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# A Model Designed for the Information Management System of Entrepreneurship Training In Rural Areas of Ilam Province in Iran

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## Abstract

The present study aimed to provide a systematic model for the management of an information system for rural entrepreneurship training in Ilam province, Iran. The research used a descriptive methodology performed by the Delphi technique. The sample was taken by the purposive technique in which 15 experts including faculty members, executives, and experts were selected to participate in three Delphi rounds. At the end of round 3, the final model was confirmed by the panel to be composed of seven components (data collection, data storage, data quality control, data analysis, data dissemination, documentation, and data sharing and application) and 22 sub-components. The results showed that to use an information management system for entrepreneurship training, it is first necessary to specify the required data on rural areas (about economic, social, cultural, infrastructural, and ecological aspects) before their collection. For the sake of storage, the data should be inputted in a system specifically designed for the management of the entrepreneurship training information system. Based on the results, quality control, data analysis, dissemination, documentation, and sharing should be performed by the Governor's Office of Economic Coordination.

### Keywords:

*Entrepreneurship; information management system; rural areas training*

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## INTRODUCTION

Some researchers perceive that entrepreneurship development is one of the strategies to develop employment in rural areas (Archibong 2004). According to these scholars, entrepreneurship is the driving force of economic growth and development and job creation in society, and entrepreneurs are the symbol of endeavor and success and the cause of major developments in manufacturing, service, and trade (Urbano et al. 2008). Hashemi et al. (2011) suggest that entrepreneurship development can play a constructive role in breaking down the barriers of rural development. They argue that by encouraging people's participation, activating social capitals, and recruiting local workforce, entrepreneurship can emerge as an optimal strategy for rural development.

In the past few decades, experiences of rural development in different countries have shown that rural development is not made possible just by capital and technology; rather, many factors are involved in rural development such as entrepreneurship development and raising a spirit of entrepreneurship among rural people (HosseiniSoleimanpour 2006). In many developed and developing countries, a major approach for the socio-economic development of rural areas is the development of entrepreneurship (Ahmadpour Dariani 2002). Rural entrepreneurship helps rural people to take advantage of their opportunities to launch economic and profitable businesses (Rokneddin Eftekhari et al. 2018). Rural entrepreneurship refers to building a new structure in which a new commodity, service or market is created and/or a new technology is adopted in the rural environment (HeriotCampbell 2002). According to Reagan (2002), rural entrepreneurship can improve quality of life and lay the ground for employment, income improvement, and wealth generation. Further, rural entrepreneurship helps local people participate in economic activities (Reagan, 2002). Entrepreneurship can create new opportunities for entrepre-

neurs to increase their income and capital and also improve the living standards of rural communities by launching small and medium-sized businesses (Henley, 2005). In a study on the effect of entrepreneurship on the development of rural areas, Escobar and Reardon (2008) conclude that entrepreneurship development in rural areas depend on the development of entrepreneurial culture (e.g. laying ground for fostering entrepreneurs among rural people, encouraging rural people to participate in rural entrepreneurship schemes, motivating public and non-public organizations to support entrepreneurship schemes in rural areas), entrepreneurship training (e.g. empowering rural people, holding training courses for entrepreneurship, and providing consulting services about entrepreneurship), developing entrepreneurship infrastructure, facilitating rural people's access to capital, granting loans to entrepreneurs, developing transportation infrastructure, expanding information and communication systems, making links with public information and knowledge resources, and developing living facilities in rural areas. Researchers have shown that the unemployment rate of rural youth in Iran has increased from 12.5 percent in 2007 to 17.7 percent in 2011. This has been the case for the youth of Ilam province, Iran too. The 2012 consensus of the Statistical Center of Iran reports that 35.74 percent of the population of Ilam province resides in rural areas (Anonymous 2012). According to Azadi and Beikmohammadi (2012), the rural areas of this province are faced with many challenges, one being unemployment. So, it seems that the development of entrepreneurial training in the rural areas of this province can be instrumental in improving the socio-economic indices of the rural areas.

Fell (1999) states that training is the optimal way to develop entrepreneurship in villages. Similarly, Rezvani and Najjarzadeh (2009) suggest that entrepreneurship training is the key approach to creating and reinforcing entrepreneurship for the sake of the

sustainable development of rural areas.

Obviously, sound planning to provide rural people with entrepreneurial training requires precise and timely information, but this information can be used if it is processed correctly. Nowadays, information management systems are employed for the optimal use of information around the world. The growing complexity of organizations and their reliance on quick access to high-quality information have created a new field known as information management, which is as important as human resources and financial management in organizations (Norton 1997). Reliable access to relevant information for those who share information is a key factor in information generation in societies, which leads to the generation of knowledge and social growth and development (Sreekumar 2006).

Information should be continuously collected by trained people. They should be, then, subjected to analysis and interpretation to be delivered to officials. It should be noted that this information is not raw, rather they are analyzed and interpreted and they form a basis for planning and management by officials (Davoodi et al. 2010). Hassanzadeh (2005) suggests that information management is the process of information recognition and generation, organization and storage, dissemination or publication, and exploitation or use with respect to organizational and socio-cultural components of an organization and the use of technology in this process.

In a study on the healthcare system for unforeseen natural disasters in the US, Japan, and Iran, Safdari et al. (2006) proposed to develop, reinforce and systematize information system of natural disasters in Iran by using different methods, systems and software for information collection, the establishment of a network of unforeseen disasters and healthcare, more coordination with the involved organizations, the use of geographical information system, and the exploitation of healthcare information classification systems to enhance this system. Davoodi et al. (2010) took a comparative study of an occupational

disease information system in the US, Finland, France, and Iran and concluded that Finland had the most comprehensive system and that Iran lacked a comprehensive system. They recommended using the experience of other countries to establish a comprehensive electronic system of occupational diseases in Iran due to the importance of occupational diseases and their prevention. In a research work on the design and application of a management information system for hand-made carpets in Iran, Eslami et al. (2012) concluded that it was feasible to develop information systems for the technical, organizational, and economic management of hand-made carpets in spite of low digital literacy of those employed in the hand-made carpet sector and the lack of hardware and software infrastructure in relevant public and private organizations.

It seems that the development of entrepreneurial training in rural areas of Ilam province can contribute to the development of the province and improvement of production and employment in its villages. But, it is beforehand imperative to design an information management system for entrepreneurship training in the rural areas of this province so as to provide a roadmap for designing entrepreneurial training courses that are aligned with the relative advantages of these rural areas. A review of the literature shows that no research has ever focused on an information management system for entrepreneurial training in rural areas of this province. So, the present study aims to design a model for an information management system of entrepreneurial training in rural areas of Ilam province as a step towards their development. Various studies have focused on information management systems, some of which are reviewed below. In an attempt to propose an information management system for the perinatal period in Iran, Sadoughi et al. (2015) stated that the final model was composed of three major topics – goals, structure, and data collection mechanism. In this model, 32 goals were confirmed. The re-

sponsible organizations, supervisors, committees, and data generation centers in the structure aspect were specified. Within the data collection mechanism, data resources, media type, time framework for data delivery, data collection process, and methods of confidentiality and data security were considered. The authors expected that the proposed model would enhance perinatal care quality, data exchange, and accomplishment to an integrated information management system. Souitaris et al. (2007) reported that entrepreneurial training programs increased the entrepreneurial attitude of people significantly. In addition, Souitaris et al. suggests that there is a significant relationship between the development of innovation and the digital economy and the development of entrepreneurship in rural areas. According to Granville et al. (2005), the school staff argued that the use of management information systems in schools would increase effectiveness and efficiency, make a saving in time, and facilitate the development of alternative solutions for complicated problems. Demir (2006) studied elementary schools and the extent of their use of MIS in Turkey and suggested that school principals should be more motivated to use information systems. They argued that data is an invaluable resource for decision-making and stated that MIS would play a critical role in educational reforms. Ajami and Hosseini (2013) compared the health-related population information management system of Iran with the UN standards and concluded that executives can use in their decision process an information system that is reliable and valid, so all relevant organizations should cooperate to improve it and reduce its weaknesses and avoid providing inconsistent information by cooperation and data sharing. In a study to design a regional information system for surveillance of voluntary counseling and testing (VCT) of HIV/AIDS, Nematollahi and Hatam (2011) found that since most data on HIV spread were collected by VCT centers and the information related to the steps and results of VCT

services could play a significant role in designing and improving HIV/AIDS intervention strategies and given the fact that HIV/AIDS spread differed among different provinces and regions, it was necessary to clarify, analyze, and publish the VCT data for each province. Farzi et al. (2008) explored the national diabetes registry system and proposed a model consisted of structure, data elements, aims, registration criteria, data collection process, classification systems, and data quality control system for the registry system in question.

### METHODOLOGY

The research was a descriptive study conducted by the Delphi technique. So, a panel of experts was invited to a focused-group session to discuss the measures determining the components of an entrepreneurial training information management system in the rural areas of Ilam province. By a qualitative content analysis, a list of measures was derived (Table 1). The list was extracted by considering the models and conceptual frameworks suggested for an entrepreneurial training information management system in the rural areas of Ilam province. The initially suggested model was translated into a questionnaire to be filled out by the panel in three rounds. The questionnaire was composed of a section for the demographic information of the experts and items pertaining to the derived components. The responses to the items were organized on a 10-point scale (from 1 = least important to 10 = most important). Open-ended questions were also included to collect the experts' opinions about each section. The validity of the questionnaire was measured through content validity by three experts and academic teachers of rural entrepreneurship management. To check the reliability and consistency in the replicability of the results, the test-retest technique was used. The sample was taken by the purposive technique. Finally, 15 experts including faculty members, managers, and experts who were fully familiar with these concepts were selected as the

research sample. The inclusion criteria were familiarity with entrepreneurial training information management, research background in rural entrepreneurship, and familiarity with the status of training, employment, and rural environment of the province. The number of the experts was identical in the three rounds of the Delphi. At this step, the questionnaires were administered to the experts in face-to-face meetings. After collecting the questionnaires of the first round, the results were analyzed. The items whose weighted coefficient was  $\geq 1$ , as well as the new points suggested by the panel, were included in the second round. The results of this round were analyzed like the first round and they were put in a poll in the third round. Finally, the panel confirmed the final model composed of seven components (data collection, data storage, data quality control, data analysis, data dissemination, documentation, and data sharing and application) and 22 sub-components in the third round.

### RESULTS

Fifteen experts whose demographic information is summarized in Table 2 participated in this study. The components identified in the three rounds of the Delphi technique are displayed in Figure 1.

Table 2 presents the results of consecutive rounds of the Delphi to identify and assess the measures for the components of an entrepreneurial training information management system in the rural areas of Ilam province.

Here, the items were ranked by their weighted coefficients. To this end, the mean scores were first calculated for each dimension, and the score of each individual item was then divided by the mean total score. A look at the panel's opinions shows that seven consecutive and inter-related steps should be systematically considered for the management of rural entrepreneurial training information in Ilam province (Figure 1). They include data collection, data storage, data quality control, data analysis, data dissemination, documentation, and data sharing and application

The results show that in the data collection dimension, "specifying the required (economic, social, cultural, infrastructural, ecological ...) information" was the most important item. In the data storage dimension, the items "registering data in the system" and "inputting data in data analysis software" were ranked the first and the item "sorting, summarizing, and protecting the confidentiality of data" was ranked the second. In the data quality control dimension, the two items "control by the Governor's Office of Economic Coordination (GOEC)" and "control by the Governor's Employment Workgroup (GEW)" were found to be important. Based on Table 2, it can be claimed that GOEC should take responsibility for data analysis. In the data dissemination dimension, four items were found to have a weighted coefficient of  $>1$  among which the items "responsible: GOEC and GEW" and "dissemination by audio-visual

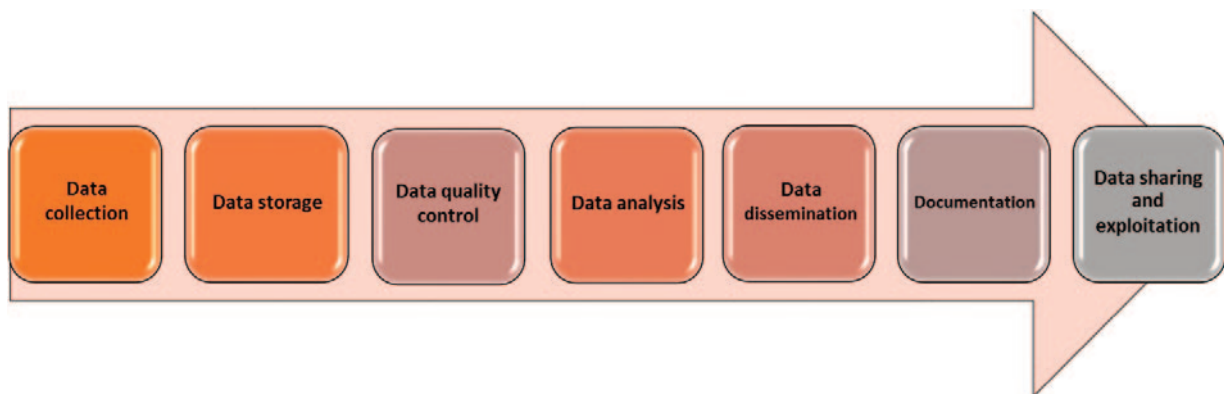


Figure 1. The Structure of an Information Management System for Rural Entrepreneurship Training

Table 1  
*Measures to Determine the Components of an Entrepreneurship Training Information Management System for Rural Areas of Ilam Province from the Perspective of the Focused-Group Experts*

Sr. No.	Components/sub-components
<b>Data collection</b>	
1	Data collection by the Governor's Rural Affairs Management
2	Data collection by the Governor's Employment Workgroup
3	Data collection by the Governor's Office of Economic Coordination
4	Data collection by the Technical and Vocational Training Organization
5	Data collection by the General Office of Labor, Welfare, and Cooperative
6	Data collection by the private-sector research and educational institutes
7	Data collection by the University of Ilam
8	Data collection by Payam Noor University
9	Data collection by Islamic Azad University
10	Data collection by the University of Applied Science and Technology
11	Data collection by using standard forms (a separate form for each village)
12	Data collection by using periodical statistic books
13	Data collection by Agricultural Jihad Organization
14	Data collection by the Office of Natural Resources and Watershed Management
15	Data collection by the Islamic Revolution Housing Foundation
16	Data collection by the General Office of Education
17	Data collection by the General Office of Industry, Mining, and Trade
18	Data collection by the General Office of Technical and Vocational Training
19	Data collection by the General Office of Cultural Heritage and Tourism
20	Data collection by the General Office of Welfare
21	Data collection by the General Office of Labor, Welfare, and Cooperatives
22	Data collection by the Governorate
23	Data collection in paper documents
24	Data collection as electronic sources
25	Economic data collection
26	Demographic and social data collection
27	Cultural data collection
28	Infrastructural data collection
29	Ecological data collection
30	Data collection on a monthly basis
31	Data collection on a biannual basis
32	Data collection on a yearly basis
33	Data collection on a triennial basis
<b>Data storage</b>	
1	Data registry in a single system
2	Data sorting and summarizing
3	Data registry in specific data analysis software packages (e.g. SPSS, MS-Access)
4	Determining the access level for different users
5	Enforcing data confidentiality rules
6	Determining how to have access data for different agencies
7	Protecting printed versions and backup files
8	Limiting access to the database
9	Archiving data in paper form
10	Archiving data in electronic format
11	Storing data in paper form and electronic format
12	Keeping a backup from database in MS-Access
13	Linking database to other relevant databases
14	Ensuring the security and confidentiality of data storage systems
15	Periodically assessing data storage systems
16	Specifying a duration for data storage
17	Training users who input the data

Table 1  
Continued

Sr. No.	Components/sub-components
<b>Data quality control</b>	
1	Performing quantitative analysis to ensure that all necessary data are received
2	Performing qualitative analysis to identify correctable defects
3	Searching for missing data by the village
4	Checking for unusual findings to fix coding error
5	Checking the rationality of the data
6	Inserting any possible adjustments to the database
7	Data quality control by the Governor's Office of Rural Affairs
8	Data quality control by the Governor's Office of Economic Coordination
9	Data quality control by the General Office of Technical and Vocational Training
10	Data quality control by the General Office of Labor, Welfare, and Cooperatives
11	Data quality control by universities and higher education centers
12	Data quality control by the Governor's Employment Workgroup
13	Data quality control by private-sector research and educational institutions
<b>Data analysis</b>	
1	Data analysis by the Governor's Office of Rural Affairs
2	Data analysis by the Governor's Office of Economic Coordination
3	Data analysis by the General Office of Technical and Vocational Training
4	Data analysis by the General Office of Labor, Welfare, and Cooperatives
5	Data analysis by private-sector research and education institutes
6	Data analysis by universities and higher education centers
7	Data analysis using SPSS
8	Data analysis using MS-Access
9	Data analysis using Stata
10	Reporting for the whole province
11	Reporting for each city
12	Reporting for each sector
13	Reporting for each rural area
14	Setting separate formats by sector (agriculture, industry, services)
15	Determining the type of business specialized training (exact curriculum, teaching methodology, lecturers, etc.)
16	Setting up detailed reports



Table 1  
Continued

Sr. No.	Components/sub-components
<b>Data dissemination</b>	
1	Dissemination through media
2	Dissemination through newspapers
3	Dissemination in the form of tables and charts
4	Dissemination in the form of forms
5	Having a single information management system for data dissemination
6	Dissemination by the Governor's Office of Rural Affairs
7	Dissemination by the Governor's Office of Economic Coordination
8	Dissemination by the General Office of Technical and Vocational Training
9	Dissemination by the General Office of Labor, Welfare, and Cooperatives
10	Dissemination by private-sector research and educational institutions
11	Dissemination by universities and higher education centers
<b>Documentation</b>	
1	Documentation by the Governor of Office of Rural Affairs
2	Documentation by the Governor's Office of Economic Coordination
3	Documentation by the General Office of Technical and Vocational Training
4	Documentation by the General Office of Labor, Welfare, and Cooperatives
5	Documentation by private-sector research and education institutions
6	Documentation by universities and higher education centers
7	The producer of data should be clear.
8	The original forms and documentation should always be archived.
9	Reports should be based on data and personal comments should be avoided.
10	Any changes in the village and regional conditions should be recorded.
11	Reports and instructions should be updated by time and variations.

Table 2  
*Demographic Characteristics of the Participants*

Variable	Group	Frequency	Percentage
Gender	Male	10	66.6
	Female	5	33.4
Position	Faculty member	8	53.3
	Non-faculty member	7	56.7
Working organization	University	8	53.3
	Executive agencies	7	56.7
Number of years at work	Year	-	18.3

media" were ranked higher. In the documentation dimension, two items had a weighted coefficient of >1. They included "documentation by GOEC" and "documentation by GEW". Two items of "data sharing and application by GOEC" and "data sharing and application by GEW" were found to be the most impor-

tant items in the dimension of data sharing and application (Table 3).

### CONCLUSIONS AND RECOMMENDATIONS

The development of entrepreneurship and self-employment has become a must in rural areas, so to cope with the challenges of rural

Table 3  
Components and Items of the Rural Entrepreneurial Training Information Management System

Component	Item	Mean rank	SD	Coefficient of variance	Weighted coefficient	
Data collection	1	Specifying required information (economic, social, cultural, infrastructure, ecological, etc.)	9.11	2.41	0.26	1.07
	2	Data collection on an annual basis	8.78	2.34	0.27	1.03
	3	Data collection in paper and electronic forms	8.78	2.34	0.27	1.03
	4	Data collection from resources like periodic statistic books, agricultural Jihad organization, natural resources organization, housing foundation, the office of education, the office of technical and vocational training, office cultural heritage, etc.	8.78	2.38	0.27	1.03
	5	Specifying whose is in charge of data collection (Governor's Office Rural Affairs)	8.67	2.36	0.27	1.02
	6	Data collection using standard forms (each village a separate form)	8.56	2.41	0.28	1.01
Data storage	1	Registering data into the system	9.22	2.42	0.26	1.05
	2	Data entry into data analysis software	9.22	2.42	0.26	1.05
	3	Sorting, summarizing and maintaining the confidentiality of data	9	2.45	0.27	1.02
Data quality control	1	By the Governor's Office of Economic Coordination	9.11	2.49	0.27	1.04
	2	By the Governor's Employment Workgroup	9.11	2.53	0.28	1.04
Data analysis	1	Responsible: the Governor's Office of Economic Coordination	9	2.36	0.26	1.05
	2	Determining the type of specialized business training, curriculum, teaching methodology, lecturers and so on	8.89	2.32	0.26	1.03
	3	Determining separate formats of business in the agricultural, industrial and service sectors	8.78	2.45	0.28	1.02
Data dissemination	1	Responsible: the Governor's Office of Economic Coordination and the Governor's Employment Workgroup	8.67	2.58	0.30	1.03
	2	Dissemination through audio-visual media	8.67	2.47	0.28	1.03
	3	Dissemination through web sites and Internet systems	8.56	2.41	0.28	1.02
	4	Dissemination in the form of tables, charts, and so on	8.56	2.52	0.29	1.02
Documentation	1	By the Governor's Office of Economic Coordination	9.33	2.46	0.26	1.03
	2	By the Governor's Employment Workgroup	9.33	2.54	0.27	1.03
Data sharing and application	1	By the Governor's Office of Economic Coordination	9.4	2.51	0.27	1.11
	2	By the Governor's Employment Workgroup	8.89	2.39	0.27	1.05

communities, the entrepreneurship approach has been considered by planners as an important way for rural development (Chowdhury, 2007).

Empirical research has revealed that entre-

preneurship can be taught, or at least it can be developed by training (Gorman et al., 1997). To assess the status of education and training in a country, one needs data on inputs, resources, administration, actions, and

results of its training system (Abdul Hamid, 2014). Undoubtedly, data acquisition, retrieval, and dissemination will be boring if there is no appropriate systematic information management in place and this may lead to extra effort and time, especially for determining the type of data required and identifying data suitable for the relevant needs of stakeholders (Merzuki & Latif, 2009).

The model proposed here has seven steps of data collection, data storage, data quality control, data analysis, data dissemination, documentation, and data sharing and application. According to those participated in the study, at the data collection step, it is first necessary to identify the type of required data beforehand and to collect them at one-year intervals by the standard forms designed by the relevant entities. Keeping their confidentiality, the

data should be inputted in a single system and analyzed by data analysis software like SPSS. For quality control, the data should be revised by GOEC and GEW to minimize the mistakes and errors of the previous step. GOEC should be in charge of data analysis. The results of this step along with the specified technical training types should be provided in separate formats for business training in the agricultural, industrial and/or service sectors. Data dissemination plays a vital role in the use of information and its practicality. To this purpose, according to the experts participated in the study, GOEC and GEW should disseminate data in the form of tables, diagrams and so on via audio-visual media and Internet systems. In the proposed model, GOEC and GEW are in charge of documentation and data sharing and application (Figure 2).

Data collection					
Data collection of standard forms	Specifying an individual responsible for data collection	Collection from such resources as periodic statistic books	In hard and soft copy and in form format	Annual data collection	Specifying the required data
Data storage					
Sorting, summarizing, and keeping confidentiality of data		Data inputting in data analysis software		Data registry in the system	
Data quality control					
by the Employment Workgroup			by the Office of Economic Coordination		
Data analysis					
Determining separate formats of business in different sectors		Determining the technical business training types		Under the responsibility of the Office of Economic Coordination	
Data dissemination					
Dissemination in the form of tables, graphs, and so on		Dissemination through internet sites and systems	Dissemination through visual and audio media	Under the responsibility of the Office of Economic Coordination and the Employment Workgroup	
Documentation					
By the Employment Workgroup			By the Office of Economic Coordination		
Data sharing and exploitation					
By the Employment Workgroup			By the Office of Economic Coordination		

Figure 2. The Proposed Model for an Information Management System for Rural Entrepreneurship Training in Ilam Province

Designing and implementing a systematic model is necessary for entrepreneurship training. Rural entrepreneurship training does not follow a standard procedure in Iran and consequently in Ilam province whereas decision on strategies should be based on timely and reliable data on the status of employment, unemployment, resources, and economic, social and cultural status of the rural environment. According to the scholars in this study, it is imperative to design and exploit a standard model for the rural entrepreneurship training information management system.

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