Research Paper: Factors Affecting the Development of Rural Industries Businesses; A Sustainable Development Approach (Case Study: Stone Industry in Rural Areas of Iran)

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ABSTRACT

Purpose: In the current era, one of the main challenges facing policymakers is the sustainable development of rural areas. Rural areas' development depends more than ever on entrepreneurship because these regions have enormous capacities. Researchers consider rural entrepreneurship as the main lever for rural areas' development. Despite the existence of opportunities and potential of the stone industry, few actions have been taken to establish and run rural entrepreneurial businesses. Therefore, this study aims to identify and rank factors affecting the development of stone industry businesses in rural areas with an approach to sustainable development.

Methods: A mixed-method research involving qualitative and quantitative methods were used for this study. The library and expert interviews were used. Factors affecting the development of rural industry businesses were identified in the qualitative part. A pairwise comparison questionnaire was used to prioritize factors in the quantitative part. The survey data were collected from 26 key informants and experts and were analyzed using the analytic hierarchy process technique in the Expert Choice software.

Results: The results identified 20 factors affecting the development of rural businesses in the stone industry. These factors can be ranked into five key categories: financial factors with a weight of 0.379, ecosystem management factors with a weight of 0.263, cultural factors with a weight of 0.142, social factors with a weight of 0.112, and strategic factors with a weight of 0.104 respectively.

Conclusion: The results indicated that the sustainability of the ecosystem and village resources deserve attention for stone industry business development in rural areas with an approach to sustainable development. Accordingly, the principal recommendations are improving the entrepreneurial ecosystem and rural business environment, providing financial support for rural businesses, imposing laws related to improving entrepreneurial activity and the process of establishing a business in the stone industry, human capital enhancement, establishing business counseling offices, and investment support in rural areas.

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1. Introduction

Development has long been an important topic in social and economic fields. Rural areas play an essential role in national development; because the sustainable development of the country depends on the sustainability of the pastoral system as a subsystem of that country, and the sustainability of rural areas can, in various dimensions, play an influential role in regional and national development (Jahan al-Dini et al., 2022).

On the other hand, entrepreneurship development is a complex, lengthy, and comprehensive process that performs a decisive role in counties' economies. Entrepreneurship development has become an essential economic tool for advanced societies. Economic growth and development are due to entrepreneurs and entrepreneurial activities. Therefore, entrepreneurial development is critical to achieving economic growth and development (Acs et al., 2018).

Rural entrepreneurship is considered one of the driving forces for rural social and economic systems development (Polbitsyn, 2019). In the current era, rural entrepreneurship is seen as a strong force in the development of rural areas (Aggarwal, 2018).

Despite the importance of entrepreneurship in rural areas, many factors are barriers to reaching goals, namely, the environment of rural businesses. Businesses should respond to these challenges by taking a broader perspective and planning for the future to identify opportunities and avoid risks and threats (Al-Zu'bi, 2016).

The statics of the global entrepreneurship monitor suggests that Iran, in terms of economic development level, is transitioning to an efficiency-driven economy from a resource-driven economy (G.E.M., 2019). In rural areas, the extraction and transfer of raw materials indicate that these regions also have a resource-driven economy. Despite its importance, rural areas face strategic challenges, such as poverty, disguised unemployment, environmental degradation, and source inequality between rural and urban areas. However, for the sustainable development of villages, different actions have been taken to increase production, improve the technology and knowledge level, improve communication channels, increase the villagers' income, and reduce unemployment, poverty, and inequality (Jahan al-Dini et al., 2022). Most of the country's stone mines are located in rural areas, and entrepreneurial opportunities and capacities exist to start a mining business there. However, rural industries in general, and the stone industry of rural areas in particular, is lagging behind its corresponding regions for various reasons, such as lack of industrial investment funds, lack of attention to the potential for investment, and eventually, industrial retardation in rural areas. Although industrial development and the prosperity of businesses in rural areas can be a tool for developing other sectors, this retardation has kept rural areas' economies and businesses underdeveloped. Thus, agricultural and services products have become the mainstay of rural areas' economies; and industry has a minor role in the economies of rural areas.

The industry sector has improved rural communities' welfare and income by improving other economic sectors' productivity. Industrialization can also create a just social-economic system. The experience of developed societies indicates a direct relationship between social welfare and the business growth of that society. Moreover, the experience of developed countries suggests that industrialization is the main engine of growth and development of all social and economic sectors. Eventually, the considerable increase in the value-added of the industry sector in G.D.P., along with evolutions in environmental, social-cultural, and political fields, are all considered the main achievements in industrial development (Szimai & Verspagen, 2011). Therefore, this study aims to identify and rank factors affecting the development of stone industry businesses in rural areas with a sustainable development approach.

2. Literature Review

The term "development" refers to the steady growth of something so that it becomes more advanced, stronger, etc. The development literature arose and was evaluated after the Second World War and aimed to improve the conditions of Third World countries to have the ideal situation the same as developed countries. Generally, development involves radical changes in institutional, social, and administrative structures (Shahraki, 2013).

In general, the goal of development is to improve the living conditions of all individuals. In every country, certain groups of people are provided with better living conditions. Thus, full attention should be paid to people living in poverty. In recent decades, developed and least-developed countries have created suitable living conditions by achieving economic development. In countries, some states can still be underdeveloped. And if poorer regions grow faster than their counterparts, it is termed convergence (Purohit, 2008).

Experts believe that Comprehensive development is the main goal for development in every society. By studying factors influencing development, planners will be quaint to an analysis of factors affecting development to lead away to sustainable development through designing development plans at the macro-level (Piri et al., 2020). The review of world economies suggests an acceptable economic performance in some areas where more individuals are engaged in entrepreneurial activities and have higher economic growth in their respective countries (Chaston, 2017).

The concept of sustainable development is proposed in fields of overconsumption, habitat destruction, and the rise in the global population. Sustainable development has been defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Wackernagel & Yount, 2000). Rural areas play an essential role in national development; the country's sustainable development depends on the sustainability of the rural system as a subsystem of that country. In various dimensions, the sustainability of rural areas can play an influential role in regional and national development. If an interruption happens in rural spaces' development, its effects and consequences affect rural and urban areas. Finally, the whole land will be affected (Tasaki et al., 2015).

Ignoring each region's talents, abilities, and comparative advantages in economic activities has caused investments not to be commensurate with the potential facilities. Despite the national development programs implementation, the underdevelopment trend of areas has continued (Khodapanah et al., 2021).

Nowadays sustainable development approach, as a framework for analyzing the sustainability of human settlements' Systems in general and rural settlements, in particular, is highly valued. Sustainable rural development seeks to reduce pressures and establish economic, social, and environmental systems while considering the tremendous changes in rural spaces. In many countries, rural development tries to balance the urban community and sustainable development (Pašakarnis & Maliene, 2010).

Sustainable development is a process that enhances peoples' needs by prioritizing them, activating them, investing in infrastructure creation and social services' provision regarding the local capacities and the neglected justices, and providing security and health (Ruth, 2001). In developed countries, industrialization arises development, and the development of industries has been accompanied by economic growth and a raising in living standards. This increasing growth is due to proper economic structure, comparative advantage in different activities, and efficient regional planning and policy-making (Alia et al., 2019).

Rural sustainable development is a complex and multi-dimensional phenomenon. It is impossible to preserve the future of a village without knowing the different aspects of rural living. Rural sustainability is the ultimate goal of sustainable rural development. One-sidedness or neglect of any component of sustainable rural development may result in irreparable damage to the future of a village. The results show that culture, environment, security, education, participation, and human variables should be considered to achieve sustainable rural development (Alwani & Savari, 2022).

Development, production, dissemination, and exploitation are necessary for designing sound plans for the following three main questions. First, how is the existing situation? (Ontology); second, what the ideal situation should be like? (Objectivity); third, what are the scientific and operational strategies for ideal situation attainments? (Possibilities) (Mohammadpour, 2013). The present research is an ontological one that aims to identify factors affecting the development of stone industry businesses in rural areas with an approach to sustainable development.

Overviews of rural development indicate significant switches in thinking that have occurred over the past half-century (Jahan al-Dini et al., 2022). Today, development planners argue that the most current response to the challenges in rural areas, especially economic challenges, is the development of strategies for encouraging entrepreneurship in villagers and starting businesses in these areas. The basic idea was that "entrepreneurial activities will provide jobs and export their goods and services outside the community" (Heriot, 2002). Thus, developing rural communities requires sufficient support, but most of these communities cannot meet their needs. These needs include technical knowledge, information, and human and financial resources that can promote entrepreneurial activity in rural communities (Allen, 2003).

Entrepreneurs' products and services drive job creation, development, and economic growth in developed and developing communities (Andreas et al., 2020). In recent decades, entrepreneurship has been emphasized by scholars and policymakers as a potent mechanism for economic and community development through creat-

ing and pursuing innovative opportunities to produce value for society (Roundy & Dutch, 2018).

Rural entrepreneurship is the attempt to create value by recognizing business opportunities, the management of appropriate risk-taking, and using the communication and management skills to mobilize human, financial, and material resources necessary to bring a project to fruition (Saxena, 2012). Scholars proposed the basic principles of rural entrepreneurship as the optimum utilization of local resources in an entrepreneurial venture by the rural population, increasing employment opportunities, providing alternative occupations to reduce discrimination, and activating the system to provide money, material, machinery, management, and market to the rural population (Patel & Chavda, 2013). Rural epreneurship generates wealth, employment, and higher income, improves life quality, and helps local people to engage in the economy (Farahani & Haj Hosseini, 2013).

Wortman (1990) defines the term rural entrepreneurship as "the creation of a new organization that introduces a new product, serves or creates a new market, or utilizes a new technology in a rural environment" (Stathopoulou, 2004).

Rural entrepreneurship and entrepreneurs are not different from other kinds of entrepreneurship. Rural entrepreneurs have the same characteristics as other entrepreneurs. They should have a risk-taking ability because of the high-risk activities, lack of facilities, and weakness in the management of rural areas (Salarzehi et al., 2016).

Rural entrepreneurship has played a critical role in rural development, accelerating economic growth and social empowerment. Groundbreaking discoveries in the 20th century are entrepreneurial initiatives. Many countries got the multi-advantages from entrepreneurship. The result of rural entrepreneurship is a significant contribution to the revenue of the state. Entrepreneurs not only create new businesses but also increase employment opportunities that lead to the creation of sources of discoveries, new technologies, and innovations (Iskandarin, 2020).

The success of rural entrepreneurial development activities relies on government policies and strategies. Petrin (1994) believes that entrepreneurial orientation to rural development, contrary to other entrepreneurship based on bringing in human capital and investment from outside, is based on stimulating local entrepreneurial talent and subsequent growth of indigenous companies. This would also create jobs and add economic value to a region and, at the same time, keep scarce resources within the community. It is necessary to increase the supply of entrepreneurs to accelerate economic development in rural areas. The results show that development programs are barely connected to entrepreneurship. Besides, a rural entrepreneurship strategy should accompany the required entrepreneurship. Rural populations have increasingly looked to entrepreneurship development and entrepreneurship as optimal resource utilization in case they are not confronted with economic, social, cultural, and personal barriers. Otherwise, it leads to poverty, underdevelopment, inequality, unemployment, and outmigration (Rosario, 2020). The history of industry and industrialization dates back no more than three centuries. However, they had a profound impact on man and his environment. One of the main sectors in economic growth and development is industrial businesses. The industry paves the way for itself and other economic sub-sectors, including agriculture, education, healthcare, transportation, energy, telecommunications, construction, culture, and informing, which makes it almost impossible to run the forgoing sectors without the help of the industry (Shahraki, 2013).

One of the basic needs of every country to achieve development is to benefit from the effective industry sector by using modern technology. Thus, regardless of the region's industry, development is an inevitable process (Mohammadi et al., 2012). Today, the industry sector, in the economy, compared to other economic sectors, has become a leading sector. Industry growth leads to an increase in the power of factors of production based on an ever-increasing development of science and technology. Through the industrialization of the country, in addition to the material needs of the community can be better provided, the industry workforce can benefit from better social security and rights (Bakhtiyari & Dehghanizade, 2013). The research summary related to this study is presented in Table 1.

3. Methodology

This research is applied and conducted using the descriptive survey method. A mixed-methods analysis, in two qualitative and quantitative methods, was used for this study.

The library research and expert interviews were used in the qualitative part of the research. Each of these interviews lasts between 45 to 60 minutes. Data were recorded through field notes and transcripts. Content analysis was used to analyze the content of the interview. Content analysis is a technique widely used to analyze content. This technique was used in this research to identify and

rank factors affecting the development of rural businesses with a sustainable development approach in the stone industry in villages of Iran.

Table 1. Summary of external and internal research related to the research topic

Authors	Research topic	Findings
Jahan al-Dini et al., 2022	Explaining the Strategic Management Model in Sustainable Rural Development	This research is carried out in rural areas of Sirik township, and the results suggest that strategic management has a decisive role in sustainable rural development. Moreover, physical, social, environmental, and economic factors play a role in the sustainable rural development of this city.
Julayi et al., 2022	Explaining the Effective Structures and Challenges of Developing Rural Entrepreneurship	This research is carried out in Noor Abad rural districts, Lorestan province, using quantitative methods. The results showed that this village has the potential and capabilities of entrepreneurship, but the level of entrepreneurship development in it is low; moreover, among the existing obstacles, individual factors have the highest impact on the development of rural entrepreneurship in the studied area.
Piri et al., 2019	Investigating Factors Affecting Economic Development in Ilam Province	The research method is qualitative. Data were gathered through interviews, and elites were selected as the sample through a targeted sampling method. The results show that the main economic factors affecting the development of Ilam province are environmental problems, extreme poverty, lack of adequate private sector, and an economic infrastructure gap.
Sharifiniya, 2019	Analyzing the Causes of Barriers to Local People's Participation in Rural Development	They found that the true mean of economic-financial, personal individual and personality, institutional, organizational, and informant barriers is moderately higher.
Feizpour & Samanpour, 2017	Industrial Development and Deprivation in Iran's Region	The results show that the industrialization of geographical regions can significantly decrease the number of individuals and households covered by IKRF in the mentioned era. Thus, industrial development in Iran's areas has provided the condition for reducing deprivation.
Zali & Sajadi asl, 2017	Identification of the Main Affective Factors on Regional Underdevelopment (Case Study: Kohgiluyeh and Boyer-Ahmad Province)	The results of the finding showed that factors affecting the development of this province include ethnic and tribal management, ongoing appointment and dismissal of managers, managers' lack of correct understanding of the current situation, managers' lack of attention to citizen demands, micromanagement, narrow-minded managers, improper budget allocation, lack of facilities for attracting investors, contrast between Illyrian culture and codified culture, ethnic conflict, and low literacy rate.
Khodadad et al., 2016	Evaluating the Strengths and Weaknesses of the Development of Golestan Province	Researchers presented a model through SWOT analysis strategies in proportion to the development and considering the local situation of the city. They indicate that Golestan's officials and executives can play a decisive role in this city's development. In this research, the development of this city was discussed from a general perspective, and the industry sector was discussed in a limited way.
Mohammadi et al., 2017	Classification of Development Degree of Sub-districts in Golestan Province	This research was conducted using the TOPSIS technique and the A.N.P. model. The finding showed that about 50 percent of sub-districts in Golestan province were deprived of education, communication, healthcare, and employment, respectively, in terms of indicators. There was also a big difference between their development levels. As a result, all indicators of the sub-districts in Golestan province are considered underdeveloped.
Salarzahi & Shahbazi, 2017	Recognition and Prioritization of Effective Factors on Excellence of S.M.E.s with SWOT-AHP Approach	In this research, data were collected through interviews and questionnaires. And A.H.P. techniques were used. The results showed that high technical power and high V.A.T. are the main internal factors affecting the organizational excellence of S.M.E.s.
Shahraki, 2013	Evaluation and Ranking of Barriers to Industry Development and Providing Development Strategies in Sistan and Baluchestan	The statistical population of the present research consists of all the planners and managers of industrial organizations, the Ministry of Industry and Mines Department Office of Strategic Planning, and the Bank of Industry and Mine in Sistan and Baluchestan. Then, using simple sampling (197 people) were selected. Friedman and Chi-squared test and SPSS were used to analyze the collected data. In this regard, the barriers are put into four financial and currency credit, technology, specialist human resources, and the supply of raw materials groups.
Bayat & Hatami, 2013	Investigating Factors Affecting Underdevelopment of Makran Coast	The results of this research show that the geopolitics, overseas, geographical, security, and political factors are affecting the underdevelopment of the Makran coast.
Liu et al., 2022	The Study of Sustainable Rural Development in Taiwan	Four (government-related departments, public involvement, infrastructure, and educational resources) are classified into the cause group. And five (health and welfare, living conditions, rural culture, working environment, and industrial activation) are classified into the effect group. Accordingly, recommendations for sustainable rural development can be proposed.

Table 1. Summary of external and internal research related to the research topic

Authors	Research topic	Findings
Vitalisova et al., 2021	Evaluation of Stakeholders' Participants in Local Governance	In this research, the role of stakeholders in local participative governing was evaluated. It was suggested that Slovakia's local level of governing has always been emphasized. Furthermore, strategies for the development of participation of the local community were also presented.
Del Monte et al., 2020	Regional Entrepreneurship and Innovation: Historical Roots and the Impact on the Growth of Regions	Historical and scientific knowledge, proxied by the presence of universities, past creativity, and the cultural environment proxied by scientists and inventors in the area, positively affects long-term regional entrepreneurship and innovation that foster economic growth.
Fritsch & Wyrwich, 2017	The Effect of Entrepreneurship on Economic Development	New business formation and self-employment persist over relatively long periods, despite the drastic economic, social, and political changes. There is a significant effect of economic, social, and political changes on start-up activities.
Kimura & Silva Chang, 2016	Industrialization and Poverty Reduction in East Asia	The scholars showed how developing East Asian countries could achieve rapid economic growth and poverty reduction. However, the condition for their economic development is smooth labor movements from the rural to urban sectors, especially to industry.
Khan, 2011	Factors Affecting the Law in Entrepreneurial Activity	Intellectual property rights can have a long-term effect on economic growth. Thus, the main drivers of entrepreneurship in the U.S.A. and Europe were the respect for property right.
Tran & Duan, 2010	The Effects of Industrialization on Economic and Employment Structure	This paper presents the effects of industrialization on the economic and employment structure during the economic transition from 1990 to 2009 in Vietnam. The results showed that to achieve the goal of social stability, reduce poverty and mitigate income inequality; the industrialization strategy must aim to create job opportunities and improve earnings for the redundant workers and the poor, especially the rural workers.
Florida, 2004	The Creative Class and Economic Development	Knowledge-based social and cultural environments and their creativity led to new ideas. What attracts creative people to these environments are cultural, social, and knowledge-based structures and cultural supports.

The field survey questionnaire was used to collect data in the quantitate part of the research. Experts in this research include entrepreneurship-related managers and officials, scholars and professors of rural development and planning, management and entrepreneurship, related researchers, entrepreneurs of the stone industry, and owners of rural businesses. 26 people were selected as population sample through a purposeful method of snowball sampling. A questionnaire was used to collect data in the qualitative part of this research. The questionnaire was prepared through a pairwise comparison approach, and experts identified the principal factors and indicators by comparing them.

The analytic hierarchy process (A.H.P.) technique and Expert Choice software, a decision-making software that uses the mathematics of A.H.P., were used to weigh and rank the factors. The pairwise comparison matrices of individuals are obtained then different matrices are combined and converted to a singular matrix, obtained from the geometric mean of matrices elements of individuals, through Expert Choice software.

The inconsistency of the pairwise comparison matrices was evaluated to confirm the validity and reliability of the results. In multi-criteria decision-making (MCDM) methods, the validity and reliability of measurements are estimated through consistency. The pairwise comparison matrix technique should then be at an acceptable consistency level. Thus, the inconsistency ratio of matrices is calculated and should not be greater than 0.1. According to previous studies, if the population is more than 15, there will be no need to calculate the inconsistency ratio, and they will be compatible (Fadaei Vahed & Mayli, 2014). Moreover, the questionnaire was reviewed by experts to confirm its validity.

4. Findings

The findings of this study are divided into three sectors of demographics, identifying factors affecting rural businesses and the Analytic Hierarchy Process (A.H.P.).

Demographics

The demographic data of the research population are given in Table 2.

Table 2. The demographic data of the research population

Percentage	Frequency	Variable group	Variable	Percentage	Frequency	Sub-factor	Factor
0.30	8	Bachelor	Education	0.92	24	Male	Gender
0.57	15	Masters		0.08	2	Female	
0.12	3	PhD					
0.100	26	Total		0.100	26	Total	
0.31	8	10-15 years	Work experience	0.20	5	30-40 years	Age
0.43	11	15-20 years		0.46	12	40-50 years	
0.27	7	Above 20 years		0.34	9	Above 50 years	
0.100	26	Total		0.100	26	Total	

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Identifying factors affecting rural businesses

Several factors affect rural businesses. The impacts of some factors were very high, and others were low or moderate. The main factors were identified using experts' opinions and the existing research. In this research, first, the main factors were obtained through interviews with experts. Then, these factors were discussed with experts in rural entrepreneurship and the stone industry. Eventually, five main factors (including strategic, ecosystem management, cultural, social, and financial), and 20 sub-factors were identified as factors affecting sustainable development of rural businesses in the stone industry.

Prioritizing factors affecting sustainable development of rural businesses

In this step, the pairwise comparison questionnaire was used to elicit the expert's opinions regarding the importance of the said factors. This questionnaire includes a comparison between five main -factors and sub-factors (Figure 1). Expert Choice software was used to analyze the data. The pairwise comparison matrices of individuals are obtained then different matrices are combined and converted to a singular matrix, obtained from the geometric mean of matrices elements of individuals, through Expert Choice software. In general, this research process entails three basic steps:

- Step 1: Building A.H.P. hierarchical tree and calculating the main factors' relative weight

- Step 2: Calculating weights of f type II (sub-factors)

- Step 3: Calculating the final weights of all sub-factors

A.H.P. hierarchical tree of the research topic and the relationship between main factors and sub-factors are presented in Figure 1.

Analyzing the main factors' weight shows that the financial factor is in the first rank, followed by ecosystem management, cultural, social, and strategic factors, placed in the following ranks. The calculation results are presented in the Table 3.

Furthermore, a pairwise comparison matrix's inconsistency ratio (I.R) should be calculated to trust the ranking of calculated factors. Therefore, the process of calculating the inconsistency ratio is as follows:

- Step 1: Calculation of weighted sum vectors (W.S.V.):

$$WSV = D \times W$$

Initially, multiply pairwise comparisons D (Table 2) to relative weight columnar vector(W):

$$\text{WSV}= \begin{bmatrix} 1 & 4.721 & 1.053 & 1.637 & 0.805 \\ 0.212 & 1 & 0.682 & 1.605 & 0.308 \\ 0.950 & 1.467 & 1 & 0.848 & 0.299 \\ 0.611 & 0.623 & 1.179 & 1 & 0.227 \\ 1.242 & 3.241 & 3.336 & 4.402 & 1 \end{bmatrix} * \begin{bmatrix} 0.263 \\ 0.104 \\ 0.142 \\ 0.112 \\ 0.379 \end{bmatrix} = \begin{bmatrix} 1.392 \\ 0.553 \\ 0.753 \\ 0.591 \\ 2.009 \end{bmatrix}$$

- Step 2: Calculation of consistency vector (CV): Divide elements of the weighted sum vector into relative preference vector. The resulting vector is called the consistency vector.

$$\text{CV}= \begin{bmatrix} 1.392 \\ 0.553 \\ 0.753 \\ 0.591 \\ 2.009 \end{bmatrix} \div \begin{bmatrix} 0.263 \\ 0.104 \\ 0.142 \\ 0.112 \\ 0.379 \end{bmatrix} = \begin{bmatrix} 5.293 \\ 5.318 \\ 5.301 \\ 5.276 \\ 5.302 \end{bmatrix}$$

Step 3: Calculation of λmax:

$$\lambda_{\max} = \frac{5.293 + 5.318 + 5.301 + 5.276 + 5.302}{5} = 5.298$$

Step 4: Calculation of inconsistency index (II): inconsistency index is calculated as follows:

$$II=\frac{5.298-5}{5}=0.060$$

Step 5: Calculation of consistency ratio (I.R.): I.R. is calculated as follows:

$$IR=\frac{II}{IRI}=\frac{0.060}{1.12}=0.05\leq 0.1$$

The random inconsistency index (IRI) is extracted from Table 4. The IRI for the matrix dimension of the null space of 5 equals 1.12. The matrix inconsistency ratio is equal to 0.05, and since it is lower than 0.1, it denotes consistency in comparisons.

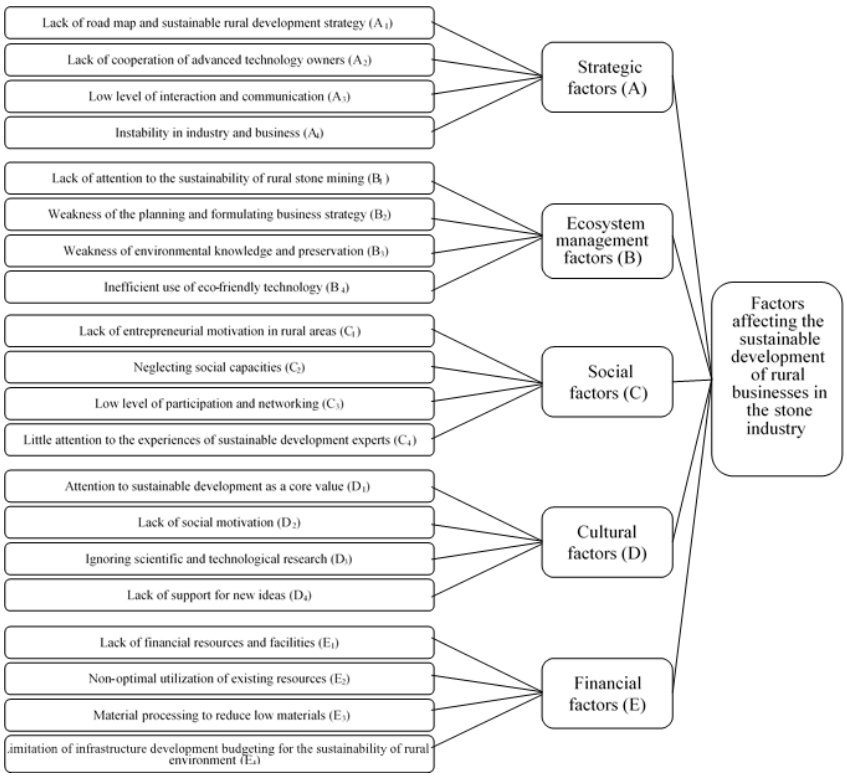

Figure 1. A.H.P. hierarchical tree of factors affecting rural businesses development in the stone industry

Table 3. Ranking factors affecting rural businesses development in the stone industry

Symbol	Weight (relative importance factor)	Factor (factors affecting the main)	Rank (priority)
A	0.263	Ecosystem management factors	2
B	0.104	Strategic factors	5
C	0.142	Cultural factors	3
D	0.112	Social factors	4
E	0.379	Financial factors	1

Table 4. Random index (I.RI)

N	1	2	3	4	5	6	7	8	9	10
I.R.I.	0	0	0.58	0.9	112	124	1.32	1.41	1.45	1.51

Calculation of relative weight of sub-factors

In this section, raking, weighting, and comparison of all barriers (sub-factors) affecting rural businesses in the stone industry are assessed in each subgroup. Based on the findings, the weight and final rank of the sub-factors are shown in Table 5.

5. Discussion

Rural development project implementation has presented a significant challenge at the national and regional levels. Therefore, rural development planners should devote considerable attention to the sustainability aspects of development projects in rural areas. In sustainable rural development paying attention to social, economic, cultural, political, and environmental factors is of the utmost importance. The utilization of village resources like mines highlights the importance of this matter. In the meantime, modern rural management with an approach to village resources conversation will take a decisive role in any organization of sustainable rural development.

This study aimed to identify factors affecting the development of stone industry businesses in rural areas with an approach to sustainable development. The library and internet research, expert interviews, and field survey questionnaire were used to collect data. A mixed-methods research, in qualitative and quantitative phases, was used for this study.

The statistical population of the present research consists of entrepreneurship-related managers and officials, scholars and professors of rural development and planning, researchers with related fields of this study, entrepreneurs of the stone industry, and owners of rural businesses. 26 questionnaires were collected based on targeted sampling. The analytic hierarchy process technique was used using Expert Choice software to analyze and rank the factors.

The research results indicated that factors affecting the development of stone industry businesses in rural areas with a sustainable development approach include 20 factors that can be categorized into five key categories: strategic factors, factors affecting ecosystem management, and cultural, social, and financial factors.

Table 5. Ranking sub-factors affecting rural businesses in the stone industry

Main factors	Sub-factors	Factors weight (Relative to the group)	Factors weight (Relative to all factors)	Rank (priority)
Strategic factors (A)	Lack of road map and sustainable rural development strategy (A1)	0.402	0.105	3
	Lack of cooperation of advanced technology owners (A2)	0.033	0.007	20
	Low level of interaction and communication (A3)	0.105	0.028	13
	Instability in industry and business (A4)	0.111	0.029	12
Ecosystem management factors (B)	Lack of attention to the sustainability of rural stone mining (B1)	0.260	0.027	14
	Weakness of the planning and formulating business strategy (B2)	0.064	0.041	8
	Weakness of environmental knowledge and preservation (B3)	0.283	0.030	11
	Inefficient use of eco-friendly technology (B4)	0.381	0.100	4
Social factors (C)	Lack of entrepreneurial motivation in rural areas (C1)	0.186	0.026	15
	Neglecting social capacities (C2)	0.124	0.018	18
	Low level of participation and networking (C3)	0.504	0.072	6
	Little attention to the experiences of sustainable development experts (C4)	0.185	0.025	16
Cultural factors (D)	Attention to sustainable development as a core value (D1)	0.095	0.011	19
	Lack of social motivation (D2)	0.314	0.035	9
	Ignoring scientific and technological research (D3)	0.212	0.024	17
	Lack of support for new ideas (D4)	0.380	0.043	7
Financial factors (E)	Lack of financial resources and facilities (E1)	0.281	0.106	2
	Non-optimal utilization of existing resources (E2)	0.090	0.034	10
	Material processing to reduce low materials (E3)	0.206	0.078	5
	Limitation of infrastructure development budgeting for the sustainability of rural environment (E4)	0.423	0.160	1

The results showed that in a general category, financial factors with a weight of 0.379 are in the first rank, and then ecosystem management factors with a weight of 0.263, cultural factors with a weight of 0.142, social factors with a weight of 0.112, and strategic factors with a weight of 0.104. are placed in the next rank. Moreover, among the 20 identified factors affecting the development of stone industry businesses in rural areas with a sustainable development approach, limitation of infrastructure development budgeting for the sustainability of the rural environment, lack of financial resources and facilities, lack of road map and sustainable rural development strategy inefficient use of eco-friendly technology, and material processing to reduce low materials have higher to lower rank respectively.

This research's findings align with Liu et al. (2022) study on sustainable rural development in Taiwan. Also, Vitalisova et al. (2021) concluded that strategic, public participation, infrastructure, and educational resources affect sustainable rural development, and participation can be regarded as key in the strategic development of rural areas. Moreover, Del Monte et al. (2020) claimed that knowledge, scientific creativity, and cultural environment affect long-term entrepreneurial behavior. The result of this study emphasizes the importance of the knowledge and cultural factors affecting entrepreneurship development.

Additionally, this study's results agreed with domestic scholars' findings. Jahan al-Dini et al. (2022) conducted a study explaining the strategic management model in sustainable rural development. Julayi et al. (2022) explained the effective structures and challenges of developing rural entrepreneurship, Zivdar & Sanaeepour (2022), Dimensions and Strategies of a Sustainable Rural Entrepreneurship Ecosystem, and Sharifiniya (2019) analyzed the causes of barriers to local people's participation in rural development. Furthermore, Piri et al. (2019) studied the investigating factors affecting the economics of development in Ilam province. Feizpour & Samanpour (2017) studied the industrial development and deprivation in Iran's region. Zali & Sajadi asl (2017) identified the main factors affecting regional underdevelopment in Kohgiluyeh and Boyer-Ahmad Province. In addition, Khodadad et al. (2016) evaluated the strengths and weaknesses of the development of Golestan province, Mohammadi et al. (2017) examined the classification of the development degree of sub-districts in Golestan province, and Shahraki (2013) evaluated and ranked barriers to industry development and providing development strategies in Sistan and Baluchestan. In conclusion, the related suggestion to the obtained results are as follows:

• Changing perception and attitudes towards sustainable development in rural areas with an emphasis on village resources and conservation of the environment.

• Supporting investments in rural areas, providing tax incentives and welfare, creating conditions for a joint venture in rural industries, offering a guaranteed return investment to economic activists, and encouraging investments in rural areas.

• Establishing rural business counseling offices and offering counseling and services in different fields (technical, marketing, financial, human and managerial resources, etc.) to entrepreneurs and owners of industries in rural areas.

• Strengthening rural residents' participation and obtaining the opinion of rural institutions such as assistant councils, village managers, and local people in different sectors of sustainable rural development.

• Improving communication among owners of rural businesses and between legal institutions and creating networks and clusters in different fields of business to benefit from shared capacities.

• Paying attention to human capital in rural areas, using human resources knowledge, cooperation with knowledge enterprises in improving the productivity in the stone industry, minimizing waste using new methods, and enhancing the technology of beneficiaries of this industry.

• Paying more attention to the industry stakeholders in rural areas, enhancing the business environment, imposing laws to improve entrepreneurial activity, and improving the start-up business process.

• Enhancing the situation of the entrepreneurial ecosystem in rural businesses and drafting policy and planning to conserve it.

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Conflict of Interest

The authors declared no conflicts of interest.

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