualitative data of the first phase of the research design which was the exploratory-qualitative phase. So, a conventional content analysis according to Hsieh and Shannon (2005) coding process was implemented. Thus, the gathered data from semi-structured interviews were analyzed through the initial coding procedure. Then, the initial developed codes were sorted into categories depending on their derived conceptual meanings and relations, and finally, the emergent categories were applied to grouping the codes into conceptual clusters. Based on the mentioned analysis on the qualitative gathered data, the contextualized concepts of SREE's dimensions and strategies were developed and by means of this conceptualization regarding to the Sustainable Rural Entrepreneurship Ecosystem, its dimensions and their related strategies were developed. The processes of collecting and analyzing the qualitative data were done simultaneously and with a zigzag shape. Some strategies such as using specialized software's of recording and analyzing the qualitative data, implementing the structured methods of collecting and interpreting the qualitative data, and parallel analysis of the data with the interceder agreement were employed for promoting the reliability of the research findings at the first stage.

To evaluate the validity in the current stage, some general strategies for evaluating and promoting the quality of the research process and findings were employed containing the triangulation (comparisons of the developing concepts with the valid literature, member checking and cross checking, and the comparisons and approvals of external experts due to the related valid literature), methodological cohesion, appropriateness and the theoretical relevancy of the research participants, and the concurrent collecting and analysis of grounded data. Moreover, the Trustworthiness of the research which is introduced by Guba and Lincoln (1989) as a criterion for evaluating the scientific precision of the qualitative research was evaluated by the elements of Credibility, Transferability, Dependability, and Conformability. Based on the two elements of credibility and transferability, to obtain appropriateness to the context and theoretical relevancy, the research sampling method was purposeful and theoretical based on specificity in sample selection, and continuous refinement of findings to achieve a proper conceptualization of the SREE's dimensions and strategies. The credibility and transferability were also approved after the continuous (during the research field study) evaluations of the three groups of (1) key informants, (2) experts participating in the research, and (3) other experts in the subject area, by applying appropriate adjustments. Besides, Dependability to grounded data was considered by systematic methods of collecting, recording, analyzing, and interpreting the qualitative data. Conformability was also provided by presenting evidence and using the opinions of the two samples of (1) theoretical sample of the research (member checking), and (2) similar samples (cross checking), the use of technical and field notes, strategies for promoting theoretical sensitivity, and strategies for avoiding researchers' biases during the research.

In the second phase (quantitative stage), the AHP method for pairwise comparison of effective factors and strategies was designed and relative importance of effective factors and hierarchical analysis of factors and strategies were performed. The mechanism for using this method is that after designing the hierarchy for the criteria and options, the next step is to evaluate the elements with the paired matrix and to calculate the degree of importance of each criterion and options to obtain the numeral mean calculated for each pair of matrix cells. Due to the high number of the strategies of Sustainable Rural Entrepreneurship Ecosystem which were identified in this study, we designed a pairwise comparison structured questionnaire (to collect quantitative data) for paired comparisons of criteria and strategies which were developed in the first stage and distributed to achieve low incompatibility rates.

In this process, the purposive sampling method was used yet again, and the questionnaire was distributed among 25 key informants in the fields of rural

entrepreneurship, sustainable development and entrepreneurship ecosystem policymakers. The incompatibility of all pairwise comparisons matrices was less than 0.1 and thus comparability of the findings in the quantitative stage was acceptable. Finally, the questionnaire was completed by the experts and key informants and the weights of each dimension and priorities of the proposed strategies were determined.

Research Findings

Based on the findings of the qualitative stage, dimensions, and strategies of SREE have been conceptually developed. In the first part of this section, these concepts are reported and in order to indicate the extent to which the concepts developed in the data and their grounded basis, evidence of real data, in the form of vignettes, or verbal cues regarding to each of the categories are presented correspondingly.

One of the conceptualized dimensions of the Sustainable Rural Entrepreneurship Ecosystem in our research is the existence of active and dynamic markets. The developed strategies for the current dimension are networking and clustering in different areas of rural businesses (industry, agriculture, and services), branding and green marketing activities for rural businesses at regional, national and international level, developing different industrial market according to the competitive advantage of each rural, holding exhibition and other marketing activities to identify products, using information technology and network marketing to sell rural products, emphasis on the production of organic products in promotional activities, and establishing international cooperation with environmental protection institutions. As participant with code 19 points out, there are specific markets that can offer green or organic products to the community:

In my opinion, two factors in the success of the rural business market are relying on organic products and the use of e-commerce and social networks. The shift in people's tastes towards green products has now reached its peak and the demand for organic products has become a public necessity. This issue needs a serious look at the role of rural entrepreneurs and rural products.

In the sustainable rural entrepreneurship ecosystem, policy is the other effective dimension. The conceptualized strategies for this dimension are facilitating conditions and improving the rural business environment at the regional level and helping to develop it, designing and enforcing entrepreneurship and business related laws with the approach of protecting the environment and rural natural resources, establishing institutions to facilitate entrepreneurial conditions and enhance the business start-up process, supporting rural entrepreneurs' investment by supporting and reducing risk of financing rural businesses, providing tax deduction and social security for businesses that do the least harm to the environment, and defining research projects focused on sustainable development of the rural entrepreneurship ecosystem. In this regard, the participant with code 3 emphasized on the important role of policy and planning:

As someone who has worked in both planning and implementation, I consider the most important factor for the development of the rural entrepreneurship ecosystem to be policymaking and the role of policymakers and the policies adopted for this purpose. The policymaker must provide the conditions for the entrepreneur to be able to operate under any circumstances with the least risk and the least financial and non-financial costs. The work of the policymaker is

to facilitate and prepare the conditions of the business environment for the activities of entrepreneurs.

The other developed dimension in the present research is financing and paying attention to financial issues in the sustainable rural entrepreneurship ecosystem. The developed strategies for the finance dimension are facilitating conditions for small and medium-sized funds, providing creative solutions for crowd funding, guaranteeing the return of investment to legal entities in accordance with legal criteria, encouraging national and international investors to operate in the region, encouraging venture capitalists and business angels to finance rural businesses, and encouraging social entrepreneurs to invest in rural regions. For example, participant with code 2 noted:

Well, you see, financial issues are one of the most important needs of any business. Financing is the first or most important need of businesses and rural businesses. In addition to the fact that policymakers must design and implement laws to financially support entrepreneurs, it should be noted that many entrepreneurial ideas are not implemented due to lack of financial resources of the owners of the ideas. In this section, it is better to introduce new and creative methods of financing, such as business angels or venture capitals.

On the other hand, the role of culture by means of values, attitudes, and motivations of individuals for entrepreneurship in rural areas has been developed in the research. The conceptualized strategies for the dimension are developing and enhancing entrepreneurial attitudes and presenting programs aimed at enhancing people's entrepreneurial intention, paying attention to entrepreneurship for women, youth and vulnerable people, introducing successful entrepreneurship as a role model in the media, considering sustainability in different types of businesses (such as home businesses, family businesses, etc.), encouraging social institutions and NGOs to participate and work in rural areas, and considering awards for entrepreneurial innovator supporting the environment. For instance, participant 1 stated:

One of the notable cases for the development of rural entrepreneurship is culture. The most important effect that culture has on entrepreneurship in rural areas is to pay attention to the fact that culture can change the attitude of people and rural society towards entrepreneurship. I can identify suitable opportunities for entrepreneurship in this rural context. It's so important and it also motivates people to pay attention to them by appreciating and rewarding them.

According to the fifth conceptualized dimension, the development of infrastructure and financial institutions, the improvement of the business environment and the role of non-governmental organizations for rural entrepreneurship are undeniable, which are called supports. The conceptual developed strategies for this dimension are establishment of business consulting and environmental protection offices in rural areas, providing advice and services to rural entrepreneurs in different areas (technical, marketing, financial, human resources, management, etc.), providing periodic visit services to various technical and environmental specialists according to the needs of rural businesses, development of supportive NGOs and related programs in rural areas, forming scientific and promoting associations and programs (conferences) to introduce the sustainable rural entrepreneurship ecosystem to the community, and development of communication infrastructure, transport,

energy, etc. according to the needs of entrepreneurs and the conditions of different regions. In this regard, participant number 12 stated:

Numerous supports are provided for the development of the rural entrepreneurship ecosystem. As a person who has worked in the field of rural development for many years, I have considered important factors such as improving infrastructure, financial support, technical and professional support in this field. Of course, non-governmental organizations and non-profit organizations also have a special place in the field.

The last conceptualized dimension of sustainable development of rural entrepreneurship ecosystem in the research is human capital. The developed strategies for this dimension are making the most of the potential and capabilities of universities and higher education institutions in each region, market-oriented disciplines, and the possibility of employing university graduates in rural industries and businesses, creating new courses tailored to market needs, developing and enhancing vocational training programs, and providing special support for rural family businesses and serial entrepreneurs. As participant number 18 of the research has noted, this dimension can play a decisive role in the success of rural entrepreneurship projects:

In the field of human capital, there is a great need to design and train courses that are tailored to the needs of the market and especially rural businesses. For example, we have products in this rural area that are produced with good quality and price, but due to unfamiliarity with the market and trade rules, we cannot sell and supply directly to consumers, and I think this requires training.

In the second phase of the study, the AHP method was used. The AHP method with paired comparisons between criteria and options as well as the use of both types of quantitative and qualitative data is a very suitable method for decision-making. The basis of this method is to create a hierarchical tree consisting of goals, criteria, sub-criteria, and alternatives, by assigning appropriate weights to each criterion and sub-criteria and determining the role of each criterion in the decision-making process for the decision-maker to make an optimal decision.

The AHP process is based on three principles: (a) Creation structure and hierarchy for the problem, (b) Prioritization through pairwise comparisons, and (c) Logical consistency of the measurements.

After calculating the numeral mean of all pairwise comparative matrix cells, the results are normalized by combining the weights of low-level elements with the corresponding high-level elements in the hierarchy, and after this procedure, the weights of the criteria and the options would be obtained. This process is performed using Excel software. Table 1 shows the weights and priorities of the dimensions of the Sustainable Rural Entrepreneurship Ecosystem.

Table 1
The SREE's Priorities of the Dimensions

Mail Subject	Dimensions of SREE	Weight	Priority
Sustainable Rural Entrepreneurship Ecosystem (SREE)	Human Capital	0.255	1
	Culture	0.219	2

Mail Subject	Dimensions of SREE	Weight	Priority
	Policy	0 .178	3
	Finance	0 .139	4
	Supports	0 .122	5
	Markets	0 .087	6

Table 2 demonstrates the weights and priorities of the strategies developed for human Capital.

Table 2
Human Capital's Priorities of Strategies

Weight	Human Capital Strategies	Importance of Factor in Group	The Overall Importance of the Factor
Human Capital Weight 0.255	Make the most of the potential and capabilities of universities and higher education institutions in each region	0.265	0.068
	Market-oriented disciplines and the possibility of employing university graduates in rural industries and businesses	0.217	0.055
	Creating new courses tailored to market needs	0.173	0.044
	Developing and enhancing vocational training programs	0.136	0.035
	Special support for rural family businesses and serial entrepreneurs	0.209	0.053

Table 3 belongs to the weights and priorities of the strategies developed for Culture.

Table 3
Culture's Priorities of Strategies

Weight	Culture Strategies	Importance of Factor in Group	The Overall Importance of the Factor
Culture Weight 0.219	Develop and enhance entrepreneurial attitudes and present programs aimed at enhancing people's entrepreneurial intention	0.254	0.056
	Paying attention to entrepreneurship for women, youth, and vulnerable people	0.180	0.039
	Introducing successful entrepreneurship as role models in the Media	0.117	0.026
	Considering sustainability in different types of businesses such as home businesses, family businesses, etc.	0.138	0.030
	Encouraging social institutions and NGOs to participate and work in rural areas	0.219	0.048
	Awards for entrepreneurial innovator	0.092	0.020

Weight	Culture Strategies	Importance of Factor in Group	The Overall Importance of the Factor
	supporting the environment		

Table 4 shows the weights and priorities of the strategies developed for Policy.

Table 4
Policy's Priorities of Strategies

Weight	Policy Strategies	Importance of Factor in Group	The Overall Importance of the Factor
Policy Weight 0.178	Facilitating conditions and improving the rural business environment at the regional level and helping to develop it	0.163	0.029
	Designing and enforcing entrepreneurship and business-related laws with the approach of protecting the environment and rural natural resources	0.117	0.021
	Establishing institutions to facilitate entrepreneurial conditions and enhancing the business startup process	0.166	0.030
	Supporting Rural Entrepreneurs' Investment by supporting and reducing risks of financing rural businesses	0.185	0.033
	Providing tax deduction and social security for businesses that do the least harm to the environment	0.158	0.028
	Defining research projects focused on sustainable development of the rural entrepreneurship ecosystem	0.211	0.038

Table 5 demonstrates the weights and priorities of the strategies developed for Finance.

Table 5
Finance's Priorities of Strategies

Weight	Finance Strategies	Importance of Factor in Group	The Overall Importance of the Factor
Finance Weight 0.139	Facilitate conditions for small and medium-sized funds	0.158	0.022
	Providing creative solutions for crowd funding	0.144	0.020
	Guaranteeing the return of investment to legal entities in accordance with legal criteria	0.232	0.032
	Encouraging national and international investors to operate in the region	0.122	0.017
	Encouraging venture capitalists and business angels to finance rural businesses	0.188	0.026

Weight	Finance Strategies	Importance of Factor in Group	The Overall Importance of the Factor
	Encouraging social entrepreneurs to invest in rural regions	0.156	0.022

Table 6 presents the weights and priorities of the strategies developed for Supports.

Table 6
Supports' Priorities of Strategies

Weight	Supports Strategies	Importance of Factor in Group	The Overall Importance of the Factor
Support Weight 0.122	Establishment of business consulting and environmental protection offices in rural areas	0.186	0.023
	Providing advice and services to rural entrepreneurs in different areas (technical, marketing, financial, human resources, management, etc.)	0.143	0.017
	Provide periodic visit services to various technical and environmental specialists according to the needs of rural businesses	0.202	0.025
	Development of supportive NGOs and related programs in rural areas	0.174	0.021
	Forming scientific and promoting associations and programs (conferences) to introduce the sustainable rural entrepreneurship ecosystem to the community	0.132	0.016
	Development of communication infrastructure, transport, energy, etc. according to the needs of entrepreneurs and the conditions of different regions	0.163	0.020

Table 7 belongs to the weights and priorities of the strategies developed for Markets.

Table 7
Markets' Priorities of Strategies

Weight	Markets Strategies	Importance of Factor in Group	The Overall Importance of the Factor
Market Weight 0.087	Networking and clustering in different areas of rural businesses (industry, agriculture, and services)	0.172	0.015
	Branding and green marketing activities for rural businesses at regional, national, and international level	0.166	0.014
	Developing different industrial market according to the competitive advantage of each rural	0.076	0.007
	Holding exhibitions and other marketing activities to identify products	0.113	0.010

Weight	Markets Strategies	Importance of Factor in Group	The Overall Importance of the Factor
	Using information technology and network marketing to sell rural products	0.187	0.016
	Emphasis on the production of organic products in promotional activities	0.184	0.016
	Communicate and establish international cooperation with environmental protection institutions	0.102	0.009

Discussion

The purpose of this study was to explore the Sustainable Rural Entrepreneurship Ecosystem (SREE) by conceptualizing its dimensions and strategies that can provide new opportunities for rural entrepreneurship policymakers and planners. The study was designed based on a mixed-qualitative research design using the qualitative conventional content analysis method for the qualitative phase, and the Analytic Hierarchy Process (AHP) method for the subsequent quantitative phase. In the first step, to explore SREE phenomena, a fundamental research based on qualitative research via the conventional content analysis method was used. According to the result of this phase, the dimensions and they're regarding strategies of the SREE were conceptualized. In the second phase of the study, the AHP method was used. Accordingly, the priorities of the six developed concepts of the Sustainable Rural Entrepreneurship Ecosystem are determined respectively as human capital, culture, policy, finance, supports and markets. Moreover, the contextualized strategies for each of the factors were weighted and prioritized and the most important strategies were determined. For instance, the most important strategy for the dimension of human capital is making the most of the potential and capabilities of universities and higher education institutions in each region, and the most important strategy for the concept of culture is the development and enhancement of entrepreneurial attitudes and presenting programs aimed at improving people's entrepreneurial intention. Accordingly, other strategies for each dimension were prioritized.

The Sustainable Rural Entrepreneurship Ecosystem (SREE) such as other Entrepreneurial Ecosystems specified by scholars such as Isenberg (2010) and Spigel (2017) has six dimensions: market, policy, financial capital, culture, support, and human capital.

The difference between the sustainable rural entrepreneurship ecosystem (SREE) and other ecosystems is in the kind of context and geographic territory in which the ecosystem is formed. Although the concept of sustainability should be considered in all planning and policymaking, considering the rural environment in which the entrepreneurial ecosystem and the survival of rural areas and, rural entrepreneurship ecosystem depends on the characteristics of the rural environmental context. Therefore, the dimensions and strategies of the rural entrepreneurship ecosystem must be organized in accordance with the principles and criteria of sustainability.

For example, the issue of the social legitimacy of rural entrepreneurs or the professional training of rural entrepreneurship volunteers and other variables of the rural entrepreneurship ecosystem needs to be addressed with environmental sustainability.

On the other hand, as rural communities face structural constraints, there is therefore a risk of entrepreneurial activity and more management weaknesses in these areas that need special attention. Besides, although communications, transportation and energy access are important for all types of businesses, rural areas generally suffer from technological and

infrastructural weaknesses. This implies the high weights and priorities of these items, especially communications and access to transportation and energy.

Human capital is the most important factors of rural entrepreneurship ecosystem development in our research context. Human capital is the distinguishing feature of entrepreneurial ecosystems (Stam, 2015). Human capital includes skilled manpower in both professionals whose skills are accumulated through entrepreneurship training and the workforce that come together to create new companies with the goal of economic advancement (Jafari Sangari et al., 2019). This factor has been considered in most research of entrepreneurial ecosystem (e.g., Acs et al., 2017; Arruda et al., 2013; Isenberg, 2011; Mason & Brown, 2013; Spigel, 2017).

Another factor that was highly emphasized in this study was culture. The lack of a culture of self-confidence in rural areas increases the importance of paying attention to cultural factors. Low risk-taking, lack of role models, inspiration to others and the like, are among the cultural factors affecting the development of the entrepreneurial ecosystem that have been considered by other researchers (e.g., Acs et al., 2017; Audretsch & Belitski, 2017; Auerswald, 2015; Isenberg, 2011; Malecki, 2018; Mason & Brown, 2013; Spigel, 2017; Stam & Spigel, 2017).

Government policies have been considered in previous research with titles such as government (Feld, 2020), politics (Isenberg, 2011; Spigel, 2017) official institution or institution (Malecki, 2018; Stam & Spigel, 2017). Financial, infrastructure, and development support are other factors in the entrepreneurial ecosystem that have been considered by some researchers (e.g., Acs et al., 2017; Alvedalen & Boschma, 2017; Isenberg, 2011; Malecki, 2018; Motoyama & Knowlton, 2016). This factor is one of the most important factors in shaping entrepreneurial startups.

According to the results of the present study, the market is another effective factor in the development of rural entrepreneurship ecosystem. This has been emphasized in previous research (Isenberg, 2011; Spigel, 2017). Many activists believe that smaller rural populations lead to smaller markets in rural areas than in urban areas.

Rural entrepreneurship can be considered as a unique ecosystem which has its own characteristics and requirements that governmental policies and specific support programs can also be considered for its enhancement. Especially since the issue of bio-resources and environmental conservation has several public concerns, conceptualizing the SREE provides conceptual, theoretical, and operational implications, and its importance is greater than ever.

It can be implied that the sustainable Rural Entrepreneurship Ecosystem (SREE) is a systematic, self-sustaining, and dynamic set of stakeholders and actors involved in creating innovative value and seizing entrepreneurial opportunities while protecting environmental resources, it contributes to the economic and social development of rural areas. Rural entrepreneurs are key players in this ecosystem and their environment and social culture are the source of many opportunities, so their novelty would be based on the values, beliefs, cultural characteristics, and ecosystem of the rural areas. So, protecting and upgrading the SREE would be as important as the importance of the economic development. Furthermore, the SREE as a contextualized concept can provide new insights for the development of rural areas through the entrepreneurship process. Besides, from the theoretical contribution perspective, the contextualized dimensions, and strategies as the developed concepts, contribute to the body of knowledge in the entrepreneurship discipline based on the call of pioneer researchers of the field such as Welter (2011), Welter and Gartner (2016), Zahra (2007), and Zahra et al. (2014) who have implied the importance of the context element in contemporary and future research of the entrepreneurship discipline. However, the substantive and context specific nature of the developed concepts and strategies requires future researchers to design variables according to these constructs for investigating the

generalizability of these findings in more and different population frames. In other words, the present research findings are based on the grounded evidence of the context of the research. Thus, these findings are context specific, and the research limitations are mainly related to the generalizability of the findings. So, the research implications may not be generalizable for related studies of other scholars of the field and, on the other hand, may not be applicable for economic and entrepreneurship development policymakers in other contexts. For that reason, we would suggest to future researchers to conduct empirical research designs using quantitative techniques for testing out the generalizability of the finding to other statistical population frames.

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