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# The Effect of Intra-Organizational Factors on Human Resource Development in the Implementation of Knowledge Management Components in Small Knowledge-based Companies

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**ABSTRACT**

**The present study aims to investigate the effect of intra-organizational factors on human resource development in small knowledge-based companies by considering the components of knowledge management in. The study adopts a practical approach and descriptive-correlation method. The data collection instrument is questionnaire. To measure intra-organizational factors the questionnaire of Fazili and Alishahi (2012), to measure knowledge management the questionnaire of Patrick et al. ( 2009), and to human resources development a researcher-made questionnaire are used. The statistical population includes 450 managers and shareholders from knowledge-based companies in Lorestan Province, Iran. Based on Krejcie and Morgan (1985) table, a sample size of 208 people was selected using simple random sampling. Data were analyzed using SPSS and Lisrel. Findings highlight that intra-organizational factors have a positive and significant effect on human resource development and knowledge management components as well as knowledge management components have a positive and significant effect on human resource development.**

**Keywords:** Intra-organizational factors, Human resource development, Knowledge management; Knowledge-based companies

## INTRODUCTION

In the past decades, "small and medium-sized enterprises in general and knowledge-based companies in particular, have attracted the attention of researchers and policy makers" (Mansouri et al., 2016, 320). In today's changing world, the infrastructure of industrial

economies is shifting from the focus on resources to on intellectual capital, and hence the knowledge component is increasingly becoming important. In such a situation, a new type of organization form is needed; Organizations which are based on knowledge and are known as knowledge-based companies play a crucial role in the economic development of a country. In fact, these companies are the engine of growth and development. The term knowledge-based companies with this conception are rarely found in the literature. Theoretically, knowledge-based companies mostly refer to the companies that are learning and creating knowledge and use the knowledge, whether tacit or explicit knowledge, to expand their products and technologies. In fact, this concept mostly refers to "established organizations that use the processes of knowledge creation and application to progress in their business" (Khayatan et al., 2016, p. 49).

In today's competitive world where productivity has grown in all areas, only organizations can thrive in this turbulent world that make the best use of their resources and have the most productivity in the shadow of the internal and external factors of the organization. Internal organizational characteristics are a vital resource for success. The intra-organizational factors include a broad and relatively stable set such as culture, structure, power, and political endeavors that constrain the organization's activities. Researchers are trying to study the effect of these elements on human resource development (Fazli & Alishahi, 2012).

It can be said that change is the most important feature that organizations may face. In these changes, the very important status of "human resource as the designer, creator and processor of operating systems becomes more and more apparent" (Taybi Abolhassani & Khodabakhshi, 2017, p. 168). Due to the competitive environment of the business environment, access to appropriate resources is considered the most prominent factor in the success of organizations. In the meantime, human resource is the only resource that is different from other resources and does not have the negative characteristics of other resources including mortality, imitation, etc. Of course, here human resource refers to proficient and knowledgeable human resources that are promoted by using human resource development systems and processes (Khorasani et al., 2016). Human resources are considered an important source for organizational innovation. The main goal of most policymakers is to influence the human resources (Antonioli et al., 2014). Human resource development is always one of the main challenges of organizations, because in the arena of innovation, quality, continuous growth and other important data on survival in the competitive and modern business world it is humans who create ideas ( Bell, 2005). In today's world, the latest production process technology can be purchased and used, but human knowledge and skills are more sophisticated and its acquisition requires a lot of time and money (Taheri, 2009). Therefore, to survive in competitive markets, due to changing needs and wants of customers, the leading organizations have no choice but to build innovation and establish new facilities; since in all processes of organizational development, the knowledge produced by human resource is considered as the main pillar of development, the role and position of human resource development and employees' knowledge development is really important in organizational agility. Thus, each organization should formulate and implement specific strategies and approaches for the human resource development and knowledge development of its employees according to the capabilities and limitations of the internal and external environment (Jazani, Taheri & Abili, 2010).

On the other hand," knowledge management has a risky path that evaluating the effectiveness of its methods and models calls for understanding the concept of knowledge and its functions" (Ranjbar, 2012, p. 238). The core goal of the knowledge management system is understanding and awareness of what we know and in the next stage, creating and producing what we need (Sangi et al., 2016). For this purpose, in order to implement the components and apply the knowledge management system in the organization, it is necessary first to identify the real needs for knowledge. When these needs are identified, the sources of knowledge production and knowledge sharing strategies are also identified and at the same time, employees are encouraged to produce more and newer knowledge (Shahbazi, 2012). Knowledge management focuses on individuals and emphasizes individuals as sources of knowledge. The scientific and business communities believe that knowledge-based organizations, including knowledge-based companies, can maintain their long-term competitive advantage. In fact, it can be said that knowledge management is a strategic requirement for all organizations that want to remain thriving. The key achievement of knowledge management is the development of human capital (Mehraban et.al., 2014). Nowadays, development is considered as a tool by which managers will be able to effectively manage organizations with different characteristics. Therefore, given the competitive environment in which the most successful organizations are those that can develop their human capital effectively and efficiently, it is essential that organizations maintain and nurture these key assets well by identifying the intra-organizational factors affecting human resource development. This paper aims to examine the effect of intra-organizational factors on the development of human resources in the implementation of knowledge management components in knowledge-based companies.

## STATEMENT OF PROBLEM

At the beginning of the third millennium, the role of human resources has become increasingly important, so that some consider it as the only factor in gaining a sustainable competitive advantage. This is especially true for knowledge-based enterprise. As a result, for a knowledge-based company, human capital is the most important asset, and the better the quality of this asset, the greater the probability of survival, success and promotion of the enterprise (Shafiei, 2013). There are various reasons for supporting and developing the human resources of knowledge-based companies. Increase in international attractiveness for researchers and the difficulty of retaining talented human resources especially for small knowledge-based companies is an issue that has justified the developent and implementation of a combination of innovation policy instruments focusing on research and development manpower of small enterprises. On the other hand, the existence of competition in attracting human capital for research and development is another rationale for support (Rigby & Ryan, 2018).

In Iran, after approval of the law of supporting knowledge-based companies in 2010 by the Islamic Consultative Assembly, a new approach has been created to support high-tech companies. According to this law, support and facilities will be provided to companies and institutions that will be certified as experts in the field of advanced technologies such as nanotechnology and biotechnology. These companies are mainly operating in the field of medicine and advanced materials and products based on chemical technologies, machinery, medical devices and equipment, electricity and electronics, and information and communication technology. Granting sales tax exemption for 15 years and granting short-term or long-term low-interest or interest-free facilities (including technology development and

commercialization facilities) to cover all or part of the cost of production, supply or application of innovation and technology by the Innovation and prosperity Fund is one of the most important protections in this law. By providing this support, some effects are expected to be created in the development of human resources and performance indicators of such companies (Hashemi, 2012). Furthermore, emergence of knowledge-based economy has created new needs in the organization and caused changes in organizational goals and human resource practices. It should be noted that employees' skills and their knowledge ability are the key to the success of new organizations. The transition from a traditional economy to a knowledge-based economy provides an opportunity to increase human resource performance to become a priority in the organization (Sangi et al., 2016). Meanwhile, the driving force behind the knowledge-based economy is knowledge-based companies that play a key role in the development of this economy. These companies with their capable manpower are involved in the synergy of science and wealth, the development of knowledge-based economy, the realization of scientific, economic and commercial goals, and research and development results in the field of high technology. One of the problems in these companies is the lack of attention to staff development and empowerment. Lack of proper use of the capabilities of good employees, and hence their loss, imposes huge costs on the organization (Tavakol Jazi et al., 2016).

The world is now in the middle of the economy transition from the era of competitive advantage based on information to the era of competitive advantage based on knowledge creation. The world is experiencing the era of knowledge in which knowledge is a precious commodity and knowledge flows have been considered as important factors in economics (Ansari et al., 2013, p. 62). Nowadays, access to up-to-date information and knowledge has become a stable situation for the continuation of individual, social and organizational life to the extent which knowledge is reflected as an essential part of the capital of organizations. Hence, successful organizations continuously measure the production, dissemination, exchange and application of knowledge among their employees through various methods, so that they can obtain solutions to achieve organizational goals (Rajaei et al., 2014, p. 95).

In recent years, knowledge management has become one of the most interesting and challenging topics in business management and scope of its application is always expanding along with other topics in the field of management. Knowledge management is a process that assists organizations in identifying, selecting, organizing, disseminating, and transmitting important information and skills that are part of an organization's history and generally exist in unstructured format in the organization. Organizations should consider all the matters because knowledge management acts as a work strategy simultaneously throughout the organization and is considered a device for the development of the overall program of an organization (Poursarajian, Olia &Soltani, 2013, p. 35). The main purpose of this study is to investigate the effect of intra-organizational factors on human resource development by considering the mediating role of knowledge-management in small knowledge-based companies.

In these organizations, the weakness in the development of human resource and employee' s knowledge is a very important issue that has not been addressed so far. This weakness has resulted in major issues such as inability to solve workplace problems, termination of

employees' cooperation, reduced employees' motivation and a sense of diminished value of knowledge and experience, weakness in the competence acquisition and employees' knowledge, etc., which in turn deteriorates the performance of human resources, reduces efficiency and the overall effectiveness of the education system at the current time and will exacerbate the issues in the future. In the literature, little research has been conducted on the human resource development in the small knowledge-based companies. As the main strategy of the organizations under study is to meet the needs of employees and maintain the continuous interaction with the learning community, and employees play a vital role in performing it in the small knowledge-based companies, formulating strategies to develop human resource and improve employees' knowledge is very important. The main purpose of this study is to explore the human resource development strategy with a focus on employee knowledge development in small knowledge-based companies and its role in implementing knowledge management components. The role of intra-organizational factors in this respect is also scrutinized. Improving the employees training and development requires choosing a vision that encompasses the whole system; that is, considering the structure and performance of organizations collectively and not just individually (Poshan, 2000).

Competitive advantage among organizations reveals that powerful organizations are advanced in terms of human resource and technology, and can be at the forefront of organizational development. This highlights the need for organizations to put more efforts to develop mature and grown-up employees. Since small knowledge-based companies are service organizations, the role of human resource, especially human resource development, including managers and employees, is very crucial in them, so designing human resource strategies is very important for them and top-level managers should pay attention to this basic point and try to adopt desired strategies. The issue of knowledge-based organizations is currently taken up in many publications in the field of management sciences. In the context of globalization and the increasing competitive pressures, organizations try to gain a competitive advantage based on the effective use of knowledge. It is the human resource unit that plays the main role in knowledge management in the organization, because human resource management has an important impact on the effectiveness of a knowledge-based organization. Human resource management activities can significantly support knowledge management in the organization (Han & Stieha , 2020). Therefore, conducting this research is important and necessary in the following ways: the conditions and status of the knowledge-based organization will be determined from different aspects of human resource management, especially the strategic development of human resources. The current and desirable status of the knowledge-based organization to achieve long-term goals of knowledge-based staff development will be determined. The findings of the research may help to remove the obstacles and challenges to the advancement of knowledge-based companies in achieving knowledge-based employees, and can be the basis for formulating appropriate strategies for the human resource development of other similar organizations. The horizons of long-term, medium-term and short-term goals of the knowledge-based companies are determined. Drawing up plans and allocating the funds needed to develop human resource to reach knowledge-based staff will be practical. The literature related to the rich educational system and horizons for future research in this field will be created. Conducting this research will provide the theoretical framework and appropriate research literature on knowledge-based staff development. In order to survive and compete successfully, knowledge-based companies must launch a wide range of activities

to adapt to environmental changes. Organizational improvement begins with the pathological stage in which if damages are not identified, analyzed and presented properly and in a timely manner, they may lead to premature destruction of the knowledge-based company. In this regard, human resource in the role of the main factor of change and transformation of the company has been exposed to the most changes, which if not paid attention, threatens the improvement and development of the company.

## THEORETICAL FOUNDATIONS

### Human Recourse Development

In today's competitive world, one of the most important tools to create revolution and excellence within the organization is the change and transformation, and undeniably any process of creating change is the result of human resource activities. Development is a comprehensive and systematic process of training and growth of managers. The issue of human resource has been one of the most important topics in industrial societies during the last two decades. In our country, Iran, it has gradually demonstrated its undeniable importance to managers and decision makers, and research has begun in this arena. What gives life to the system change and guarantees the stability of the organization is human resource. The fact is that if organizations do not have creative, knowledgeable, opportunistic employees, many opportunities are missed. Organizations entail to train their employees as vital and effective resources and investments for the future, as they grow and develop, they can make optimal use of these human resources when needed. Undoubtedly, the growth and development of any organization relies on its human resource, but it simply is not enough to have human resource, but the way to make the best use of, maintain and update science and knowledge and production efficiency is more important and valuable (Mohammadi et al., 2015).

Indeed, today's management theorists believe that effective employees are the most important source of competitive advantage due to their rarity, value, irreplaceability and inimitability, and are able to meet the strategic needs of the organization and increase the performance of the organization (Eidi et. al., 2019). Human resource development is a systematic and long-term process whose ultimate goal is to increase the level of awareness and insight of employees, strengthen skills and optimize training to improve the level of employee performance, enhance the efficiency and effectiveness of human resources and realize the employees' potential talents and capabilities (Linham & Cunningham, 2006). Armstrong (2001) has stated that human resource development includes providing educational opportunities to improve the performance of individuals, teams, and organizations. One of the first attempts to explain the concept of human resource development dates back to its definition by Nadler (1970). He defined human resource development as a set of organized activities that lead to behavioral changes during a particular period of time. Swanson (1995) defines it as the process of broadening human skills through employee training to improve performance.

Harrison (1992) considers human resource development as any process or activity that has the capacity in the short or long term to flourish the knowledge, skills, productivity and satisfaction of individuals or groups to achieve the goals of the organization, society, country and finally humanity. He believes that the development of human resources should be conducted in accordance with a strategy (Khalilnejad & Mehri, 2016). Today, the position of human resource and its development are the basis and center of all intellectual developments and the growth

and improvement of the quality of human activity. This is a process that, due to its importance, has covered all issues related to the modern world in various dimensions. The evolution of human capital and human cognition has transformed all equations as well, and in the current situation, human capital efficiency has taken precedence over territorial borders, so that the material capital of a city is considered to be equal with the mind and thought of a scientist. Therefore, at the present time, mentioning the importance of human resource is repetitive, but enriching and developing human resources using modern policies or executive methods is an up-to-date and debatable issue that is growing in scope every day. Creating motivation in an organization is considered part of the human skills (Mohammadi et al., 2015).

**Intra-organizational Factors**

In this study, intra-organizational factors such as organizational structure, information technology and organizational culture have been studied.

**Organizational structure**

It is a long-standing and static configuration of the organization's work and activities. In simple words, the structure of an organization is defined as a set of methods whereby the organization is divided into separate tasks, and then coordination is achieved between those tasks (Fazli & Alishahi, 2012). Zheng et al. (2010) describes the components of organizational structure as formalization, concentration, control and acceptance of authority.

**Organizational culture**

It is an important and defining factor in the success of knowledge management actions. Organizational culture comprises beliefs, values, norms and social customs that guide the behavior and actions of individuals in the organization and is considered the most important barrier in establishing knowledge-based firms. In relation to organizational culture, we can mention the culture of cooperation between employees, exchange of ideas, knowledge sharing, trust, encouraging employees to generate innovative ideas and try to solve problems. Thus, researchers emphasize that due to the role of culture in the success of knowledge management, organizations must ensure that their actions are in harmony with the organization culture (Kazemi & Malekzadeh, 2011).

**Information Technology**

It serves as a powerful, effective and efficient tool in all aspects of knowledge management including capturing, sharing and applying knowledge. Technologies such as related database management system, document management system, internet, intranet, decision support systems, e-mail, search engines, data mining, and data storage can play a significant role in facilitating knowledge management, but information technology only plays a supporting role in knowledge management. Information technology helps people to find the information they want, but only individuals can determine whether this information is suitable for them or not (Nekoudari & Yaghoubi, 2011).

**Knowledge Management**

Knowledge management involves the discovery, development, use, transfer and absorption of knowledge inside or outside the organization through an appropriate management process to achieve the current and future goals of the organization. Knowledge management is the

creation, extraction, transfer, storage of knowledge and correct information in order to design better procedures, improve operations and transfer results (Mirsapasi & Hosseinzadeh, 2018). Knowledge management is defined as a strategy that must be developed in a company. We can ensure that knowledge gets to the right people at the right time, when it can be shared and used to improve the tasks of the organization. Knowledge management is regarded as explicit and systematic management of critical knowledge and the processes associated with creation, organization, publication, application and exploration of knowledge (Dehghani & Ghorbani, 2018). It promotes an integrated approach to identifying, acquiring, retrieving, sharing and evaluating all business information assets. These information assets can include databases, documents, policies, procedures, as well as implicit and overt skills and experiences that exist in the minds of individuals (Malhotra & Galta, 2005).

The goal of knowledge management is to integrate internal and external knowledge with the aim to adapt to environmental changes both inside and outside the organization to solve existing problems and create innovation for development. Currently, we are going through times when competitive advantage is achieved not only through access to information, but more importantly through the creation of new knowledge (Samieh Zafarghandi & Agha Kathiri, 2017). Knowledge management assists organizations to identify, select, organize, and disseminate important information and skills that are reflected as organizational memory and typically exist in an unorganized manner, which reduces errors and rework. This enables the management of organizations to solve learning problems, strategic planning and dynamic decisions efficiently and effectively and increases the speed of problem solving and decision making. The most important objective of applying knowledge management in organizations is to adapt quickly to changes in the environment. Continuous changes in knowledge have created a new state of imbalance for organizations. In the meantime, only organizations can survive that can sustain their competitive advantage, and maintaining competitive advantage and the survival of the organization may be possible with the help of knowledge management. The ultimate purpose of knowledge management is the use and development of knowledge assets to achieve goals, create new knowledge in the organization, how to do work and increase the experiences of people and skills and create added value for the organization (Ronaghi, Zeinuddinzadeh & Alam Baladi, 2019).

Knowledge management consists of four stages:

1. **Knowledge Creation**: It is a process by which the knowledge you need is created within your organization. This stage includes all activities that bring new knowledge into the system. Here, activities such as discovering, creating or developing knowledge are important.
2. **Preservation of Knowledge**: It deals with what knowledge is preserved where and for how long and how this will be kept to provide maximum retrievability. Here are the activities that preserve knowledge in the organization. In this regard, we can refer to organizational memory. The most important task of organizational memory is to preserve organizational knowledge.
3. **Transformation and Transfer of Knowledge**: Knowledge should be easily exchanged in your organization. Here are the activities that are related to the transfer of knowledge from one form to another or from a person or group to another person or group.

Activities such as coding knowledge and forming knowledge exchange teams are important at this stage.

4. **Knowledge Application**: It includes processes that develop knowledge taken from others according to their other knowledge facilities and also allow the application of knowledge in different work environments. Knowledge is valuable when it is applied. Knowledge management activities not only should affect the actions and grand plans of the organization but also their effects should be observed in the daily activities of the organization (Kachuei Manesh & Pourhossein, 2016).

## LITERATURE REVIEW

Arsalan and Vaezi (2019) in a study entitled "model of human resource development in the public sector of Kerman province" state that the issue of human resource development is vital for today's organizations. Since human resource provides a sustainable competitive advantage for organizations, developmental efforts must begin first with human resources. Seyed Abbaszadeh et al. (2015) in another study entitled "sustainable human resource development: the effects of management-knowledge channel and organizational factors, with the aim of modeling sustainable human resource development in line with the effects of knowledge-management channels and factors organizational", concluded that organizational factors have a positive, direct and significant impact on the knowledge management process. Knowledge management process has a positive, direct and significant impact on human resource development; Organizational factors have a positive, direct and significant effect on human resource development. Khalilnejad and Mehri (2016) in a study entitled "the role of knowledge management in human resource development", found that knowledge management plays a significant role in the human resource development and the development of knowledge management system can develop human resource in all dimensions. Qutbuddini, Danaei and Matani (2019) in a study , " Factors Affecting the Implementation of Knowledge Management: Evaluating the Factors Affecting the Implementation of Organizational Knowledge Management", concluded that from the employees' perspectives, "employees' interactions and mutual relationship" has been the most important factor affecting the employees' readiness for knowledge management implementation. Hosseini (2013) in an article entitled "Study of organizational factors affecting human resource empowerment" established that organizational factors affecting human resource empowerment can be related to communication, leadership style, employee's needs, organizational ethics, and competency.

Moo et al. (2008) examined the relationship between human resource development and knowledge-sharing status in network companies. The results of their research revealed that the of human resource development in various dimensions, especially "trust", play an important role in the development of knowledge management programs and act as an informal strategic mechanism in the knowledge management process. In their research, Young and Forn (2009) scrutinized the role of organizational training, employee development, and control of organizational behavior in tacit knowledge sharing and knowledge sharing behavior in organizations. The results showed that staff training and improvement plays a significant role in the process of knowledge sharing in organizations. Rothman (2008) conducted a study on American companies that have association with companies outside the United States and examined the extent of human resource development in the companies and its role and relationship with knowledge transfer. The findings indicated that human resource

development has a great impact on the dissemination and transfer of knowledge by facilitating and creating networks, the development of trust and relationship between individuals; and the expansion of training and human resources development facilitates the process of dissemination and transfer of knowledge within the companies. Orange and Chalmata (2019) explored the use of Web 2.0 and BigData tools in the development of knowledge management systems. They provided a methodology that can help organizations use Web 2.0 and BigData tools to discover, collect, manage, and apply knowledge, and make the process of implementing a knowledge management system faster and simpler. Santolby et al. (2018) presented a three-dimensional fuzzy logical approach to assess the level of convergence between knowledge in the company and the knowledge management system. In this study, solutions to reduce inconsistencies and improve operations performance in terms of reliability and effectiveness were proposed, and the correlation coefficient between organizational knowledge and knowledge management systems from ontological and epistemological perspectives was run.

**Hypotheses**

**Hypothesis 1**: Intra- organizational factors have a significant effect on human resource development of knowledge-based companies in Loretan Province.

**Hypothesis 2**: Intra- organizational factors have a significant effect on the of knowledge management components of knowledge-based companies in Loretan Province.

**Hypothesis 3**: The components of knowledge management have a significant effect on the of human resource development of knowledge-based companies in Loretan Province.

**Conceptual Model of Research**

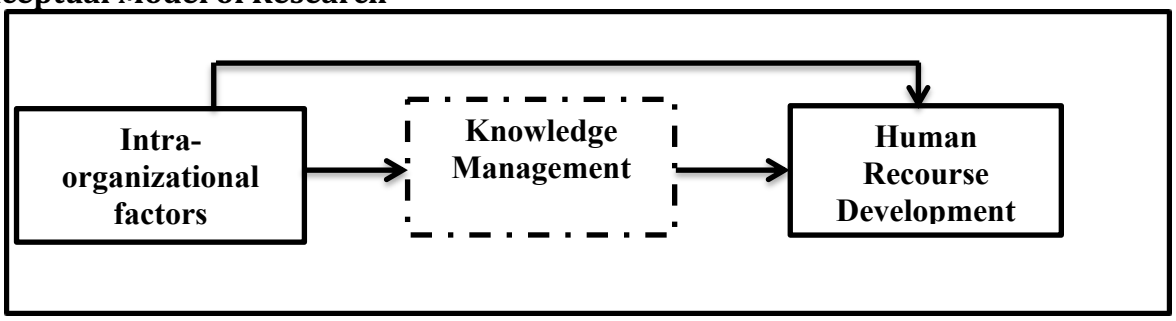



**Fig.1 Conceptual Model**

## METHODOLOGY

The purpose of this study is to investigate the effect of intra- organizational factors on the human resource development in the implementation of knowledge management components in small knowledge-based companies. This research is applied in terms of purpose and has a descriptive-correlational nature. The statistical population of this study includes 450 managers and shareholders of knowledge-based companies in Lorestan Province. Based on Krejcie and Morgan (1985) table, a sample size of 208 people was selected using the simple random sampling. The data collection instrument was questionnaire. For measuring intra-factors the questionnaire of Fazili and Alishahi (2012), for knowledge management the questionnaire of Patrick et al.( 2009), and for human resources development a researcher-made questionnaire were used.

The validity of the questionnaires was assessed through a sample of leading experts and professors in this field. To measure the reliability of the research, first 30 questionnaires were distributed in the statistical sample and then using the Cronbach's alpha coefficient, the reliability of the research components was measured, which was higher than 0.7 for all three questionnaires. The result is presented in Table 1. Also, the structural equation model was used for further analysis and better understanding of the data structure. In order to get a measure of fit of data, indicators of RMSEA, SRMR, GFI, CFI, AGFI, IFI, NFI, NNFI are presented.

**Table 1 Scales and subscales of research and their reliabilities**

| Scales مقیاس | Sub-scales | Questionnaire Items | Reliability of Research Components | Reliability of Each Instrument |
|---|---|---|---|---|
| Knowledge Management | Knowledge Creation | 7 Items (1-7) | 0/79 | 0/80 |
| | Knowledge-Sharing | 6 Items (8-13) | 0/81 | |
| | Knowledge Application | 5 Items (14-18) | 0/88 | |
| | Knowledge Storage | 7 Items (19-25) | 0/76 | |
| Intra-organizational Factors | Organizational Structure | 18 Items (26-43) | 0/89 | 0/82 |
| | Information Technology | 10 Items (44-54) | 0/78 | |
| | Organizational Culture | 14 Items (54-67) | 0/73 | |
| Strategic Human Resources | Human Resources | 13 Items (67-80) | 0/79 | 0/79 |

## RESULTS

According to demographic information, about 57.6% of the respondents were male and 42.4% were female. 15.7% of the respondents had a master's degree, 67.7% a bachelor's degree and 16.6% a master's degree. To determine the characteristics of the research variables, the average of the main concepts and dimensions of the questionnaires is provided in Table 2.

**Table 2 Mean and standard deviation of dimensions of factors and knowledge management and human resource development**

| Concepts مفهوم | Dimensions | Mean | Standard Deviation | Variance |
|---|---|---|---|---|
| Knowledge Management | Knowledge Creation | 2/66 | 5/024 | 25/236 |
| | Knowledge-Sharing | 2/18 | 4/977 | 24/766 |
| | Knowledge Application | 1/80 | 4/392 | 19/287 |
| | Knowledge Storage | 2/68 | 5/198 | 27/015 |
| Intra-organizational Factors | Organizational Structure | 7/02 | 11/167 | 124/706 |
| | Information Technology | 4/02 | 6/387 | 40/799 |
| | Organizational Culture | 5/48 | 7/964 | 63/432 |
| Strategic Human Resources | Human Resources | 5/22 | 7/488 | 56/065 |

As can be seen, among the dimensions of Knowledge Management, knowledge storage and knowledge application enjoy the highest and lowest means, respectively. Among the dimensions of intra-organizational factors, organizational structure and information technology have the highest and lowest mean scores, respectively.

## Structural Equation Modeling

Structural equation modeling is a comprehensive approach that is used to analyze the structural relationships between observed and latent variables. It is sometimes called covariance structural analysis, causal modeling, and sometimes LISREL.

After correlation test, structural equation modeling and LISREL statistical software were used to determine the factor loading between variables. The value of each of the factor loadings of the corresponding latent variable indices must be greater than or equal to 0.5. The human resource development variable was conducted through first-order factor analysis and the variables of intra-organizational factors and knowledge management were conducted through first and second-order factor analyses.

**Table 3 Factor analysis of knowledge management variables**

| Variableمتغير | Dimension | Question | Factor Loading | T-Value | AVE Index | CR Index |
|---|---|---|---|---|---|---|
| Knowledge Management | Knowledge Creation | 1 | 0/68 | 10/24 | 0/52 | 0/91 |
| | | 2 | 0/61 | 9/69 | | |
| | | 3 | 0/74 | 9/89 | | |
| | | 4 | 0/66 | 11/15 | | |
| | | 5 | 0/69 | 10/15 | | |
| | | 6 | 0/65 | 10/21 | | |
| | | 7 | 0/62 | 10/02 | | |
| | Knowledge-Sharing | 8 | 0/75 | 9/73 | 0/56 | 0/93 |
| | | 9 | 0/72 | 11/62 | | |
| | | 10 | 0/77 | 11/37 | | |
| | | 11 | 0/79 | 11/67 | | |
| | | 12 | 0/72 | 11/96 | | |
| | | 13 | 0/84 | 10/65 | | |
| | Knowledge Application | 14 | 0/76 | 10/40 | 0/59 | 0/94 |
| | | 15 | 0/78 | 10/75 | | |
| | | 16 | 0/78 | 10/83 | | |
| | | 17 | 0/82 | 9/65 | | |
| | | 18 | 0/66 | 10/62 | | |
| | Knowledge Storage | 19 | 0/85 | 11/38 | 0/51 | 0/90 |
| | | 20 | 0/79 | 11/69 | | |
| | | 21 | 0/82 | 9/28 | | |
| | | 22 | 0/69 | 9/14 | | |
| | | 23 | 0/79 | 8/64 | | |
| | | 24 | 0/76 | 12/99 | | |
| | | 25 | 0/74 | 13/08 | | |

As can be understood, all the factor loadings, the T-value, and the average variance extracted (AVE) are greater than 0.50, 3, and 0.5, respectively, being suggestive of an adequate convergent validity. Moreover, as the composite reliability is greater than the Average Variance Extracted, the questions of knowledge management variable have internal consistency. As can be seen in Table 4, all the factor loadings of three dimensions of the intra-organizational factors variable are greater than 0.5 and the average variance extracted index is greater than 0.5, which indicates that these dimensions are well measured by their questions.

**Table 4 Factor analysis of intra-organizational factors variable**

| متغیرVariable | Dimension | Question | Factor Loading | T-Value | AVE Index | Index CR |
|---|---|---|---|---|---|---|
| عوامل درون سا | Organizational Structure | 26 | 0/66 | 7/56 | 0/51 | 0/92 |
| | | 27 | 0/76 | 11/74 | | |
| | | 28 | 0/78 | 10/20 | | |
| | | 29 | 0/65 | 10/60 | | |
| | | 30 | 0/74 | 11/58 | | |
| | | 31 | 0/74 | 12/13 | | |
| | | 32 | 0/45 | 11/29 | | |
| | | 33 | 0/74 | 11/52 | | |
| | | 34 | 0/66 | 12/00 | | |
| | | 35 | 0/69 | 13/01 | | |
| | | 36 | 0/73 | 12/55 | | |
| | | 37 | 0/68 | 12/33 | | |
| | | 38 | 0/71 | 12/25 | | |
| | | 39 | 0/72 | 12/74 | | |
| | | 40 | 0/71 | 11/17 | | |
| | | 41 | 0/77 | 10/24 | | |
| | | 42 | 0/70 | 10/44 | | |
| | | 43 | 0/74 | 8/34 | | |
| | Information Technology | 44 | 0/78 | 9/16 | 0/52 | 0/89 |
| | | 45 | 0/72 | 8/19 | | |
| | | 46 | 0/76 | 11/52 | | |
| | | 47 | 0/78 | 9/51 | | |
| | | 48 | 0/78 | 9/16 | | |
| | | 49 | 0/79 | 11/05 | | |
| | | 50 | 0/65 | 10/40 | | |
| | | 51 | 0/75 | 10/31 | | |
| | | 52 | 0/80 | 10/66 | | |
| | | 53 | 0/75 | 9/88 | | |
| | Organizational Culture | 54 | 0/79 | 11/02 | 0/54 | 0/91 |
| | | 55 | 0/73 | 10 | | |
| | | 56 | 0/61 | 10/84 | | |
| | | 57 | 0/65 | 10/47 | | |
| | | 58 | 0/71 | 10/50 | | |
| | | 59 | 0/63 | 10/93 | | |
| | | 60 | 0/50 | 9/16 | | |
| | | 61 | 0/74 | 8/19 | | |
| | | 62 | 0/66 | 11/52 | | |
| | | 63 | 0/70 | 9/51 | | |
| | | 64 | 0/73 | 9/16 | | |
| | | 65 | 0/73 | 11/05 | | |
| | | 66 | 0/79 | 10/40 | | |
| | | 67 | 0/75 | 10/31 | | |

As indicated in Table 5, all the factor loadings of human resource development variable are greater than 0.05 and the T-value is greater than 3, suggesting the questions of the variable have good internal consistency.

**Table 5 Factor analysis of human resource development variables**

| Variable | Question | Factor Loading | T-Value | AVE Index | CR Index |
|---|---|---|---|---|---|
| Human Resource Development | 68 | 0/79 | 7/96 | 0/56 | 0/88 |
| | 69 | 0/79 | 11/04 | | |
| | 70 | 0/77 | 12/93 | | |
| | 71 | 0/62 | 13/42 | | |
| | 72 | 0/82 | 14/81 | | |
| | 73 | 0/76 | 10/95 | | |
| | 74 | 0/83 | 11/84 | | |
| | 75 | 0/85 | 12/70 | | |
| | 76 | 0/77 | 14/71 | | |
| | 77 | 0/70 | 12/08 | | |
| | 78 | 0/65 | 11/81 | | |
| | 79 | 0/71 | 13/11 | | |
| | 80 | 0/78 | 13/42 | | |

## Testing the Structural Model of Research Hypotheses

First, to test the first and third hypotheses, the model is considered in the case of t-coefficients or significant coefficients. If the T values are in the range of more than +1.96 and larger -1.96 it indicates the significance of the relevant variable and subsequently confirms the research hypotheses.

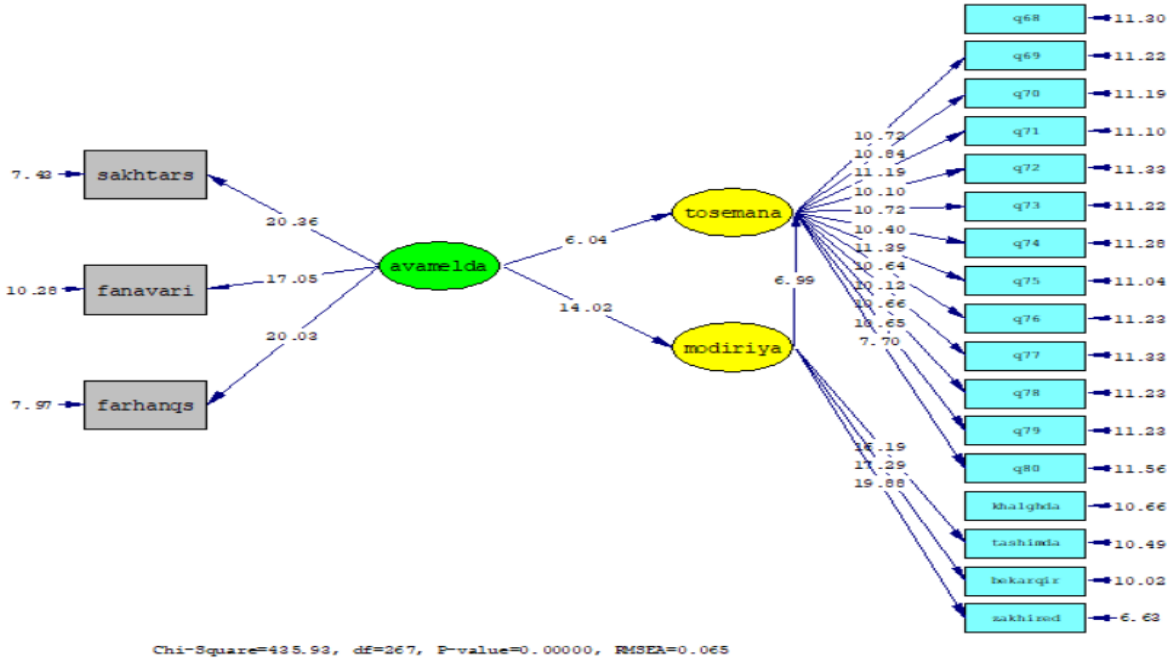



**Fig. 2 Model in significant coefficient mode**

As you can see, significant coefficients between the variables of intra- organizational factors and human resource development (Hypothesis 1), intra-organizational factors and knowledge management (Hypothesis 2) and knowledge management and human resource development (Hypothesis 3) is greater than the range of 1.96, which indicates the confirmation of the research hypotheses. Figure 2 illustrates the model in the standard estimation mode. In this case, the extent of the impact of each research structure on each other has been discussed.

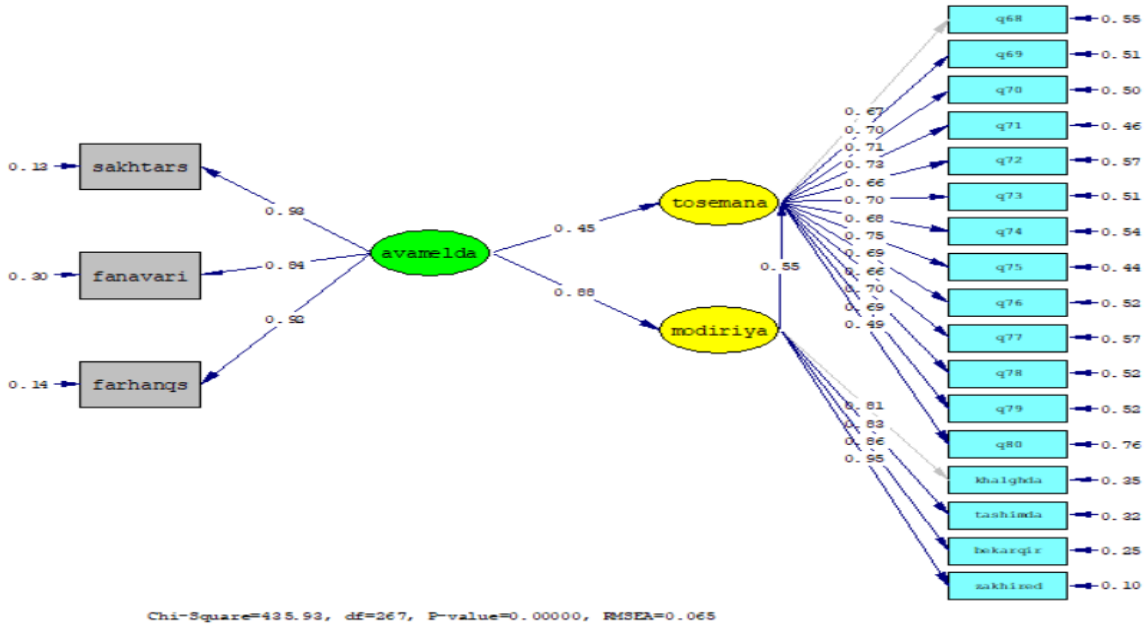



**Fig. 3 In standard estimation mode**

To determine the indirect effect of the mediating variable, the calculated variance statistic of VAF is used, which takes a value between zero and one, and the closer this value is to one, the stronger the mediator variable. In fact, this value measures the ratio of indirect effect to total effect. VAF is obtained through the following formula:

$$\text{VAF} = \frac{a \times b}{(a \times b) + c}$$

Where **a** is the value of the path coefficient between the independent and mediator variables, b is the value of the path coefficient between the dependent and mediator variables, and c is the value of the path coefficient between the independent and dependent variables. By placing numbers in the formula we get

$$VAF = \frac{0/88 \times 0/55}{(0/88 \times 0/55) + 0/45} = 0/51$$

This means that approximately 51% of the total effect of intra-organizational factors on human resource development is indirectly explained by the knowledge management mediator variable. The structural model indices are reported in Table 5.

**Table 5 Goodness-of- fit indicators of structural model of the research**

| Index | RMSEA | SRMR | GFI | CFI | AGFI | IFI | NFI | NNFI |
|---|---|---|---|---|---|---|---|---|
| Acceptable Values | 0/09< | 0/05< | 0/09> | 0/09> | 0/09< | 0/09< | 0/09> | 0/09> |
| Calculated Values | 0/067 | 0/037 | 0/93 | 0/96 | 0/85 | 0/96 | 0/96 | 0/97 |

As Table 5 represents, the RMSEA index in this model was 0.067 and the GFI index was equal to 0.93. Since the RMSEA value is low and the GFI value is above 0.09, the validity and appropriateness of the model are confirmed, so the results of structural equation model analysis can be relied on.

## DISCUSSION AND CONCLUSION

Given the critical role of knowledge in sustainable economies and the need to earn money from knowledge, much more is expected from knowledge-based companies in economic systems today because these companies are the main body of knowledge commercialization. However, to implement the knowledge management components instruments based on human resource development are needed. The present study was conducted to explore the effect of intra-organizational factors on human resource development by considering the mediating role of knowledge management in small knowledge-based companies in Lorestan Province. Indeed, what kept researchers motivated on this study was asking questions about the relationships and possible effects of these variables and finding answers for them. The results of this study reveal that there is a significant relationship between intra-organizational factors with path coefficient (6.04) and human resource development with intensity of effect (0.45). Therefore, the first hypothesis, that is intra-organizational factors has a positive and significant effect on the human resource development, is supported.

Consistent with previous research, the nature of small and medium-sized knowledge-based companies is in such a way that they have fewer human, financial and raw materials resources, which consequently allocating resources to human resources for the most optimal goals in these companies become more important (Ajdrio et. al, 2018). The findings of Abdolreza, Mostafazadeh Vahyati (2017), as well as Khorshidi, Oladian and Hosseini (2018) and Hosseini (2013) confirm the hypotheses of the present research. Another result obtained from this study was a significant relationship between intra-organizational factors and knowledge management with a coefficient of significance (14.02) and effectiveness value (0.88) which reflects the positive and significant effect of intra-organizational factors on knowledge management and hence the second hypothesis is supported. And the last result was that there is a significant relationship between knowledge management and human resource development with a coefficient of significance 6.99 and effectiveness number (0.55), which indicates the confirmation of the third hypothesis. The result of this hypothesis is in congruent with the findings of Abbaszadeh et al. (2015), Khalilnejad et al. (2015), Jazani, Taheri and Abili (2010), Moore et al. (2005), and Ajdari et al. (2016). Since human resource management metrics have been studied separately in this study, the results of this study are helpful for planning to empower, improve and train managers and decision makers of human resource

management in small and medium-sized enterprises and strategic and macro national planning to empower knowledge-based companies.

Human Resource should be considered as the most important asset of an organization that plays a key and important role in achieving its goals. Organizations today spend a lot of money on attracting and retaining human resources so that they do not lag behind other competitors in the field of competition. In the present age, due to the competition between organizations and companies for greater benefits, mastery of available resources has become particularly important. Organizations can not affect the environment and be successful in competition if they have the best technology and the best facilities but do not have specialized and efficient human resource or are not able to use the existing human resources properly and efficiently. Therefore, paying attention to intra-organizational factors and its impact on the human resources development as well as the implementation of knowledge management components in the organization can be very effective to be successful in an organization. In Iran, since 2011, knowledge-based companies have received special attention. Allocation of empowerment budgets and appropriate loans to these companies and other tax and insurance protections were among the policies related to the empowerment of this sector. The effectiveness of each of these services in empowering human resource and the success of these companies has not been studied, but what has now been determined is that the managers of these companies are often elites who do not necessarily have much knowledge and awareness of the human resource and development field. Although human resource development is effective in the success of companies, but there is little awareness of related concepts among the managers of these companies. One of the innovations of this research is paying attention to the human resource development in knowledge-based companies and its impact on identifying the dimensions of knowledge management. Human resource development and human resource management in knowledge-based companies have received little attention from researchers.

## RECOMMENDATIONS

### A) Executive Recommendations

1. Considering the relatively strong and direct relationship between intra-organizational factors and human resource development on the one hand and intra-organizational factors with knowledge management components on the other hand, it is suggested that in order to implement successful knowledge management system various programs as well as staff development and improvement programs are established to improve the knowledge and skills of experts and managers and increase the culture of innovation.
2. Paying attention to the knowledge-centered factor in attracting new human resources, including factors related to measuring the knowledge of employees in performing individual and team work in the performance appraisal system of experts and managers, promoting a culture of creativity and innovation by holding classes and training seminars and promoting a spirit of criticism among individuals is one of these programs.
3. Also, considering the strong and direct correlation between human resource development factor and knowledge management components in the company and knowledge production and transfer factors, it can be concluded that in order to implement and strengthen the knowledge management system in the organization, this factor should be paid more attention and suitable conditions for human resource development are provided.

4. Since the production, formation, dissemination and application make sense in organizational teams and groups, it is recommended that group performance appraisal replace individual performance appraisal or group meetings are held alternatively on various topics to clarify the importance of teamwork and its role in its creation for members.
5. Encouraging investment in telecommunications, information and communication technologies and scientific networks as the most important infrastructure and helping to develop the human resources of knowledge-based companies.
6. Establishing and strengthening technology centers for employee empowerment at the international level and with special facilities in various branches of basic sciences and technologies and supporting the creation and development of research and technology networks in order to increase interactions and facilitate knowledge transfer and dissemination.
7. The important point in conducting this research was that until the end of this research, there was no comprehensive system that comprehensively implements all intra-organizational factors that were the basis of the questionnaire in this research. In other words, internal factors are presented in an island form by different systems and implementers, and of course based on traditional computing not cloud computing. By providing these factors in a comprehensive system, they are expected to lead to the development of human resource. Examining the underlying requirements after presenting intra-organizational factors comprehensively and reviewing them is another research recommendation. In other words, the results of this research, which was based on the opinion of individuals, should be examined in practice.

**B) Research recommendations**

According to the research findings, the following topics are suggested for future research:

1. Investigating the effect of the strategic education and development human resource and knowledge-creating organizational culture on knowledge sharing
2. The impact of knowledge-creating organizational culture on knowledge sharing.
3. The relationship between the existing organizational structure of the organization and the psychological empowerment of employees
4. Identifying individual, group and organizational factors affecting the optimal implementation of knowledge management system
5. The role of information technology in the development of human resource and job productivity of employees
6. Study of the application of knowledge management components in public and private schools.

**Limitations**

In the present study, despite the fact that it was tried to examine all the possible aspects and make the research as comprehensive as possible, but it faced limitations that were unavoidable. This research was subject to the following limitations from two contextual and thematic dimensions:

1. Contextual limitation: The present study is contextually limited to knowledge-based companies of Lorestan Province and they cannot be a complete representative of organizational systems in the whole country.

2. Thematic limitations: Since in this research only the relationship between intra-organizational factors and human resource development and their impact on knowledge management has been studied and other issues that may affect the implementation of knowledge management, including human relations and interpersonal relationships, organizational complexity, employee civic behavior, organizational commitment, were not included in the research variables, so the results are not expected to be completely comprehensive.
3. In addition to the above-mentioned issues, one of the major limitations of this study is the use of questionnaire as data collection tool, which due to its inherent limitations, this tool alone is an incomplete tool for data collection.

## Resources

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