



## Classification of Challenges of Home Businesses in Rural Areas of Sari County using an Integrated Technique of DEMATEL-ISM

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### Abstract

**Purpose-** In many development programs in the third world, the expansion of small home businesses in rural areas has been mentioned as an efficient solution to advance the rural development process and improve the living conditions and income of rural residents. Therefore, the aim of this study is to prioritize the challenges of home business in rural areas of Sari County.

**Design/methodology/approach-** The present study is an applied and descriptive-analytical, for which the method of documentary and survey (questionnaire) were used. The statistical population of the research consists of experts of the General Directorate of Cultural Heritage, Handicrafts and Tourism of Mazandaran Province and the Industry, Mine and Trade organization and the Agricultural Jihad organization in Sari County. Fifteen people were selected as a statistical sample. Six factors of economic and financial, infrastructure, education and innovation, insurance and law, marketing and skills were considered as home business challenges in rural areas of Sari County. In order to analyze the data, the combined DEMATEL method and interpretive structural modeling were used.

**Findings-** The results showed that education and innovation, insurance and law and skills barriers are at the highest level of the model and economic and financial, marketing and infrastructure barriers are at the lowest level of the model. According to MICMAC analysis, economic and financial and marketing barriers with strong impact and weak dependence were identified as the most important challenges of home business in rural areas of Sari County.

**Research limitations/implications -** The absence of a comprehensive database for home businesses, especially in rural areas, poor cooperation of experts in completing the questionnaires is the limitation of this study. Creating and organizing a database of home-based businesses are suggested, especially in rural areas that have been less studied and arranging the study platform for other research in this field.

**Practical implications-** Supporting home-based businesses based on local and indigenous capacities and knowledge is a solution that not only promotes production and creates jobs for the villagers, but also it has positive social consequences.

**Originality/Value-** The results of this research can be a guiding tool in the executive organizations in charge of issuing home business licenses (Agricultural Jihad Organization, Industry, Mining and Trade Organization and Cultural Heritage, Handicrafts and Tourism Organization) and institutions supporting the vulnerable and poor groups (Imam Khomeini Relief Foundation and the Welfare Organization). It could also help the managers implement the prosperity of home businesses as effectively as possible.

**Keywords-** Business, Home business, Sari County, DEMATEL-ISM.

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## 1. Introduction

In recent years, rural businesses have been a transition from agricultural-based business to other enterprises (Sharifzadeh et al., 2014). On the one hand, shifted social values, such as people's desire for more freedom and independent work as well as having more time with the family, and on the other hand, raising the standard of living of households who increasingly demand more income sources are two main reasons to establish a home-based business (Agahi, et al., 2012). Home-based business is a type of business that may not necessarily involve all family members, so only one or more family members are engaged in economic activity (Izadi et al., 2016).

The nature and characteristics of rural communities and rural development experiences in different countries over the past decades confirm the deficit in the villagers' income. Accordingly, the social, cultural and political consequences cannot be addressed merely by transferring technical knowledge and technologies, and tangible capitals to rural areas. Therefore, a more important element that should be considered by policy makers and rural development practitioners is the improvement of small rural businesses, especially home business and providing the necessary bases for their growth and development (Omidi & Chaharsoghi Amin, 2018).

Rural small businesses with an emphasis on home and households have been able to create the conditions for starting ventures and, hence, sustainability in rural communities (Vakilolroaya et al., 2018). Having a very close relationship between high unemployment, widespread poverty and unequal income distribution, establishing productive employment for underprivileged people are the main mechanisms for reducing poverty and inequality in less developed areas. These rural areas have a special capacity and potential for agriculture, tourism and handicrafts (Rahmani Fazli et al., 2019). The law of home businesses has been regulated in 150 countries of the world (Taghibaygi et al., 2014). It is often thought that this type of business is prevalent in poor and less developed countries, while statistics suggest that 67% of small businesses in Australia, about half of small businesses in the UK, and 52% of businesses of the private sector in the United States are home-based businesses (Zinati Fakhrabad & Bakha, 2016). Starting and developing any business, regardless of the geographical location

of its formation, is dealing with many challenges. Most rural areas are sparsely populated, or may have limited access to markets, capitals, skilled labor, and infrastructure due to their remoteness from large population centers. In addition to these, the local attitude and culture may not be in consistence with entrepreneurial activities (Sharifzadeh et al., 2014). Although this type of enterprise has a long history in Iran and can be considered as a suitable approach in the process of optimizing labor productivity and increasing employment opportunities for rural women, it comes with impediments (Moradi Nejad & Vahedi, 2019). Most home businesses in Iran are conducted informally and are traditionally managed. They do not have a specific plan for growth and development, which has led to lack of competitive advantage of these businesses for competing in the regional and national markets and hinder their growth (Modarresi et al., 2018).

According to Iranian Population and Housing Census of 2016, there are 411 villages in Sari County with a population of 152184 people and 50288 households. In other words, about 30% of the total population of Sari County live in villages. About 10.9% of this population is unemployed, which is close to the total rate of the province unemployment (11.1% of the rural population of Mazandaran Province in 2016 was unemployed).

Therefore, there is no option but creating employment and reducing unemployment and preventing the migration of villagers in order to maintain the rural population. The development of home businesses as a way to achieve this goal depends on providing a set of factors and challenges and obstacles. Therefore, the prosperity of home business is necessary for the economic and social empowerment of the villagers in the region. For this purpose, the aim of this study is to use the DEMATEL-ISM combination technique to classify the challenges of home business in rural areas of Sari County. Based on the level of challenges, the study suggests practical solutions to reduce and eliminate these barriers in order to provide empowerment, job creation, entrepreneurship, income generation, and rural development.

## 2. Research Theoretical Literature

Rural economy is a one of the most important components in the countries' economy from a systemic point of view. Considering the organic relationship between the rural system and the territorial system, it can be said that in terms of

geographical realities, development and progress in economic dimensions depend on the growth and development of rural economy (Afrakhteh et al., 2018). Economy provides jobs and income and is vital for health, food, clothing, and housing. It also satisfies the needs of higher levels such as education, health and recreation (Zangisheh et al., 2018). The rural economic sub-system is not able to play its complementary role in the national and territorial system; the effects of rural issues will eventually be spread in urban areas and the national and territorial system (Zarei and Estelaji, 2017). Sustainable development is a general concept related to various aspects of rural life and sustainable rural development is one of the main aims of public policy (Tavakoli Kajani et al., 2019). In the economic component, lack of employment, deprivation, environmental poverty and lack of optimal use of capabilities have created many challenges for sustainable development (Oghabaei et al., 2019). One of the most important approaches to sustainable development is the diversification of economic activities. The importance of diversification for non-agricultural and multi-sectoral activities in rural areas has been highlighted (Alavizadeh & Mirlotfi, 2013). It can increase flexibility and reduce vulnerability to external shocks (droughts and market problems) by reducing homogeneity in the rural economy. The most important approaches to diversify the economic activities of rural areas can be: the expansion of rural industries (conversion and complementary), the development of home business and the development of tourism and related activities (Sojasi Ghidari et al., 2018). Therefore, replying to globalized economy, rural planners have considered the development of small, regional business associations and local entrepreneurs (Arayesh et al., 2019). Today, creation of small and fast-growing economic enterprises in most economic systems of the world is accepted as a necessity (Gorji Mahlabani & Motevali Alamuti, 2018). The importance of small and medium enterprises in economic growth has made them the main elements in recent policies (Ale Ebrahim et al., 2010). Thus, home business is now a significant part of small businesses and consists the main part of initiated enterprises (Mason & Carter, 2011). Theories of rural development started from the perspective of economic growth and followed by the basic needs of villagers and poverty alleviation policies. Then, the concepts of sustainability, integrated rural development and human

development of villages were created with an emphasis on endogenous, participatory, and creative approaches (Orooji et al., 2018). In the new model of sustainable rural development, according to the dynamism and the identified requirements, rural development should come from inside of the communities and in this regard, it needs to use available resources and inputs (Azkia & Dibaji Forooshani, 2016). In many development programs in the third world, the expansion of small home businesses in rural areas has been mentioned as an efficient solution to advance the rural development process and improve the living conditions and income of rural residents (Yaghoubi Farani & Jalilian, 2015). Although the village and rural life are associated with agricultural activities, and agriculture plays a major role in rural development activities (Fallah Tabar, 2018), now many policymakers promote non-farming economic activities, which are known as the engine of rural growth (Mohammadi & Rostami, 2019). Diversification of economic activities in villages in addition to strengthening incomes, will facilitate the process of rural development. This will enrich economic sustainability (Taleshi & Shabnama, 2017). In this regard, the approach of diversification of economic activities is one of the approaches considered in the integrated development of rural communities (Motiee Langroodi et al., 2019). One of the main strategies for job creation and applying the approach of diversification of economic activities in rural areas is to foster non-agricultural industries and businesses, especially home-based businesses. These types of businesses are often part of the hidden and informal sector of the economy, yet they have a significant role in the wealth and economic growth of a society and improvement of social capital (Jaliliyan & Saadi, 2016). In the theory of marginal economies, Penrose believes that conditions of prosperity, creating growth opportunities for small businesses is more feasible than the development of large businesses (Rahmanian Koushki, 2017). More than 50% of the income of rural agricultural communities in developing countries is generated from non-farm resources (Gautam & Andersen, 2016). In the Oxford dictionary of Business means buying, selling and trading. The word is rooted in being busy and entertaining, and refers to activities that produce and purchase goods and services in order to sell them for profit (Taghibaygi et al., 2014). Home business is an enterprise that is done by family members in the

home environment that does not disturb the neighbors. The production is conducted within the home environment, whereas its supply, sale and marketing are transferred outside the residential environment (Naderi Mehdei & Vahdat Moadab, 2018). Walker and Webster have categorized different types of home business based on motivation into ventures, comfortable, contented and ambitious home-based businesses (Najafi & Safa, 2014). Home-based business owners have a variety of motivations for working from home, such as minimizing costs, comfort at workplace, and not needing alternative places (Newbery & Bosworth 2010). Regardless of the type of home business, some features are common about it such as the house is as the main place of business; the ownership or management of the business is done by one or more family members. Moreover, the production volume is in consistence to the conditions and space of the residential unit, and it is not creating environmental, noise and visual pollution. Home business in rural areas also achieves the goals of a resilient economy for employment and sustainable development (Rahmanian Koushki, 2017). The expansion of home-based businesses in four dimensions transforms the society. In the social dimension, it increases employment. They tend to focus on technology rather than capital. In the economic dimension, it causes the distribution of income in the society, and thus it prevents the emergence of many social conflicts. In the political dimension, it promotes the proper distribution of opportunities among the people, the improvement of democracy, and prevents the dominance of a certain group. In the personal dimension, a more suitable space will be provided for implementing the creativity of the homo economicus (Khosravipoor & Dehghanpoor, 2015). Home-based businesses reduce local economic outflows to other areas, so local people work in their own area, promote self-sufficiency and facilitating sustainable economic growth. In this manner, a potential impetus is created to promote businesses that create local or local employment opportunities (Saadi & Heidari, 2013). According to the theory of human development in the future the work will not serve others. It is an activity that people has organized for himself, under their management and control and in order to meet the needs (Mirakzadeh et al., 2017). According to Horgan's postulation, home-based business increases employment and reduce household costs, and ultimately is a means to regional economic

growth (Yaghoubi Farani et al., 2014). Despite their economic importance, these kinds of businesses are not well recognized (Breen, 2010). The followings are the cases to be said about the importance of home business:

1. Home-based businesses have a strong potential to develop. The average annual growth of home business is 16% and the average growth of small businesses is 11%;
2. Home business provides a great opportunity to create an entrepreneurial strategy with low risk and cost;
3. Most of them have entrepreneurial tendency (Mirlotfi et al., 2014). Entrepreneurs are the engines of economic growth (Faggio and Silva, 2014). Business scholars believe that three factors have led home business to grow in recent years:
  - a. The emergence and infusion of new technology, ICT in particular, has led to the prosperity and development of remote and Internet businesses.
  - b. Changing the industrial structure and shrinking organizations and outsourcing increases the job insecurity in people and hence more efforts for self-employment. Home business can satisfy the outsourcing need.
  - c. Shifted social values, on the one hand, such as people's desire for more freedom and independent work as well as more presence with the family, and raising the standard of living on the other hand, among households who increasingly demand more income sources are two sides of reasons to establish a home-based business (Naderi and Amiri, 2018).

Due to the significance of home business, studies have been conducted about it some of which are mentioned. Findings of study (Amiri et al. 2019) using a systematic approach in the villages of Kermanshah Province showed that home business challenges are affected by various causal factors (marketing, management, legal, support and branding and identity building), interventional factors (resources Financing, government and private sector support, and understanding of decision makers) and contextual factors (socio-cultural and economic infrastructure). Moradi Nejad and Vahedi (2019) in the study of barriers to home business based on the results of factor analysis stated that economic-political factors, lack of business

experience, education, incompetency, lack of cultural and psychological support, respectively, are the most important obstacles for setting up these jobs in rural areas of Ilam. [Velaei et al. \(2018\)](#) in the analysis of barriers to small business development in rural areas of Miandoab County concluded that socio-economic and infrastructure barriers, weak social capital and the preference of bank deposit rather than investing are the important factors in starting a home business. Based on a factor analysis, [Rahmanian Koushki et al. \(2017\)](#) listed six factors of lack of support, economic barriers, cultural and social barriers, lack of knowledge and information, family barriers and lack of laws as barriers to home entrepreneurship in Kamfirooz Rural District. [Mirakzadeh et al. \(2017\)](#) stated in a study that economic, social, educational, structural and managerial barriers were among the barriers to the development of non-agricultural activities with an emphasis on home business in Ghor Ghaleh Rural District. [Naderi Mehdei and Teimouri \(2017\)](#) categorized some strategies for overcoming challenges in developing home-based businesses in five groups, including social strategies (using the latest educational findings to enhance the technical skills of technical staff working at home and reviving work habits), supportive strategies (granting long-term loans in the first two years, promoting the insurance), institutional strategies, marketing strategies (marketing, advertising, home business products export and holding national, regional and local exhibitions) and financing strategies (raising the number and amount of loans). [Izadi et al. \(2016\)](#) in a study investigated obstacles to the development of entrepreneurship in home-based businesses in rural areas of Shiraz. They mentioned the following as the impediment factors: information factors (lack of business plan, lack of cooperation with agricultural and related organizations, poor knowledge of supportive plans in rural areas and the process of obtaining loans and facilities), economic (lack of capital, lack of receive financial support timely), marketing (cheap purchase of products and lack of facilities to supply and sell products without intermediaries), personality (risk avoidance and conservatism and lack of perseverance and limited activity of the business owner) and family (many jobs and responsibilities and lack and exhaustion of physical facilities) [Najafi and Safa \(2014\)](#) in a study “entrepreneurial home businesses and obstacles and challenges in rural areas” concluded that lack of

proper business plan, lack of experience and expertise, lack of proper access to market, lack of access to information and resources, lack of financing for home business investment and legal barriers are the most important barriers. [Taghibaygi et al. \(2014\)](#) research about the development of home-based businesses in the villages of the Islamabad-e-gharb County mentioned a list as personality factors (lack of endurance and resistance in the face of problems, lack of creativity and innovation, lack of competence, lack of knowledge about strengths and weaknesses, lack of bargaining power and lack of confidence and perseverance), economic factors (dissatisfaction with the income of the father or spouse, lack of capital, lack of access to credit and loans, disbelief in the impact of home-based jobs on improving income, lack of access to raw materials and the difficulty of providing them and expensive equipment), family-related factors (lack of division of labor and cooperation of family members, lack of encouragement of family members, considerable number of children, disruption of family calmness, household chores and responsibilities, dissatisfaction with life and prevention of family and spouse). They continued with individual factors (lack of planning, lack of effort and perseverance of women, lack of expertise, skills and experience, low social and public relations of women, lack of unemployment and previous failure in family career) and government factor (lack of market, not holding workshops and training classes by the organizations, no access to information centers, lack of insurance, lack of tourism activity and lack of exhibitions). [Mirlotfi et al. \(2014\)](#) in a study about the challenges of home business development in the villages of Dishmuk District of Kohgiluyeh County found lack of expertise, lack of official support, legal barriers, maintenance restrictions, cheap purchase of products, social problems, lack of facilities, lack of suitable space, recession in markets for supply, financial problems, information barriers and lack of business plan, as important factors. [Yaghoubi Farani et al. \(2014\)](#) in a study in Sardrud District of Razan County based on factor analysis identified six factors of cultural and social, infrastructure and finance, personality, support, family and education as components inhibiting the tendency of rural women to work at home. [Reuschke and Mason \(2020\)](#) in a study examined 994 examples of small and medium-sized home-based businesses in Scotland. The findings show that in rural areas, a

tiny proportion of home-based businesses use digital technologies and online markets. Philip and Williams (2019) stated in a study that the digital economy offers many benefits to small-scale home-based businesses in rural areas. However, the sharp and rapidly changing digital and socio-economic gaps still pose challenges for this segment of the economy. It creates a rural economy, especially in remote villages. A study by Fatoki (2014) stated that internal factors affecting barriers to small and medium-sized businesses in South Africa include lack of management experience, lack of functional skills and training, poor staff development, and poor customer attitudes. Galloway and Kapasi (2014) recognized the lack of funding, lack of networking, and the lack of cooperatives and support organizations as impediments to starting a rural home-based business in Scotland. Ming-Yen Teoh & Chong (2008) identified four components of capital, education and consulting networks, and the

use of information and communication technology as barriers to the growth of women entrepreneurs in small and medium-sized enterprises in Malaysia. Most research has only addressed the barriers to a home-based business. However, in this research, it is intended to categorize the challenges of home business, unlike previous researches. Moreover, the study uses the DEMATEL-ISM combination technique as one of the most widely utilized recent methods for this purpose. Unlike most multi-criteria decision models, this technique solves the problem of ignoring the intensity of interactions and internal relations of criteria and sub-criteria quantitatively, and its output is the matrix of interpretive structural modeling (ISM) method for impact analysis, in which one factor builds on another and determines the level of factors of a system. Figure 1 - illustrates the conceptual model of the research.

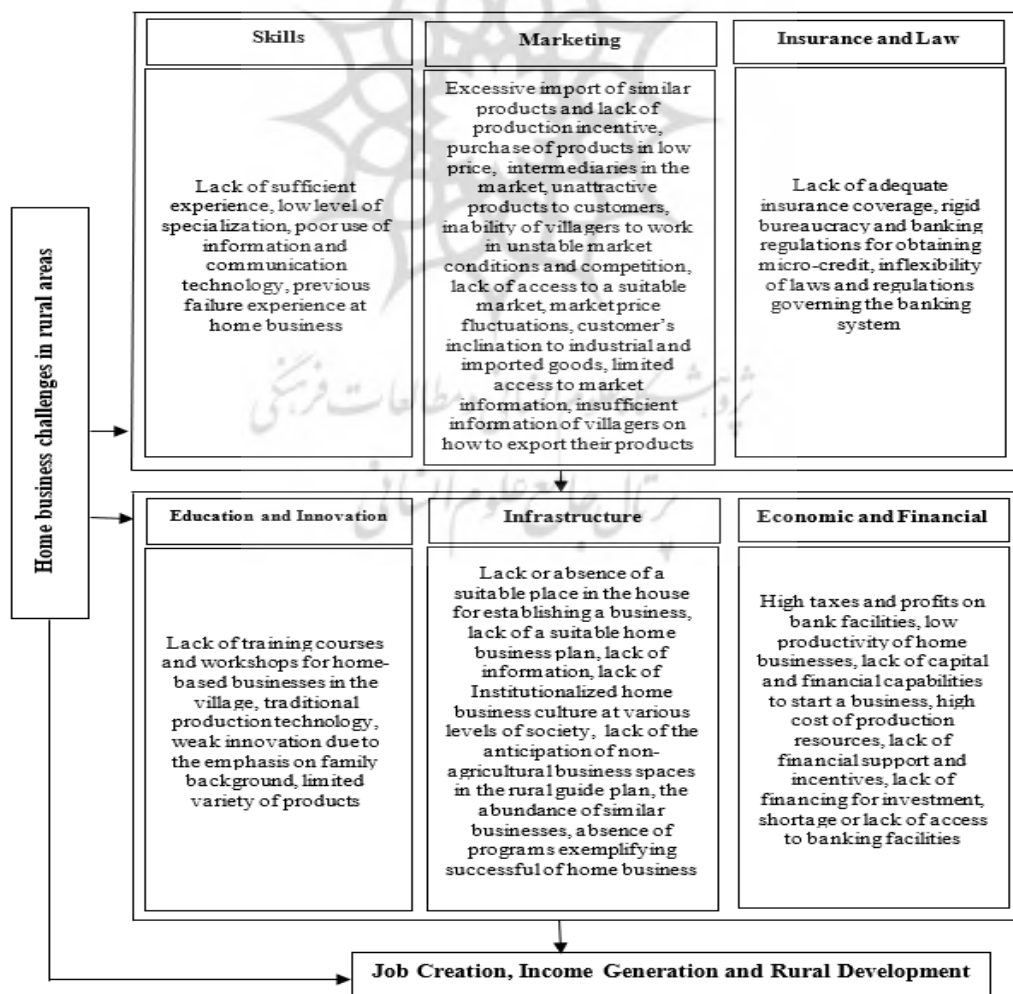


Figure 1. Conceptual model of research

### 3. Research Methodology

The present study is an applied purpose and in terms of method and nature is descriptive-analytical, for which the method of documentary and survey (questionnaire) were used. The statistical population of the research consists of experts and practitioners of the General Directorate of Cultural Heritage, Handicrafts and Tourism of Mazandaran Province and the Industry, Mine and Trade organization and the Agricultural Jihad organization in Sari city. The statistical sample of most studies based on Dematel method and interpretive structural method is 10-12 selected experts. It should be noted that in this process, the most important factor is the quality of expert opinion (Moradi et al., 2013, p. 95). In this study, 15 experts and actors with the work experience related to home business in rural areas in the above-mentioned organs were selected as a statistical sample using chain-referral sampling technique. So that after identifying and selecting the first sampling unit (expert), that person was used to identify and select the second sampling unit. Based on the theoretical foundations of research, field study and expert opinion, 6 factors of economic and financial, infrastructure, education and innovation, insurance and law, marketing and skills were considered as home business challenges in rural areas of Sari County (Table 1). In order to analyze the data, the combined Dematel method

and interpretive structural modeling have been used. Based on Dematel and interpretive structural modeling, a set of various and related factors are comprehensively organized and the conceptual relationships between variables are described in a form of cause and effect. In this method, based on the judgment of experts, the relationship between variables and the way they interact is examined. Also, the specific relationships of variables and the general structure are illustrated in the form of a schematic model. On the other hand, the interpretive structural method only determines the level of influence of factors on each other and helps to identify the internal relations, prioritizing and leveling between factors, while Dematel has the ability to determine the intensity of interactions and relationships between factors in a quantitative fashion and determine the degree of impact and dependence (Pendar & Vesi, 2020). In fact, interpretive-structural modeling is an effective and efficient method for topics in which qualitative variables at different levels of importance have interactions with each other. By applying this method, relationships and dependencies between qualitative variables can be discovered, analyzed and designed. Hence, three crucial steps in the optimal usage of the method are: Identifying qualitative variables, determining the conceptual relationships between the considered qualitative variables and drawing the network of interactions of the studied qualitative variables (Seyfi Farzad et al., 2019)

**Table 1. Dimensions and indicators used in the research**

Dimensions	Indicator
Economic and Financial (C1)	High taxes and profits on bank facilities, low productivity of home businesses, lack of capital and financial capabilities to start a business, high cost of production resources, lack of financial support and incentives, lack of financing for investment, shortage or lack of access to banking facilities
Infrastructure (C2)	Lack or absence of a suitable place in the house for establishing a business, lack of a suitable home business plan, lack of information, lack of Institutionalized home business culture at various levels of society, lack of the anticipation of non-agricultural business spaces in the rural guide plan, the abundance of similar businesses, absence of programs exemplifying successful of home business
Education and Innovation (C3)	Lack of training courses and workshops for home-based businesses in the village, traditional production technology, weak innovation due to the emphasis on family background, limited variety of products
Insurance and Law (C4)	Lack of adequate insurance coverage, rigid bureaucracy and banking regulations for obtaining micro-credit, inflexibility of laws and regulations governing the banking system

Dimensions	Indicator
Marketing (C5)	excessive import of similar products and lack of production incentive, purchase of products in low price, intermediaries in the market, unattractive products to customers, inability of villagers to work in unstable market conditions and competition, lack of access to a suitable market, market price fluctuations, customer's inclination to industrial and imported goods, limited access to market information, insufficient information of villagers on how to export their products
Skills (C6)	Lack of sufficient experience, low level of specialization, poor use of information and communication technology, previous failure experience at home business

**Source:** Amiri et al. (2019), Taghibaygi et al. (2014), Velaei et al. (2018), Saadi & Heidari (2013), Moradi Nejad & Vahedi (2019), Mirakzadeh et al. (2017), Mirlotfi et al. (2014), Najafi & Safa (2014), Sharifzadeh et al. (2014), Galloway and Kapasi (2014), Ming Yen Toh & Chong (2008) Yaghoubi Farani et al. (2014), Taghibaygi et al. (2014), Fatoki (2014), Velaei et al. (2018),

#### 4. Research Findings

Questionnaires distributed among 80% of male experts and 20% female experts, 26.7% of them were between 26-35 years old, 33.3% were between 45-36 years old and 40% were over 45 years old. About 26.7% of experts have a bachelor's degree, 60%, and 13.3% of them have a master's degree and a Ph.D degree, respectively. About 20% have work experience between 1-10 years, 26.7% between 11-20 years and 53.3% have above 20-year experience.

##### 4. 1. Implementing the Dematel technique

##### First stage: Direct connection matrix formation

(M)- In this study, the opinion of 15 experts were used to compare the pairs of criteria, and table 2 is

the result of the arithmetic mean of the opinions of experts. In this step, the impact of two criteria on each other was determined based on a scoring criterion of 0 to 4. Verbal expressions and corresponding numbers of Dematel method convey the following arrangements:

0) Factor A has no effect on factor B; 1) Factor A has very little effect on Factor B; 2) factor A has little effect on factor B; 3) factor A has much effect on factor B; 4) Factor A has a great effect on factor B (Moradi et al., 2013). According to the relationships obtained from pairwise comparisons as well as the arithmetic mean, a diagram of the direct relationships between the criteria and the intensity of their relationships is drawn based on a weight score of 0 to 4 (Figure 2).

Table 2. Direct relationship matrix

C6	C5	C4	C3	C2	C1	
3.47	3.53	3.27	3.73	3.6	0	C1
3.53	3.47	1.47	3.33	0	1.67	C2
3.4	1.67	1.4	0	1.33	1.27	C3
3.8	1.6	0	3.33	1.53	1.47	C4
3.4	0	3.73	3.67	3.6	1.6	C5
0	1.53	1.73	1.4	1.27	1.4	C6



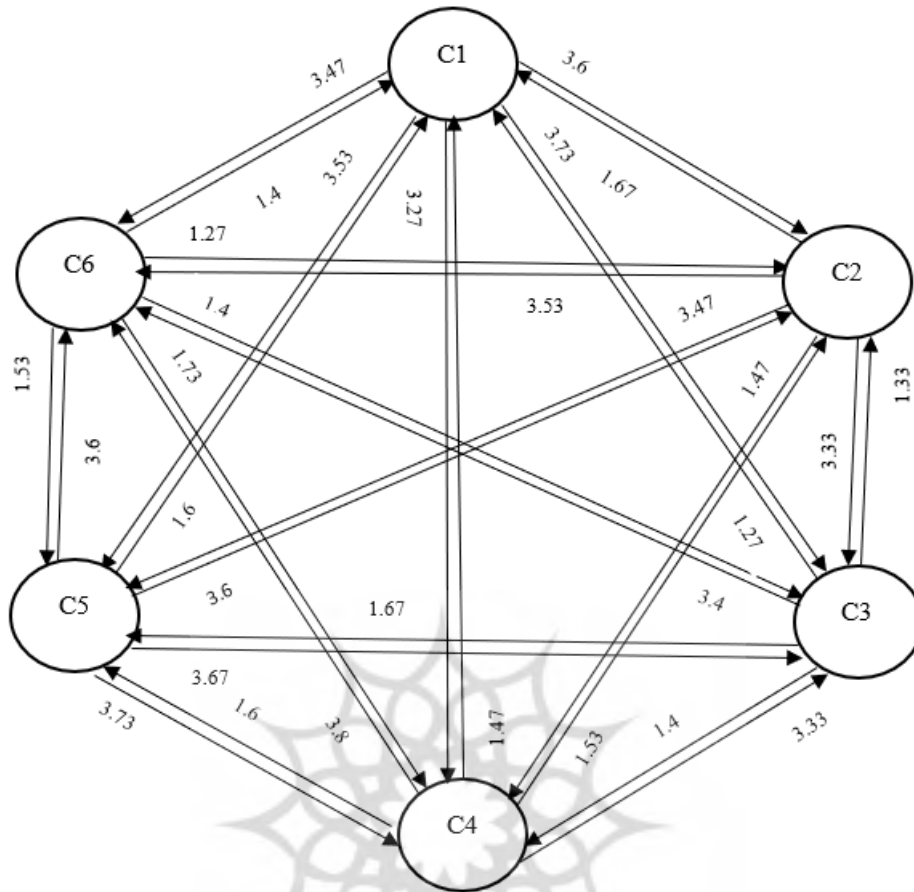


Figure 2. Diagram of direct relationships between criteria and the intensity of their relationship

**Second stage: Normalization of direct relationship matrix-** Equation (1) was used to normalize the direct relationship matrix (Table 3). To calculate K, first the sum of all the rows and

columns of the direct relationship matrix was calculated, and the largest number was displayed with K (K = 17.6), and all the elements of the direct correlation matrix were divided by K.

$$k = \max\{\sum_{j=1}^n x_{ij}, \sum_{i=1}^n x_{ij}\}; N = \frac{1}{k} * X \quad \text{Equation (1)}$$

Table 3. Normalized direct relationship matrix

C6	C5	C4	C3	C2	C1	
0.197159	0.200568	0.185795	0.211932	0.204545	0	C1
0.200568	0.197159	0.083523	0.189205	0	0.094886	C2
0.193182	0.094886	0.079545	0	0.075568	0.072159	C3
0.215909	0.090909	0	0.189205	0.086932	0.083523	C4
0.204545	0	0.211932	0.208523	0.204545	0.090909	C5
0	0.086932	0.098295	0.079545	0.072159	0.079545	C6

**Third stage: Calculate the complete relationship matrix-** The general relation matrix (T) represents the relative intensity of direct and indirect relations between the criteria, which was calculated according to equation (2) (Table 4). Equation (2) states that the I-N matrix must first be formed (i.e.,

the unit matrix minus the normal matrix) and then inverted (the MINVERSE function was used to investigate in Excel).

Finally, the normal matrix must be multiplied by the inverse matrix (the MMUIT function was used to multiply the two matrices in Excel).

$$T = N * (1 - N)^{-1} \quad \text{Equation (2)}$$

**Table 4. full relationship matrix**

C6	C5	C4	C3	C2	C1	
0.659199	0.501826	0.48826	0.602494	0.489526	0.228762	C1
0.550236	0.423143	0.335586	0.487158	0.246174	0.263663	C2
0.423748	0.259411	0.248332	0.219349	0.235908	0.188403	C3
0.503145	0.295629	0.211927	0.432024	0.280997	0.225959	C4
0.604671	0.293857	0.468537	0.552509	0.44955	0.28738	C5
0.22787	0.232623	0.242666	0.270569	0.214329	0.178948	C6

**Fourth stage: Calculating the degree of impact and dependence of factors relative to each other and drawing a cause-and-effect diagram-**

At this stage, we calculate the sum of the elements of the row and column of the complete relationship matrix (T) and analyze it as follows:

The sum of the elements of each row (D) for each factor indicates the degree of impact of that factor on other factors of the system (the amount of effect of variables), the higher the score of this variable, the more effectual that factor is.

The sum of the elements of the column (R) for each factor indicates the degree of dependence of that factor on other factors of the system (the degree of dependency of variables)

Therefore, the horizontal vector (D + R) is the amount of impact and dependence of the desired factor in the system. In other words, the higher the score for D + R in a factor, the more it interacts with other system factors.

The vertical vector (D-R) shows the power of impact for each factor. Therefore, if the D-R is positive, the variable is a cause variable, and if it is negative, it is an effect.

Finally, a Cartesian coordinate system is drawn. In this plane, the horizontal axis is D + R and the vertical axis is D-R. The position of each factor is determined by a point with coordination (D + R, D-R) in the plane (Ebrahimi and Khorshidi, 2017). Eventually, a graphic diagram will be obtained (Figure 3).

Accordingly, the economic and financial index with the highest impact (3.970068) has the most impact on other factors and the skill index with the highest impact (3.968869) has the most impact on other factors, and economic indicators And financial, infrastructure and marketing with positive impact power are classified as causal and stimulus indicators and educational and innovation, insurance and legal indicators and skills with negative impact power are classified as dependent (disabled) indicators. Also, economic, financial and marketing indicators with higher impact and dependence due to more interaction with other factors, and these challenges for home business in the study area are of more pivotal.

**Table 5. The amount of impact and dependence of factors towards each other**

D-R	D+R	R	D	
1.596952	6.343184	2.373116	3.970068	C1
0.389476	6.222444	2.916484	3.30596	C2
-0.98895	6.139254	3.564103	2.57515	C3
-0.04563	5.944989	2.995308	2.949681	C4
3.423882	6.662995	3.006489	3.656505	C5
-1.60186	6.335873	3.968869	2.367004	C6

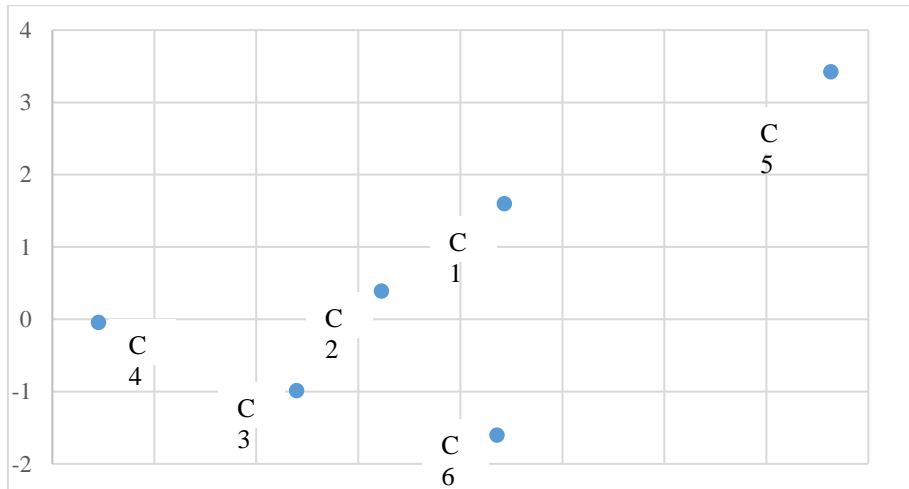


Figure 3. Cartesian coordinate system of  $D + R$  and  $D - R$  values of each criterion

**Fifth stage: Calculate the threshold value and determine significant relationships-** In this step, first the matrix  $T$  is added to the unit matrix, and the arithmetic mean of the resulting matrix is taken to obtain the threshold value, which is 0.522899. For significant relationships between the criteria, each of the resulting matrix components, or the ones less than 0.522899, was given a value of zero, and for those more than the threshold, the value will be 1 (Table 6).

Table 6. Matrix of significant relationships between criteria

C6	C5	C4	C3	C2	C1	
1	0	0	1	0	1	C1
1	0	0	0	1	0	C2
0	0	0	1	0	0	C3
0	0	1	0	0	0	C4
1	1	0	1	0	0	C5
1	0	0	0	0	0	C6

#### 4. 2. Implementing the ISM technique

Based on the output of Dematel technique, which is a matrix of significant relationships between criteria (Table 6), the criteria were graded using the ISM model.

##### First stage: Determining the level of criteria-

Due to the use of the output of the Dematel technique, there is no need to form a Structural Self-Interaction Matrix (SSIM), form the initial reachability matrix, and adapt the reachability matrix that is done in the first stage of the ISM technique. Therefore, the level of criteria was determined.

**Determining level 1 criteria-** Based on the matrix of significant relationships between the criteria, a set of input criteria (prerequisite) and output (reached) were calculated for each criterion (1 in each output row and 1 in each input column) and then common factors were identified. Therefore, when the criterion has the highest level, the output set (reachability) is equal to the common set (Table 7). Therefore, according to Table 7, education and innovation, insurance and law and skills indicators are at the highest level of the model and have less impact on the system than other indicators.

Table 7. Determining level 1 criteria

Level	Criterion	Output	Input	Similarity
---	C1	C1, C3, C6	C1	C1
---	C2	C2, C6	C2	C2
1	C3	C3	C1, C3, C5	C3
1	C4	C4	C4	C4
---	C5	C3, C5, C6	C5	C5
1	C6	C6	C1, C2, C5, C6	C6

**Determining level 2 criteria-** To determine the level 2 criteria, the rows and columns of criteria selected in level one was removed from the matrix

of significant relationships and the last process was repeated on the other criteria (Table 8).

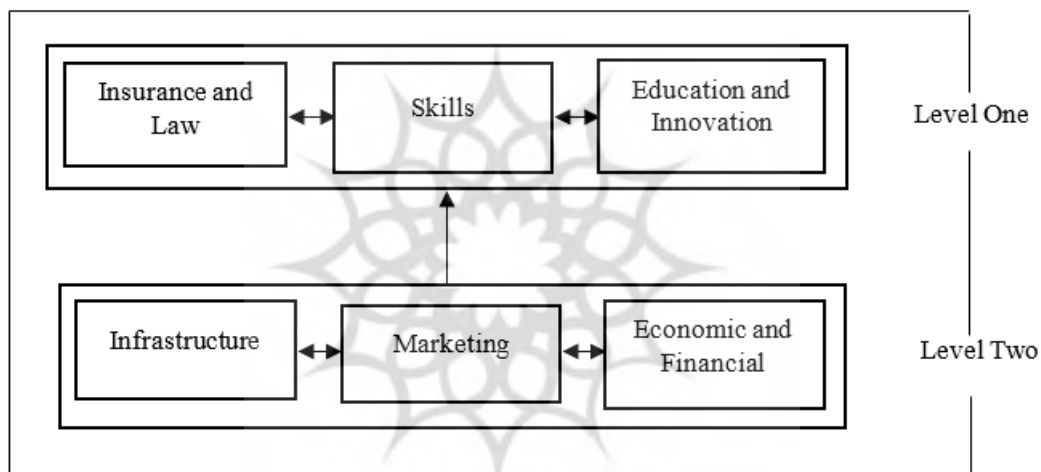
**Table 8. Determining level 2 criteria**

Criterion	Output	Input	Similarity	Level
2	C1	C1	C1	C1
2	C2	C2	C2	C2
2	C5	C5	C5	C5

**Second stage: Mapping network interactions-**

As it turns out, the final model obtained consists of two levels. Barriers to education and innovation, insurance and law, and skills that are at a high level (level one) are less effectual and more dependent by level one factors. Economic and financial,

marketing and infrastructure barriers are at a low level (level two) and act as the milestone of the model, these indicators are interrelated and have the greatest impact on level one factors, and to reach to sustainable home business, one should start with these factors (Figure 4).



**Figure 4. interpretive structural model of home business challenges**

**Third stage: MICMAC analysis-** The purpose of this analysis is to identify and analyze the driving and dependence power of variables. According to Table 6, which is the basis of MICMAC analysis, the degree of impact and dependence of each of the factors in relation to each other has been determined (Table 9). In other words, each factor in Table 6 has two numbers that determine the degree of dependence in the table column and the degree of impact in the row of the table. The intersection of the row and column, the position of the factor in MICMAC analysis (Figure 5). In this analysis, factors are divided into four categories according to the power of driving (impact) and dependence: 1- Autonomous factors: They have poor driving and dependence, these factors are relatively unconnected to the system and have little or no communication with the system; 2- Dependent factors: They have low driving but are

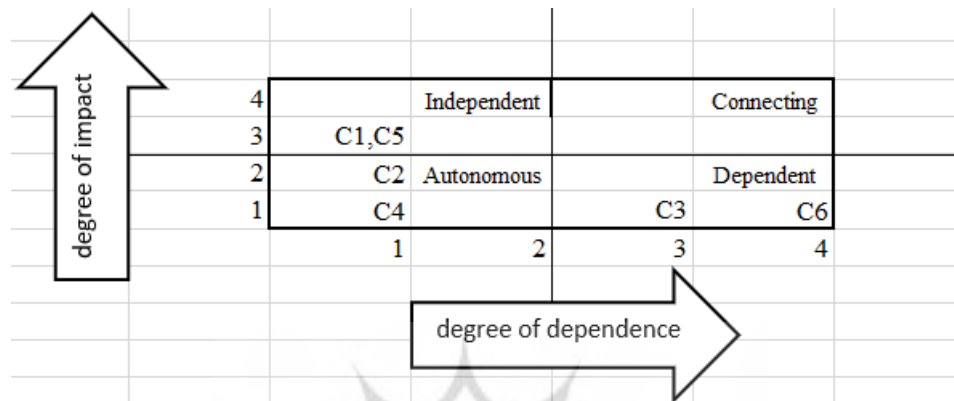
high dependence; 3- connecting factors: They have high driving and dependence. These factors are unstable, because any change in them can affect the system, and the system feedback can change these factors again; 4- Independent factors: they have strong driving but weak dependence (Ravi et al., 2005). In the classification, educational, innovation and skill barriers with low impact power and high dependence power (high impact of other factors) are located in the area of dependent indicators (zone 2). Thus, in the logic of cause-and-effect relations, they are considered as the effect of other factors. Infrastructure, insurance and law factors are in the autonomous zone with weak impact and dependence. Economic, financial, and marketing barriers are located in zone 4 (Independent Indicators zone) due to their high impact and low dependency. These factors are not constant, because any change in them affects other variables,

and the feedback of these effects on themselves. Therefore, to address the challenges of home

business in the rural areas in this study, we must first pay attention to these factors.

**Table 9. Degree of impact and dependence of the factors**

C6	C5	C4	C3	C2	C1	
1	3	1	1	2	3	Impact power
4	1	1	3	1	1	Dependence power



**Figure 5. impact and dependence power diagram**

## 5. Discussion and conclusion

Creating, consolidating and growing home-based businesses in rural areas as a complex and systemic concept require attention to solving different and diverse challenges affecting this concept and attention to the impact and relationship between these factors. This study defines the concept of home business and identifying its challenges using the combined DEMATEL-ISM method, has also identified the relationship between barriers and their levels. 6 factors (educational and innovation, insurance and law, skill, economic and finance, marketing and infrastructure) and 35 indicators were identified from theoretical studies. In order to classify the level of the challenges of home-based business, the structural modeling method was used. Finally, a two-folded level was obtained, in which educational and innovation barriers, insurance and law, and skills are at the highest level of the model, which is affected by level two indicators. This is in consistence with the findings of studies of Amiri et al. (2019), Taghibaygi et al. (2014), Velaei et al. (2018), Saadi and Heidari (2013), Moradi Nejad and Vahedi (2019), Mirakzadeh et al. (2017), Mirlotfi et al. (2014), Najafi and Safa (2014), Sharifzadeh et al. (2014), Ming Yin Toh and Chong (2008).

At the lowest level of the model there are economic and financial, marketing and infrastructure

barriers, which according to MICMAC analysis economic and financial and marketing barriers with strong impact but weak dependence act as the milestone of the system structure. They are known as the most important challenge Home-based businesses in rural areas of Sari County, which should be emphasized in the first place to start a fundamental change. This is aligned with the results of research by Amiri et al. (2019), Yaghoubi Farani et al. (2014), Taghibaygi et al. (2014), Velaei et al. (2018), Saadi and Heidari (2013), Moradi Nejad and Vahedi (2019), Mirakzadeh et al. (2017), Mirlotfi et al. (2014), Najafi and Safa (2014), Sharifzadeh et al. (2014), Galloway and Kapasi (2014), Ming Yen Toh and Chong (2008). Due to the high taxes and high interest of banking facilities and the lack of capital to start small businesses in rural areas, one of the few options for funding is the rural women micro credit fund. Considering that 30% of the population of Sari County live in rural areas, to maintain the rural population and create sustainable employment, it can be a good idea to increase the number of funds. In addition, combining it with government funding and identifying capable young women can be a practical strategy for the prosperity of home-based businesses in rural areas.

In calculating the impact and dependence of factors towards each other, it was found that economic and financial factor with the highest impact (3.30068) has the greatest impact on other factors, so the development of home business requires financial support from a set of organizations and institutions. The cooperation and interaction of these organizations depend on time and the establishment of a master plan based on local conditions and requirements of home businesses in rural areas of Sari County with long and medium-term goals and transparent time-lines.

Also, the skill factor was classified as dependent (effect) indicator. According to this matter, it can be said that the villages of Sari County have a good opportunity to take advantage of this local potential for the growth of businesses in the field of tourism, production and sale of handicrafts, production and supply of local food, etc., due to the special geographical location and location in the coastal topography (such as Farahabad village) and foothill and forestry (such as Mal khast, Sanam and Telobagh villages) as well as the presence of tourists from different parts of the country. This doesn't require too much expenditure for training and skills, so according to the results of the research showed that the skill indicator is the most dependence on other factors. Strengthening the economic potential of the labor interested in home business by low-interest loans, introduction and identification of villages with potential through social media and the Internet can affect this factor and provide a good platform to support home business based on local capacities and knowledge. As a result, this will lead to prosperity of production and job creation for the villagers, positive consequences of the community the prosperity of rural businesses. The results of this research can be a guiding tool in the executive organizations in charge of issuing home business licenses (Agricultural Jihad Organization, Industry, Mining and Trade Organization and Cultural Heritage, Handicrafts and Tourism Organization) and institutions supporting the vulnerable and poor groups (Imam Khomeini Relief Foundation & the welfare organization). It could help the managers in order to implement the prosperity of home businesses as effectively as possible. Regarding the limitations of the research, the study faced some of them including the absence of a comprehensive database for home businesses, especially in rural areas, poor cooperation of

experts in completing the questionnaires due to their frequent attendance at meetings and time consuming explanation on how to complete the questionnaires. Therefore, some suggestions for future studies are provided such as collecting data in order to create and organize a database of home-based businesses, especially in rural areas that have been less studied and arranging the study platform for other research in this field.

In this study, based on the complete relationship matrix in Dematel method and network of interactions in ISM technique, economic and financial, infrastructure and marketing factors are identified as causal, driving factors and the most important challenges of home business in rural areas of Sari County. The following suggestions are provided to improve and address these challenges:

- Increasing the amount of bank loans with long-term payments for at least one to two years and with easy collateral and guarantee, encouraging the private sector to set up and support home-based businesses, using the economic capacities and capabilities of each rural area to create a set of cash support for entrepreneurs, as well as starting businesses in consistence with raw materials existed in each village.
- Holding workshops and training classes on startup home businesses and institutionalizing the culture among the villagers with the help of Rural Municipality and the Islamic Council of Village, launching various businesses according to the different capabilities and capacities of rural areas to avoid same startups businesses and guarantee profitability, holding events to show successful business examples at the local, regional and national levels for new entrepreneurs in order to overcome limitations are suggest solutions to address infrastructure challenges.
- For marketing challenges the followings are suggested: encourage villagers to hold local exhibitions of their home business products in rural areas and participate in regional and national festivals and exhibitions to introduce their products, use digital marketing, create market and variety in products by using the power of creativity and innovation in order to compete with similar products in the market, prevent the import of similar products to the country, encourage consumers to buy locally.

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## سطح بندی چالش های کسب و کار خانگی در نواحی روستایی شهرستان ساری با کاربرد تکنیک ترکیبی DEMATEL-ISM

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### چکیده مبسوط

#### ۱. مقدمه

در سال های اخیر در حوزه کسب و کارهای روستایی نوعی گذر از کسب و کارهای مبتنی بر کشاورزی به کسب و کارهای عمومی رخ داده است. با توجه به ماهیت و مشخصه های جوامع روستایی، تجربیات توسعه روستایی در کشورهای مختلف جهان نشان می دهد که مشکلات کمبود درآمد روستاییان و پیامدهای اجتماعی، فرهنگی و سیاسی ناشی از آن را نمی توان تنها با انتقال دانش فنی و فناوری ها از یک سو و سرمایه های مادی به مناطق روستایی از سوی دیگر، حل شده پنداشت، بلکه عنصر مهم تری که بایستی مورد توجه سیاست گذاران و کارشناسان توسعه روستایی قرار گیرد، تاکید بر توسعه کسب و کارهای کوچک روستایی به ویژه کسب و کارهای خانگی و فراهم ساختن بسترهای ضروری برای رشد و توسعه آن هاست. بر اساس سرشماری عمومی نفوس و مسکن ۱۳۹۵، در شهرستان ساری تعداد ۴۱۱ روستا با جمعیتی معادل ۱۵۲۱۸۴ نفر و در قالب ۵۰۲۸۸ خانوار وجود دارد. به عبارت دیگر حدود ۳۰ درصد کل جمعیت شهرستان ساری در روستاها زندگی می کنند، که حدود ۱۰/۹ درصد از این جمعیت بیکار بوده اند که فاصله اندکی با نرخ کل استان دارد (۱۱/۱ درصد جمعیت روستایی استان مازندران در سال ۱۳۹۵ بیکار بوده اند). لذا به منظور حفظ جمعیت روستایی، ایجاد اشتغال و کاهش بیکاری

و جلوگیری از مهاجرت روستاییان در روستاهای شهرستان ساری، توسعه کسب و کارهای خانگی در گرو فراهم سازی مجموعه ای از عوامل و زمینه ها و رفع مجموعه ای از چالش ها و بازدارنده هاست. بنابراین رونق کسب و کارهای خانگی برای توانمندسازی اقتصادی و اجتماعی روستاییان منطقه لازم و ضروری است. برای این منظور هدف تحقیق حاضر آن است تا با کاربرد تکنیک ترکیبی DEMATEL-ISM به سطح بندی چالش های کسب و کار خانگی در نواحی روستایی شهرستان ساری بپردازد و با توجه به تعیین سطح چالش ها راهکارهای عملی را جهت کاهش و از بین بردن این موانع در جهت توانمندسازی، ایجاد اشتغال، کارآفرینی، درآمدزایی و توسعه روستایی ارائه دهد.

#### ۲. مبانی نظری تحقیق

از منظر سیستمی یکی از اجزاء مهم در ساختار اقتصاد کشور، زیرسیستم روستایی یا ساختار اقتصاد روستایی است. با توجه به ارتباط ارگانیک نظام روستایی با نظام سرزمینی می توان گفت از حیث واقعیت جغرافیایی، توسعه و پیشرفت در ابعاد اقتصادی منوط به رشد و پیشرفت اقتصاد روستایی است. از مهم ترین رویکردهای ایجاد تنوع در فعالیت های اقتصاد مناطق روستایی می توان به مواردی از قبیل: توسعه صنایع روستایی (تبدیلی و تکمیلی)، توسعه کسب و کارهای خانگی و توسعه گردشگری و

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پایین ترین سطح مدل قرار گرفته اند، که بر اساس تحلیل MICMAC موانع اقتصادی و مالی و بازاریابی با قدرت نفوذ قوی و وابستگی ضعیف به عنوان مهم ترین چالش های کسب و کار خانگی در نواحی روستایی شهرستان ساری شناسایی شدند.

#### ۵. بحث و نتیجه گیری

ایجاد، تثبیت و رشد کسب و کارهای خانگی در فضاهای روستایی به عنوان یک مفهوم پیچیده و سیستمی نیازمند توجه به حل چالش های مختلف و متنوع تاثیرگذار در این مفهوم و توجه به اثرگذاری و ارتباط بین این عوامل است. با توجه به بالابودن مالیات و سود تسهیلات بانکی و نداشتن سرمایه اولیه برای راه اندازی کسب و کارهای خرد در نواحی روستایی یکی از صندوق های مالی حمایتی صندوق اعتبارات خرد زنان روستایی می باشد، که دفتر مشارکت و امور زنان روستایی وزارت جهاد کشاورزی از سال ۱۳۷۹ صندوق اعتبارات خرد زنان روستایی را در سطح کشور با هدف حضور زنان در ساختار اقتصادی خانواده اجرا نمود و در استان مازندران در سال ۱۳۷۹ اولین صندوق اعتبارات خرد زنان روستایی در روستای فیروزجاه بابل تشکیل شد. در حال حاضر در استان مازندران تعداد ۱۱۶ صندوق وجود دارد که ۶ صندوق آن با ۱۸۰ عضو مربوط به شهرستان ساری می باشد (نظیر روستای پایین دزا با ۲۵ عضو). لذا با توجه به این که ۳۰ درصد جمعیت ساری در نواحی روستایی زندگی می کنند به منظور حفظ جمعیت روستایی و ایجاد اشتغال پایدار افزایش تعداد صندوق ها، تلفیق آن با اعتبارات دولتی و شناسایی زنان توانمند و جوان می تواند راهبردی عملی در رونق کسب و کارهای خانگی در نواحی روستایی باشد.

**کلیدواژه ها:** کسب و کار، مشاغل خانگی، ساری، DEMATEL-ISM

#### تشکر و قدردانی

پژوهش حاضر حامی مالی نداشته و حاصل فعالیت علمی نویسندگان است.

فعالیت های مرتبط با آن اشاره نمود. در بسیاری از برنامه های توسعه ای در کشورهای جهان سوم نیز توسعه کسب و کارهای خرد خانگی در محیط های روستایی به عنوان نوعی راهکار موثر در پیشبرد فرایند توسعه روستایی و بهبود وضعیت معیشت و درآمد ساکنان مناطق روستایی عنوان شده است.

#### ۳. روش تحقیق

پژوهش حاضر بر اساس هدف کاربردی و به لحاظ روش و ماهیت توصیفی-تحلیلی و روش گردآوری اطلاعات کتابخانه ای و میدانی (پرسشنامه) است. جامعه آماری تحقیق را کارشناسان و متخصصان اداره کل میراث فرهنگی، صنایع دستی و گردشگری استان مازندران و سازمان صنعت، اداره معدن و تجارت و جهاد کشاورزی شهرستان ساری تشکیل می دهد. نمونه آماری اغلب مطالعات مبتنی بر روش دیمتل و ساختاری-تفسیری، ۱۰-۱۲ خبره انتخابی است باید توجه داشت در این فرایند عامل مهم تر کیفیت نظر خبرگان است. در این پژوهش ۱۵ نفر از کارشناسان و فعالان دارای سابقه کار، تجربه و مرتبط با کسب و کار خانگی در نواحی روستایی در ارگان های فوق الذکر با استفاده از روش نمونه گیری زنجیره ای به عنوان نمونه آماری انتخاب شدند. بر اساس مبانی نظری تحقیق، پژوهش های میدانی و نظر کارشناسان ۶ عامل اقتصادی و مالی، زیرساختی، آموزشی و نوآوری، بیمه ای و قانونی، بازاریابی و مهارتی به عنوان چالش های کسب و کار خانگی در نواحی روستایی شهرستان ساری در نظر گرفته شد. به منظور تجزیه و تحلیل داده ها از تکنیک ترکیبی دیمتل و مدلسازی ساختاری-تفسیری استفاده شده است.

#### ۴. یافته های تحقیق

نتایج حاصل از تکنیک DEMATEL-ISM تحقیق نشان داد که که موانع آموزشی و نوآوری، بیمه ای و قانونی و مهارتی در بالاترین سطح مدل و موانع اقتصادی و مالی، بازاریابی و زیرساختی در



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