**Analysis the role of higher education centers on improving the competitive advantage of knowledge-based businesses**


## Abstract

The purpose of this article is analysis the role of higher education in promoting the competitive advantage of businesses. This research, in terms of practical purpose, questionnaire data collection tool and interpretative structural modeling method were used. The analysis and interpretative findings indicate that the development of higher education plays a significant role in the development of knowledge culture, innovation and entrepreneurship on the one hand, and on the other hand in the development and absorption of information technology in businesses. Higher education and university research develop in interaction with each other, and this development means the development of the university.

A developed university is the only institution that can lead the development of the knowledge-based business ecosystem, although it does not need the support of the government and knowledge-based companies. Development of cooperation between higher education and knowledge-based companies plays an important role in the development of the regional knowledge-based business ecosystem.

Because in addition to helping the cooperation of complementary knowledge-based companies, it helps to develop the culture of knowledge and innovation, entrepreneurship, research development, production of new technology, absorption of knowledge from abroad, etc. These programs will continue to increase risky investment in knowledge-based industries, develop cooperation between domestic and foreign companies, develop trade union cooperation, improve the level of development of regional industries, and develop commercial infrastructure.



**Keywords**: Higher Education, Business, Innovation, Entrepreneurship, Competitiveness


## Introduction

In today's era, identifying the dimensions of development and providing logical solutions with the aim of graduates being innovative and entrepreneurial is one of the important and effective actions of higher education (Pahlavan Sharif et al., 1400), so that the qualitative and quantitative level of entrepreneurship is a serious concern. The attention of higher education (Emia et al., 1401).

During recent studies, higher education reported that evaluation and analysis with a business intelligence model gives businesses practical insights and business users the power to make informed and data-based decisions is also useful and better understood for higher education. The current state of the business intelligence and analytics help us to understand the vision and it clearly shows that the business intelligence and analytics program is a technological effort as well as an organizational development (Cardoso et al., 2022).

In the era of knowledge-based economy, the most obvious feature of competitive advantage based on it is innovation and entrepreneurship (Long, 2001), higher education as the cradle of science and knowledge have a special place in innovation and entrepreneurship (Rangriz et al., 1400) which have been assigned the most important factors of the competitiveness to themselves (Pahlavan Sharif and others, 1400 Therefore, key processes such as knowledge production, knowledge absorption, knowledge

distribution and knowledge promotion in an ecosystem interact with each other and overshadow the structures of national competitiveness (Attarari, 1400).

In developed countries, higher education and universities serve the ecosystem and create a platform for competitiveness in their country, but in some developing countries, such as Iran, development is only based on material resources (Lin, 2012; Entezari, 2017). The main problem of our country in global competitiveness indicators (2019): inputs, efficiency enhancers, innovation and progress factors that represent the level of productivity represent the weakness of our country.In the current business world, relying on intangible assets will be the basis for improving productivity, improving performance, survival and profitability for organizations (Chen et al., 2003, 2004; Rangriz et al., 1400). Therefore, one of the best sources of business and creation of competitive advantage in businesses is using the knowledge, skills and capabilities of entrepreneurial and innovative graduates (Hosseinpour et al., 2015; Sharifzadeh, 2011; Wegner, 2011).

In the new perspective, higher education as one of the social institutions of the society and the main arm of advancing the economic, social, cultural and political goals in the development process have entered the global business arena because every society has its own university culture from the heart of the structures, adopts its social, political, economic and cultural relations (Mohseni Tabrizi et al., 1389).

The relationship between higher education and the competitive advantage of businesses in economic development is important from two dimensions: in the first dimension, the mutual relationship between science, technology and society's culture, and in the second dimension, the commitment of higher education to spread the new values of science and technology. It is the need of society.

As long as the culture of development of science and knowledge is not created in society, the weakness of higher education in science and knowledge will not solve the fundamental problems of society. Higher education as the capacity and infrastructure of competitiveness, knowledge and skills (Mohammadi et al., 2019) will be the basis for establishing a relationship between higher education and meeting the economic, social and cultural needs of communities, which will lead to economic development (Raofi, 1995) and provides a competitive advantage for businesses (Moon et al., 1998). Competitive advantage is a set of innovative human capital functions in the business world that cannot be easily imitated, copied or destroyed by competitors (Mohammadi et al., 2019; Attaran et al.; Porter, 1998; Rangriz et al. colleagues, 1400).

In this article, the goal is analysis the role of higher education in promoting the competitive advantage of businesses. This analysis shows that it is necessary to start and develop the business ecosystem based on universities, to reform higher education and to reform the country's political system. The reform of the political system in relation to the development of the university-based business ecosystem from two perspectives is the reform of the current and future strategies, policies and methods of government support for the development of the university-based business ecosystem and the other is the creation of good governance at different levels of the country.

## Theoretical and research background

Entering the concept of education in economic analysis, the economy of education has become an independent concept in economics (Heidari, 2011) and attracting, motivating and maintaining human capital with knowledge and innovation in a knowledge-based business is very important because success Businesses depend on knowledge and innovation provided by higher education (Safari et al., 1400). The importance of education in general and higher education in particular has gone beyond borders and overshadowed international policies. It is obvious that most of the economic, social, industrial and political development of any country is influenced by scientific advances. and the culture of that society will be

placed. In fact, increasing the knowledge and level of education in higher education facilitates the learning process of complex issues in the business world and at the same time improves the level of skills and capabilities. Therefore, the most important task of higher education is education, education, promotion of creativity and innovation of efficient human force for employment in different business sectors (Sharifzadeh, 2011).

Higher education should no longer be a place for learning theoretical teachings and research projects for the economic goals of businesses, but should include the training of people and the establishment of enterprises that create work and entrepreneurship (Mahangar et al., 2012; Tayyibi et al. colleagues, 2016). In history, no factor has been as effective and the publisher of constructive changes in societies as higher education and universities, the academics of these and scientific elites are always the pioneers of scientific and social changes in different societies (Drucker, 1994). Universities and higher education, in addition to the role of creating culture in the society, should also play a role in advancing the goals of business and economic development in national and international dimensions, since the identity and existence of the nation depends on the higher education. These should focus all their attention on the wishes and needs of the nation (Bouzari, 2015).

In the first category, higher education deals with the issue of human capital education and training, and aims to perform the tasks assigned to them in the best way in terms of quantity and quality, in the second category, it enables those educated to make timely decisions, and in the third category or The same effect of innovation, the graduates of higher education will be able to transform ideas into new information and by organizing the information into knowledge, and with the entry of the graduates into the business world. They will become the basis for improving the competitive advantage of businesses, the innovators in the world today are the same ones who have been trained in higher education (Taibi et al., 2016).

In developed countries, a comprehensive strategy has been seen to improve the competitive advantage of businesses by reforming the political system and creating good governance, while in developing countries such as Iran, a comprehensive strategy has not been formulated to the extent that improvement measures are taken in this field in order to improve the advantage. The competitiveness of the ecosystem of knowledge-based businesses has not been presented, therefore, the weakness of strategy and policy making in this field is clearly seen.

Despite significant scientific and technological developments, physical capital, natural resources and labor are no longer the most important productive and economic resources of business in countries, but knowledge as an intangible asset plays the most important role in the organization. Drucker believes that the training of expert and efficient human resources will not only improve the knowledge and abilities of people, but will also be the basis for the all-round and sustainable development of businesses. Certainly, the growth of knowledge and the increase of information will lead to scientific and industrial progress in the framework of higher education systems. In fact, higher education provides the knowledge and skills needed to improve competitive advantage at different levels of the economy and businesses (Bouzari, 2015; Mohammadi et al., 2016).

In Iran, although investing in the education system is effective on the country's social, cultural and political behaviors and attitudes. It has some economic consequences, but the evaluation of the performance of the country's higher education system indicates that the consumption aspect of this investment was more than its production aspect. Now, our country needs a link between educational processes and business processes to improve the human capital index. In order to link between educational and research processes and business processes, educational policies and strategic strategies of different regions of the country should be changed towards an objective approach (Qalipour, 2003).

In order to advance the purpose of this article, various measures to improve the competitive advantage of knowledge-based businesses through higher education should be identified in Iran's academic areas

and each of the measures will be interpreted by experts and researchers using the interpretative structural modeling method.

## Methodology

### Focus of the study

This study focused on interpretive structural modeling method is used to Analysis the role of higher education centers on improving the competitive advantage of knowledge-based businesses. In this method, different components of a system are interpreted by experts and researchers. By using interpretative structural modeling, a diverse set of measures (direct and indirect) related to measures the role of higher education in promoting the competitive advantage of businesses in the framework of the national ecosystem of knowledge-based businesses.

### Theoretical framework

The model created by "interpretive structural modeling" depicts the structure of various actions with words and graphic shapes. This method determines the relationships between various measures in order to improve the role of higher education in promoting the competitive advantage of businesses in the framework of the national ecosystem of knowledge-based businesses. These relationships are divided into two types, direct and indirect, and a complete set of the state of university business relationships. It describes the axis with more precision and breadth. Therefore, it provides a broader and more comprehensive view of measures to improve the role of higher education in enhancing the competitive advantage of knowledge-based businesses. Interpretive structural modeling is done in nine stages (Atari et al., 2014). These steps are briefly reviewed in Figure 1 below:

**Step 1- Identifying:**

Identifying and determining the importance of various measures to improve the competitive advantage of knowledge-based businesses through higher education in university areas of Iran.

**Step 2- Obtaining experts' opinions:**

The interpretative structural modeling method is based on the use of experts' opinions. In order to determine the contextual relationship between the components of improving the competitive advantage of knowledge-based businesses through higher education, the opinions of 25 experts in various fields of university-based business, industry and government have been used. Experts' opinions were obtained through interviews and filling out questionnaires.

**Step 3- Creating a structural self-interaction matrix:**

This matrix shows the two-way relationship between the 11 components of the competitive advantage of businesses and higher education; In order to analyze the contextual relationship of ecosystem components, the two terms "to influence" or "to receive influence" are used. Considering the background relationship for each of the factors and the existence of a relationship between both factors (i and j), the following four signs are used to direct the relationship between the two factors:

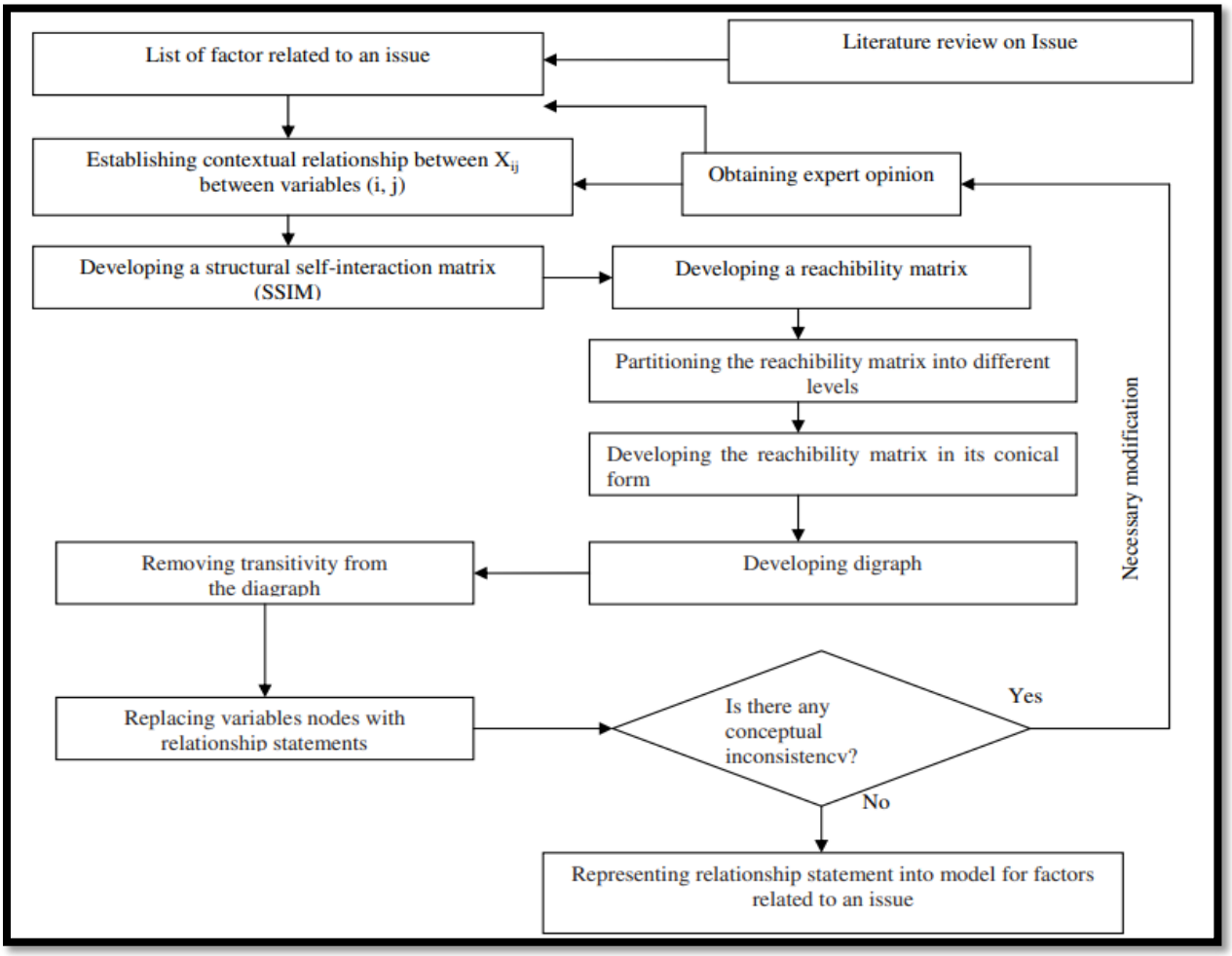
A: V for the relationship from factor i to factor j - that is, factor i will influence factor J.

B: A to communicate from agent j to agent i - that is, agent i will be influenced by agent J.

A: X for the reciprocal relationship between i and j - factors i and j will be influenced by each other

D: O for lack of relationship between i and j.

Figure (1): Different stages and work flow of interpretive structural modeling method (Atari et al., 2013, Rajesh Attri et al., 2013)




**Step 4- Creating an Availability Matrix:**

The next step in the ISM approach is to develop a basic accessibility matrix from SSIM. For this, "V, A, X or O" symbols in "SSIM" are replaced with ones (1s) and zeros (0s).

The placement rules are as follows:

A: If the entry (j,i) in the structural self-interaction matrix V, then the entry (j,i) in the primary access matrix will be one, and the entry j,i) will be zero.

(b): If entry (j,i) in the self-interaction matrix is structured A, then entry (j,i) in the primary access matrix will be zero, and entry (i,j) will be one.

(c): If the entry (j,i) in the structural self-interaction matrix is X. Then at entry (j,i) in access matrix

initial one, and in input (j, i) one will be placed.

(d): If the entry (j,i) in the structural self-interaction matrix is O, then the entry (j,i) in the primary access matrix will be zero, and the entry (j,i) will also be zero.

(e): For entry (j,i) in the primary accessible matrix, where i=j, the entry will be one.

By following these rules, the primary accessible matrix is prepared. The entries of a * include transferability (i.e., if a affects b and b affect c, then a will affect c) combinations to fill gaps, if any, in the observations collected during matrix development. They are structural self-interactions. After incorporating the portability concept, as explained above, the final reachability matrix is obtained.

**Step 5- Extracting the surface (final accessible matrix):**

From the final accessible matrix, the set of output components and the set of input components are obtained for each component. The set of output components consists of the component itself and another component that may affect it, including components of the system that originate from other components. One in the lines of the access matrix shows these solutions. While the input solution set includes the component itself and another component that may be affected by it. The input set includes components of the system that lead to other components. Ones in the columns of the access matrix show these components. After determining the inputs and outputs, the intersection of these sets is determined for all components and factor levels. Components that have the same accessible sets and intersections are placed at the top level of the ISM hierarchy. High-level components are those components that will not guide another component at the top of their level in the hierarchy. When the top-level component is known, it is not checked. Then, the same process is repeated to find the components in the next level. This process continues until the level of each component is determined. These levels help us in drawing the graph and the ISM model.

**Step 6- Canonical matrix:**

The canonical matrix with cluster components at the same level throughout the row and column is extracted from the final accessible matrix. The driving power of a component is obtained from the sum of the number of units in the rows and their dependence power by adding their number in the columns. Next, the ranks of driving power and dependence power are calculated by giving the highest rank to the components that have the maximum number of rows and columns, respectively.

**Step 7- Graph:**

From the conical form of the accessible matrix, the initial graph is obtained including transitive and variable links. It is produced by nodes and marginal lines. After removing indirect links, a final graph is created. The graph is used to show the elements and their dependence in terms of nodes and edges, or in other words, the graph is an objective display of the elements and their interdependence. In this regard, the high-level agent is placed at the top of the graph, the second-level agent is placed in the second position, and so on, until the low-level agent is placed at the lowest position in the graph.

**Step 8: "ISM" model:**

The graph becomes an "ISM" model by replacing the agent nodes with related statements. The use of interaction matrix multiplication is called MIKMK for short. The purpose of the MICM analysis is to analyze the power of the driver and the power of dependence of the factors. The principles of MiMK are based on the properties of matrix multiplication. The application of mutual influence matrix multiplication is done to identify the key strategies that lead the system to different classifications. Components are classified into four categories based on their driving power and dependency power, for example autonomous components, related components, dependent components and non-dependent or independent components.

Self-governing components (autonomous): these components have weak motivation and dependence power. Those components are somewhat separate from other components (relatively unrelated to the ecosystem component) and have few connections.

Linked components: These components have strong driving power and strong dependency power. These factors are unstable; in fact, any action on these components leads to the change of other components.

Dependent components: These components have weak driving power but strong dependence power. Non-dependent or independent components: These components have strong driving power but weak dependence power. A component with a strong driving force is known as a "key component" that is included in the category of independent or linked components.

In this section, in order to determine the data collection tool, 25 action plans were identified to improve the competitive advantage of knowledge-based businesses through higher education, of which 16 actions were identified. In order to explain the relationship between measures, experts in the fields of business, higher education and innovative entrepreneurship were consulted. Below is the table of measures taken by higher education to improve the competitive advantage of the knowledge-based business ecosystem:

Table (1): Actions of higher education in improving the competitive advantage of knowledge-based businesses

| Row | Actions |
|---|---|
| 1 | Cultivation of required human capital by higher education |
| 2 | Production of new practical and developmental ideas and knowledge by higher education |
| 3 | Acquiring and absorbing knowledge from outside higher education |
| 4 | Introduction of products offered by higher education |
| 5 | Financing entrepreneurship from inside and outside higher education |
| 6 | Creation of a focal company by the university to supply the product |
| 7 | Calling related companies and institutions for cooperation (as partners) |
| 8 | Share ideas and insights with partners |
| 9 | Provision of information technology |
| 10 | Provision of soft infrastructure (proper laws) |
| 11 | Providing regional, national and global communications |
| 12 | Simplifying the process of creating a company and entrepreneurship |
| 13 | Reforming macroeconomic policies |
| 14 | Amending business rules |
| 15 | Reforming the country's political system in line with good governance |
| 16 | Reforming knowledge-based business policies |

The role and importance of the components mentioned in the above table are evaluated by collecting the opinions of experts in the fields of business, higher education and innovative entrepreneurship in promoting the competitive advantage of businesses through higher education. In the following, by drawing the matrix below, they show the relationship between the necessary measures on the role of higher education in promoting the competitive advantage of knowledge-based businesses in a region. To complete the matrix, you must follow the following rules:

Table (2): Matrix of analysis the role of higher education centers on improving the competitive advantage of knowledge-based businesses

| Interaction Matrix | Cultivation of required human capital by higher education centers | Production of new practical and developmental ideas and knowledge by higher education | Acquiring and absorbing knowledge from outside higher education | Introduction of products offered by higher education | Financing entrepreneurship from inside and outside higher education | Creation of a focal company by the university to supply the product | Calling related companies and institutions for cooperation (as (partners | Share ideas and insights with partners | Provision of information technology | Provision of soft infrastructure (proper laws) | Providing ,regional national and global communications | Simplifying the process of creating a company and entrepreneurship | Reforming macroeconomic policies | Amending business rules | Reforming the country's political system in line with good governance | Reforming -knowledge based business policies |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cultivation of required human capital by higher education centers | | | | | | | | | | | | | | | | |
| Production of new practical and developmental ideas and knowledge by higher education | | | | | | | | | | | | | | | | |
| Acquiring and absorbing knowledge from outside higher education | | | | | | | | | | | | | | | | |
| Introduction of products offered by higher education | | | | | | | | | | | | | | | | |
| Financing entrepreneurship from inside and outside higher education | | | | | | | | | | | | | | | | |
| Creation of a focal company by the university to supply the product | | | | | | | | | | | | | | | | |
| Calling related companies and institutions for cooperation (as partners) | | | | | | | | | | | | | | | | |
| Share ideas and insights with partners | | | | | | | | | | | | | | | | |
| Provision of information technology | | | | | | | | | | | | | | | | |
| Provision of soft infrastructure (proper (laws | | | | | | | | | | | | | | | | |
| Providing regional, national and global communications | | | | | | | | | | | | | | | | |
| Simplifying the process of creating a company and entrepreneurship | | | | | | | | | | | | | | | | |
| Reforming macroeconomic policies | | | | | | | | | | | | | | | | |
| Amending business rules | | | | | | | | | | | | | | | | |
| Reforming the country's political system in line with good governance | | | | | | | | | | | | | | | | |
| Reforming knowledge-based business policies | | | | | | | | | | | | | | | | |

It should be noted that to respond to the matrix, we act in the following way:

1- If the component presented in row (i) affects the component presented in column (j), put the letter "V" in the corresponding section.

2- If the component presented in column (j) affects the component presented in row (i), put the letter "A" in the corresponding section.

3- If the component presented in column (j) and the component presented in row (i) have a mutual relationship with each other, put the letter "X" in the corresponding field.

4- If the component presented in column (j) and the component presented in row (i) have no relationship with each other, put the letter "O" in the corresponding section.

Higher education actions in improving the competitive advantage of knowledge businesses

| *O* | *X* | *A* | *V* |
|---|---|---|---|
| Variables i and j have .no relationship | Variable j and help to .realize | Variable j helps to realize .variable i | Variable i helps to realize .variable j |

Summary After validating the components according to the research literature in the second chapter, 25 action plans have been identified as a statistical population for higher education actions in promoting the competitive advantage of knowledge-based businesses, of which 16 actions are the sample size was identified. In order to explain the relationships between measures, 20 experts in the fields of business, higher education and innovative entrepreneurship were consulted.

**Research findings**

In this section, while determining the importance of appropriate measures for higher education programs to improve the competitive advantage of the knowledge-based business ecosystem after validating the components and asking for opinions from experts in the fields of business, higher education and innovative entrepreneurship of experts analysis the role of higher education centers on improving the competitive advantage of knowledge-based businesses is interpreted in order to show the importance of each of the measures by the structural modeling method.

Among the 25 action plans identified in order to improve the competitive advantage of businesses through higher education after validating the components, 16 important action plans were selected and presented in the table below. In this section, experts in the fields of higher education, research, innovation and innovative entrepreneurship have been consulted.

Table (3): The components analysis the role of higher education centers on improving the competitive advantage of knowledge-based businesses

| Interaction Matrix | Cultivation of required human capital by higher education centers | Production of new practical and developmental ideas and knowledge by higher education | Acquiring and absorbing knowledge from outside higher education | Introduction of products offered by higher education | Financing entrepreneurship from inside and outside higher education | Creation of a focal company by the university to supply the product | Calling related companies and institutions for cooperation (as (partners | Share ideas and insights with partners | Provision of information technology | Provision of soft infrastructure (proper laws) | Providing ,regional national and global communications | Simplifying the process of creating a company and entrepreneurship | Reforming macroeconomic policies | Amending business rules | Reforming the country's political system in line with good governance | Reforming -knowledge based business policies |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cultivation of required human capital by higher education centers | | | | | | | | | | | | | | | | |
| Production of new practical and developmental ideas and knowledge by higher education | | | | | | | | | | | | | | | | |
| Acquiring and absorbing knowledge from outside higher education | | | | | | | | | | | | | | | | |
| Introduction of products offered by higher education | | | | | | | | | | | | | | | | |
| Financing entrepreneurship from inside and outside higher education | | | | | | | | | | | | | | | | |
| Creation of a focal company by the university to supply the product | | | | | | | | | | | | | | | | |
| Calling related companies and institutions for cooperation (as partners) | | | | | | | | | | | | | | | | |
| Share ideas and insights with partners | | | | | | | | | | | | | | | | |
| Provision of information technology | | | | | | | | | | | | | | | | |
| Provision of soft infrastructure (proper (laws | | | | | | | | | | | | | | | | |
| Providing regional, national and global communications | | | | | | | | | | | | | | | | |
| Simplifying the process of creating a company and entrepreneurship | | | | | | | | | | | | | | | | |
| Reforming macroeconomic policies | | | | | | | | | | | | | | | | |
| Amending business rules | | | | | | | | | | | | | | | | |
| Reforming the country's political system in line with good governance | | | | | | | | | | | | | | | | |
| Reforming knowledge-based business policies | | | | | | | | | | | | | | | | |

As it is clear from the table above, the average importance of all components according to 15 experts in the fields of business, higher education and innovative entrepreneurship is above 3.3. That is, most experts have evaluated the role and importance of the mentioned components in improving the competitive advantage of knowledge-based businesses through higher education above average. The highest importance belongs to the action plan "Introduction of products offered by the university", "Financing from inside and outside of knowledge", "Calling related companies and institutions for cooperation (as partners)" and "Sharing ideas and insights with partners". Action plans for Analysis the role of higher education centers on improving the competitive advantage of knowledge-based businesses have a direct and indirect relationship with each other, These relationships can be asked from experts.

The opinions obtained from 15 experts in the fields of business, higher education and innovative entrepreneurship in the form of a self-interactive matrix (according to the interpretive structural modeling technique) show that most of the action plans shown in table (4) They have a direct or indirect relationship with each other. The analytical self-interaction matrix of the role of higher education in promoting the competitive advantage of businesses, taking into account the opinion model of 15 experts, is shown in the form of matrix (4). According to this matrix, all the mentioned action plans are related to each other.

Table (4): Analytical self-interaction matrix on analysis the role of higher education centers on improving the competitive advantage of knowledge-based businesses

| Interaction Matrix | Cultivation of required human capital by higher education centers | Production of new practical and developmental ideas and knowledge by higher education | Acquiring and absorbing knowledge from outside higher education | Introduction of products offered by higher education | Financing entrepreneurship from inside and outside higher education | Creation of a focal company by the university to supply the product | Calling related companies and institutions for cooperation (as (partners | Share ideas and insights with partners | Provision of information technology | Provision of soft infrastructure (proper laws) | Providing ,regional national and global communications | Simplifying the process of creating a company and entrepreneurship | Reforming macroeconomic policies | Amending business rules | Reforming the country's political system in line with good governance | Reforming -knowledge based business policies |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cultivation of required human capital by higher education centers | | X | X | V | V | V | V | V | X | A | X | X | A | A | A | A |
| Production of new practical and developmental ideas and knowledge by higher education | | | X | V | V | V | V | V | X | A | X | X | A | A | A | A |
| Acquiring and absorbing knowledge from outside higher education | | | | V | V | V | V | V | X | A | X | X | A | A | A | A |
| Introduction of products offered by higher education | | | | | X | A | X | X | A | A | A | A | A | A | A | A |
| Financing entrepreneurship from inside and outside higher education | | | | | | A | X | X | A | A | A | A | A | A | A | A |
| Creation of a focal company by the university to supply the product | | | | | | | V | V | A | A | A | A | A | A | A | A |
| Calling related companies and institutions for cooperation (as partners) | | | | | | | | X | A | A | A | A | A | A | A | A |
| Share ideas and insights with partners | | | | | | | | | O | A | X | A | A | A | A | A |
| Provision of information technology | | | | | | | | | | A | X | X | A | A | A | A |
| Provision of soft infrastructure (proper (laws | | | | | | | | | | | V | V | A | A | A | A |
| Providing regional, national and global communications | | | | | | | | | | | | V | A | A | A | X |
| Simplifying the process of creating a company and entrepreneurship | | | | | | | | | | | | | A | A | A | A |
| Reforming macroeconomic policies | | | | | | | | | | | | | | X | A | A |
| Amending business rules | | | | | | | | | | | | | | | A | V |
| Reforming the country's political system in line with good governance | | | | | | | | | | | | | | | | V |
| Reforming knowledge-based business policies | | | | | | | | | | | | | | | | |

By converting the letters mentioned in the self-interaction matrix (19-4) to zero (0) and one (1), the primary accessible matrix is obtained; By revising the initial matrix based on the principle of transferability of the relationship, the final accessible matrix is obtained, which is shown in the matrix (20-4). The last row and column of the final accessible matrix respectively show the degree of dependence of one action plan on another action plan and the power of influence or effect of one action plan on another action plan. As it is clear from this matrix, the plan to reform the country's political system in line with good governance has the lowest degree of dependence on other action plans; On the contrary, it has the greatest influence.

Table (5): The final accessible matrix on analysis the role of higher education centers on improving the competitive advantage of knowledge-based businesses

| Interaction Matrix | Cultivation of required human capital by higher education centers | Production of new practical and developmental ideas and knowledge by higher education | Acquiring and absorbing knowledge from outside higher education | Introduction of products offered by higher education | Financing entrepreneurship from inside and outside higher education | Creation of a focal company by the university to supply the product | Calling related companies and institutions for cooperation (as (partners | Share ideas and insights with partners | Provision of information technology | Provision of soft infrastructure (proper laws) | Providing ,regional national and global communications | Simplifying the process of creating a company and entrepreneurship | Reforming macroeconomic policies | Amending business rules | Reforming the country's political system in line with good governance | Reforming -knowledge based business policies |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cultivation of required human capital by higher education centers | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| Production of new practical and developmental ideas and knowledge by higher education | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| Acquiring and absorbing knowledge from outside higher education | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| Introduction of products offered by higher education | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Financing entrepreneurship from inside and outside higher education | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Creation of a focal company by the university to supply the product | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Calling related companies and institutions for cooperation (as partners) | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Share ideas and insights with partners | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Provision of information technology | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| Provision of soft infrastructure (proper (laws | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| Providing regional, national and global communications | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| Simplifying the process of creating a company and entrepreneurship | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| Reforming macroeconomic policies | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| Amending business rules | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| Reforming the country's political system in line with good governance | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Reforming knowledge-based business policies | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |

The order of action plans cannot be directly determined from the final accessible matrix, it must be applied to determine the order of actions. For this purpose, it is necessary to determine the set of action plans affected by a specific action plan as a member of the input set and the set of action plans affecting a specific plan and determine their commonality.

In other words, the set of output factors consists of the factor itself and another factor that may affect it, including plans of knowledge-based business development that originate from other action plans. In each column, the 1's in the rows of the final accessible matrix represent these programs. While the input factor set includes the factor itself and another factor that may be affected by it. The input set includes an Analysis the role of higher education centers on improving the competitive advantage of knowledge-based businesses that lead to other programs. In each row, 1's in the columns of the accessible matrix show these programs.

After determining the input and output programs, sharing these sets for all programs creates another set, which is called the sharing set. The programs whose output set matches the subscription set have high priority. The implementation of high priority programs helps the feasibility and implementation of other programs. In fact, without the implementation of priority action plans, it will not be possible to implement other action plans. By setting the priority of an action plan, that plan is removed from the release process. The same process is repeated to find the next priority programs. This process continues

until the priority of each program is determined. Prioritization through programs in drawing the graph and "ISM" model helps to plan its development.

Table (6): Extracting the final access matrix and determining the first priority(s).

| Obstacles | Set Output | Set Input | Collection Common | level |
|---|---|---|---|---|
| 1 | 1,2,3,4,5,6,7,8,9,11,12,13 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,11,12,13 | |
| 2 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,16 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,10,11,12,13,14,16 | |
| 3 | 1,2,3,4,5,6,7,8,9,11,12,13 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,11,12,13 | |
| 4 | 4,5,7,8,11 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 4,5,7,8,11 | 1 |
| 5 | 4,5,7,8,11 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 4,5,7,8,11 | 1 |
| 6 | 4,5,6,7,8,11 | 1,2,3,6,9,10,11,12,13,14,15,16 | 6,11 | |
| 7 | 4,5,7,8,11 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 4,5,7,8,11 | 1 |
| 8 | 4,5,7,8,11 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 4,5,7,8,11 | 1 |
| 9 | 1,2,3,4,5,6,7,8,9,11,12,13 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,11,12,13 | |
| 10 | 1,2,3,4,5,6,7,8,9,10,11,12,13,16 | 2,10,13,14,15,16 | 2,10,13,16 | |
| 11 | 1,2,3,4,5,6,7,8,9,11,12,13 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 1,2,3,4,5,6,7,8,9,11,12,13 | |
| 12 | 1,2,3,4,5,6,7,8,9,11,12,13 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,11,12,13 | |
| 13 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,16 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,1,11,12,13,14,16 | |
| 14 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,16 | 2,13,14,15 | 2,13,14 | |
| 15 | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 | 15 | 15 | |

| | | | | |
|---|---|---|---|---|
| 16 | 1,2,3,4,5,6,7,8,9,10,11,12,13,16 | 2,10,13,14,15,16 | 2,10,13,16 | |

The above table shows that the action plan "Introduction of products offered by higher education ", "Entrepreneurial financing from inside and outside higher education ", "Inviting companies and related institutions to cooperate" and "Sharing ideas and "Insight with partners" is the first priority. That is, it should be done first of all, in fact, higher education should first of all correct their relations in relation to an analysis of the role of higher education in improving the competitive advantage of knowledge-based businesses.

Table (7): Extracting the final access matrix and determining the second priority (s).

| Obstacles | Set Output | Set Input | Collection Common | level |
|---|---|---|---|---|
| 1 | 1,2,3,6,9,11,12,13 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,11,12,13 | |
| 12 | 1,2,3,6,9,11,12,13 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,11,12,13 | |
| 10 | 1,2,3,6,9,10,11,12,13,16 | 2,10,13,14,15,16 | 2,10,13,16 | |
| 16 | 1,2,3,6,9,10,11,12,13,16 | 2,10,13,14,15,16 | 2,10,13,16 | |
| 2 | 1,2,3,6,9,10,11,12,13,14,16 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,10,11,12,13,14,16 | |
| 3 | 1,2,6,9,11,12,13 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,9,11,12,13 | |
| 6 | 6,11 | 1,2,3,6,9,10,11,12,13,14,15,16 | 6,11 | 2 |
| 9 | 1,2,3,6,9,11,12,13 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,11,12,13 | |
| 11 | 1,2,3,6,9,11,12,13 | 1,2,3,6,9,10,11,12,13,14,15,16 | 1,2,3,6,9,11,12,13 | |
| 13 | 1,2,3,6,9,10,11,12,13,14,16 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,10,11,12,13,14,16 | |
| 14 | 1,2,3,6,9,10,11,12,13,14,16 | 2,13,14,15 | 2,13,14 | |
| 15 | 1,2,3,6,9,10,11,12,13,14,15,16 | 15 | 15 | |

The above table shows that "Creation of focal companies by the university for product supply" is an analysis the role of higher education centers on improving the competitive advantage of knowledge-based businesses, which should be aimed at changing the structure in higher education.

Table (8): Extracting the final access matrix and determining the third priority (s).

| Obstacles | Set Output | Set Input | Collection Common | level |
|---|---|---|---|---|
| 1 | 1,2,3,9,11,12,13 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,11,12,13 | 3 |
| 2 | 1,2,3,9,10,11,12,13,14,16 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,10,11,12,13,14,16 | |
| 3 | 1,2,3,9,11,12,13 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,11,12,13 | 3 |
| 9 | 1,2,3,9,11,12,13 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,11,12,13 | 3 |
| 10 | 1,2,3,9,10,11,12,13,16 | 2,10,13,14,15,16 | 2,10,13,16 | |
| 11 | 1,2,3,9,11,12,13 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,11,12,13 | 3 |
| 12 | 1,2,3,9,11,12,13 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,11,12,13 | 3 |
| 13 | 1,2,3,9,10,11,12,13,14,16 | 1,2,3,9,10,11,12,13,14,15,16 | 1,2,3,9,10,11,12,13,14,16 | |
| 14 | 1,2,3,9,10,11,12,13,14,16 | 2,13,14,15 | 2,13,14 | |
| 15 | 1,2,3,9,10,11,12,13,14,15,16 | 15 | 15 | |
| 16 | 1,2,3,9,10,11,12,13,16 | 2,10,13,14,15,16 | 2,10,13,16 | |

The table above shows that in the third stage, higher education in order to improve the competitive advantage of undertaking "cultivation of human capital needed by higher education ", "acquiring and absorbing knowledge from outside higher education ", "providing information technology ", "production of new practical and developmental ideas and knowledge by higher education " and "simplification of the process of creating a company and entrepreneurship".

Table (9): Extracting the final access matrix and determining the fourth priority (s)

| Obstacles | Set Output | Set Input | Collection Common | level |
|---|---|---|---|---|
| 2 | 2,10,13,14,15,16 | 2,10,13,14,16 | 2,10,13,14,16 | |
| 10 | 2,10,13,14,15,16 | 2,10,13,16 | 2,10,13,16 | 4 |
| 13 | 2,10,13,14,16 | 2,10,13,14,15,16 | 2,10,13,14,16 | |
| 14 | 2,10,13,14,16 | 1,13,14,15 | 13,14 | |
| 15 | 2,10,13,14,15,16 | 15 | 15 | |
| 16 | 2,10,13,16 | 2,10,13,14,15,16 | 2,10,13,16 | 4 |

The table above shows that in the fourth stage, for an analysis of the role of higher education in enhancing the competitive advantage of knowledge-based businesses, action plans for "providing soft and hard infrastructures", "reforming knowledge-based business policies" should be developed and implemented.

Table (10): Extracting the final access matrix and determining the fifth priority(s).

| Obstacles | Set Output | Set Input | Collection Common | level |
|---|---|---|---|---|
| 2 | 2,13,14 | 2,13,14,15 | 2,13,14 | 5 |
| 13 | 2,13,14 | 2,13,14,15 | 2,13,14 | 5 |
| 14 | 2,13,14 | 2,13,14,15 | 2,13,14 | 5 |
| 15 | 2,13,14,15 | 15 | 15 | |

The above table shows that the action plans to improve higher education in the competitive advantage of knowledge-based businesses should be modified by "providing regional, national and global connections", "business laws" and "macroeconomic policies". Therefore, the action plan in the fifth stage of doing this is important.

Table (11): Extracting the final access matrix and determining the sixth priority(s).

| Obstacles | Set Output | Set Input | Collection Common | level |
|---|---|---|---|---|
| 15 | 2,13,14,15 | 15 | 15 | 6 |

The table above shows that "the country's political system in line with good governance" should be reformed after the business laws and macroeconomic policies are amended. Higher education (or its members) should create a focal knowledge-based company or companies to create an analytical platform on the role of higher education in promoting the competitive advantage of knowledge-based businesses.

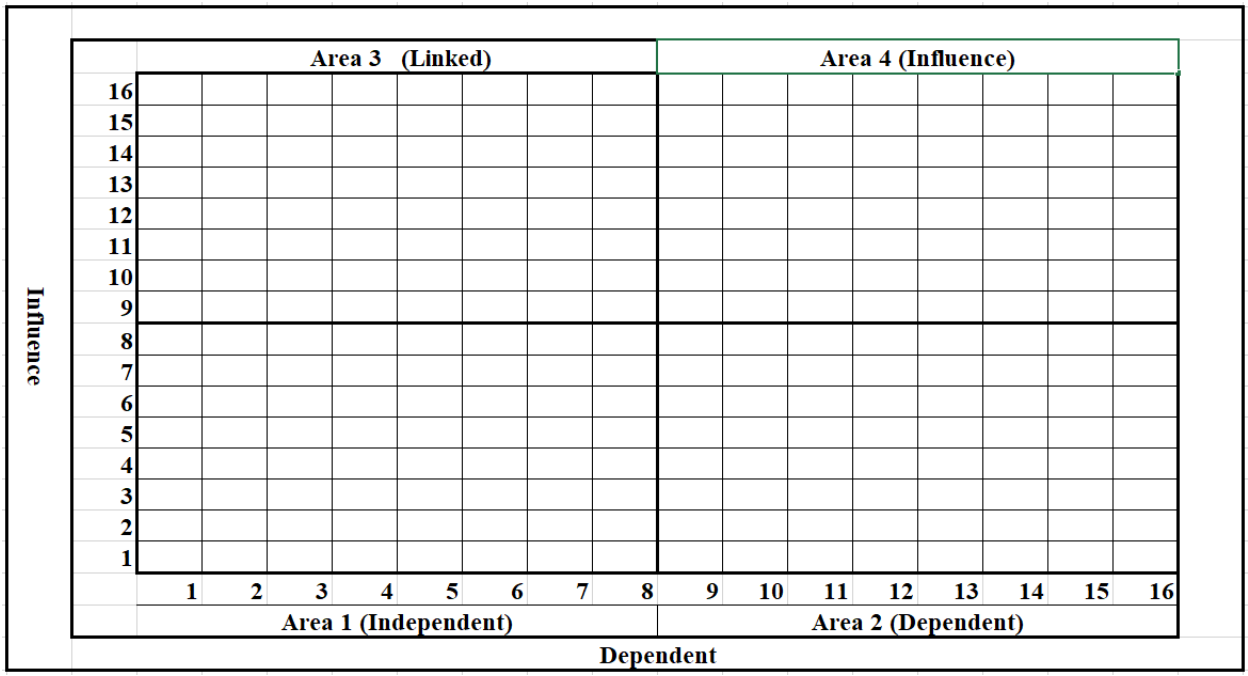
The above table shows that universities, higher education and the new university company for an analysis the role of higher education in promoting the competitive advantage of knowledge-based businesses should interact with each other in order to successfully implement improvement action plans. do

Because the success of each program means the success of the previous programs. In fact, increasing the amount of innovation in knowledge-based businesses in the region and increasing entrepreneurship in these industries, while they are necessary for each other, cannot be realized without the correct and principled implementation of the previous plans. The matrix sorted based on the level of priority of the action plans in the row and column dimensions is called focal matrix, which displays the clusters of relationships between the action plans and the intensity of interactions of the plans in each cluster. As is clear from the matrix below, the interactions are intense in all clusters of action plans, But the interactions in the third cluster, which has a large number of programs, have a great place.

Table (12): Conical Matrix

| Conical Matrix | Cultivation of required human capital by higher education centers | Production of new practical and developmental ideas and knowledge by higher education | Acquiring and absorbing knowledge from outside higher education | Introduction of products offered by higher education | Financing entrepreneurship from inside and outside higher education | Creation of a focal company by the university to supply the product | Calling related companies and institutions for cooperation (as (partners | Share ideas and insights with partners | Provision of information technology | Provision of soft infrastructure (proper (laws | ,Providing regional national and global communications | Simplifying the process of creating a company and entrepreneurship | Reforming macroeconomic policies | Amending business rules | Reforming the country's political system in line with good governance | Reforming knowledge based business policies | Level Penetration |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cultivation of required human capital by higher education centers | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 12 |
| Production of new practical and developmental ideas and knowledge by higher education | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 15 |
| Acquiring and absorbing knowledge from outside higher education | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 12 |
| Introduction of products offered by higher education | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 |
| Financing entrepreneurship from inside and outside higher education | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 |
| Creation of a focal company by the university to supply the product | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 |
| Calling related companies and institutions for cooperation (as (partners | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 |
| Share ideas and insights with partners | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 |
| Provision of information technology | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 12 |
| Provision of soft infrastructure (proper laws) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 14 |
| Providing regional, national and global communications | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 12 |
| Simplifying the process of creating a company and entrepreneurship | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 12 |
| Reforming macroeconomic policies | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 15 |
| Amending business rules | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 15 |
| Reforming the country's political system in line with good governance | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 16 |
| Reforming knowledge-based business policies | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 15 |
| The degree of dependence | 11 | 11 | 11 | 16 | 16 | 12 | 16 | 16 | 11 | 6 | 16 | 11 | 11 | 5 | 1 | 6 | |

If we measure the degree of dependence of action plans on other plans incrementally on the horizontal axis and the influence of programs on other plans incrementally on the vertical axis and divide them into two parts in the middle, at the end of coordinates We have four sections.




In the first part, where both the degree of dependence and the degree of influence of the programs are low, independent programs are called actions. As it is clear from figure (2), none of the action plans are not placed in this end. In the second part of the coordinate system, programs with a high level of dependency but low influence are called dependent programs. Figure (2) shows that out of 16 action plans, five programs, i.e., introduction of products offered by higher education (code 4), entrepreneurship financing from inside and outside higher education (code 5), creation of a focal company by the university to offer the product (code 6), call for companies and related institutions to cooperate (as partners) (code 7), share ideas and insights with partners (code 8) are placed in this area.

In the third part, there are programs that have a low degree of dependence, but have a high influence power. Programs located in this area are called stimulus programs. According to Figure (2), out of 16 action plans, seven programs are placed in this area, which are: cultivating the human capital needed by the university (code 1), providing regional, national and global connections (code 2), acquiring and absorbing knowledge from outside Higher education (code 3), provision of information technology (code 9), production of new practical and developmental ideas and knowledge by higher education (code 11), simplification of the process of creating a business and entrepreneurship (code 12), reforming macroeconomic policies (code 13) ) are located in this area.

In the fourth part, both the degree of dependence and the influence power of the programs are high. Therefore, the programs located in this section are called linked programs. As it is clear from figure (2), most of the action plans (4 plans out of 16 plans) of higher education are based on improving the competitive advantage of the knowledge-based business ecosystem in this area. These programs include: provision of soft (appropriate laws) and hard (code 10) infrastructures, reform of business laws (code 14),

reform of the country's political system in line with good governance (code 15), reform of knowledge-based business policies (code 16) in this are placed in the area.

## Discussion

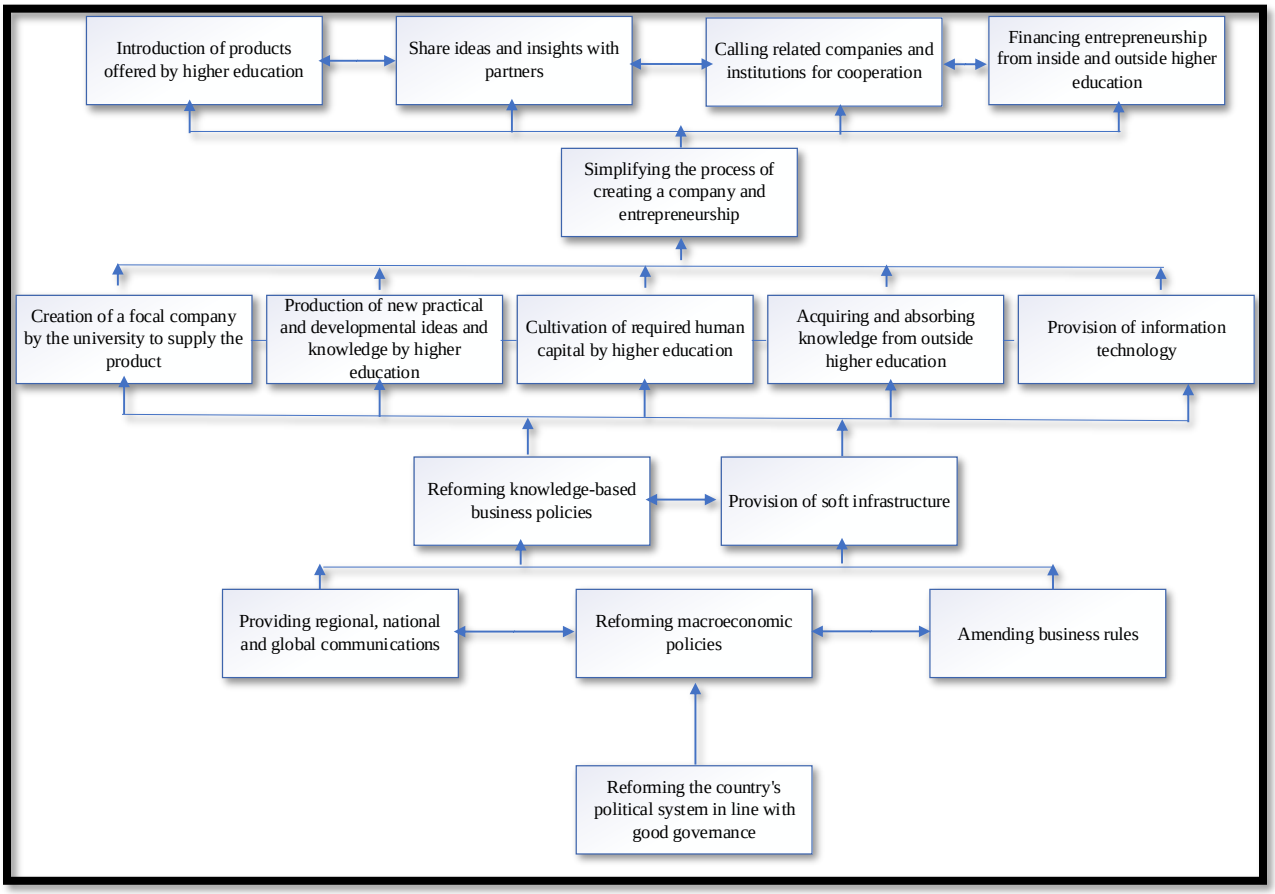
According to the discussions above, the final graph of the analysis of the help of higher education on improving the competitive advantage of knowledge-based businesses in Iran can be drawn as Figure (3) below. It is concluded that the basis and key to the development of the university's business ecosystem is the reform of the country's political system.

Reforming the political system in relation to the development of university-oriented business is important from two points of view. The first one is to modify the government's current and future strategies, policies and support methods for the development of the university-oriented business ecosystem; The second is to establish good governance at different levels of the country.

According to the United Nations, good governance is defined with eight principles and according to the European Commission with 12 principles, which are: 1- The amount of direct and indirect participation of people in the affairs of society, the concept of participation here is freedom of expression and diversity of views and the organization of a Madani society.; 2- Good governance is based on the rule of law, which includes the full protection of the rights of individuals (especially minorities) in the society and is properly implemented; 3- The free flow of information and the ability to easily access it for everyone, which is called transparency; This implies the awareness of the people of the society on how to make and implement decisions; 4- Accountability of institutions, organizations and public and private institutions within the legal framework and specific time to their members and clients; 5- The formation of general consensus, which means that the different opinions of stakeholders are guided in a direction that has the greatest convergence with the goals of the entire society; 6- Society's assurance that people will contribute to society's interests according to their activity; 7- efficiency and effectiveness; 8- Responsibility; In addition to governmental institutions and institutions, private organizations and active civil institutions must also be accountable for their behaviors, decisions, policies and actions.

In fact, the overall analysis on the help of higher education on improving the competitive advantage of knowledge-based businesses in Iran should be formulated, facilitated and supported by government.

Figure (3): Analysis graph of analysis the role of higher education centers on improving the competitive advantage of knowledge-based businesses




According to the relationships shown in Figure (3), the government, by pursuing the reform of the political system and establishing good governance, can provide fundamental and very effective assistance to the programs **higher education centers on improving the competitive advantage of knowledge-based businesses** have at the national and regional level in Iran. Also, by reforming macroeconomic policies, reforming country's business laws, providing regional and national connections, the government takes important steps in order to improve the competitive advantage of businesses through higher education.

In addition, by reforming knowledge-based business policies, providing financing for the creation of hard infrastructure (land, gas, water, electricity, etc.) and providing soft infrastructure (appropriate laws), the development of the university-oriented business ecosystem. However, the programs for cultivating the human capital needed by the university, generating new practical and developmental ideas and knowledge by the university and acquiring and absorbing knowledge from outside the university and creating a focal company by higher education are necessary measures to improve the competitive advantage of businesses through education. Of course, the provision of information and communication technology on one hand and the

globalization of the process of creating a business and entrepreneurship on the other hand can help to create an academic company. Creating and inviting companies and institutions to cooperate with higher education is one of the effective measures in improving the competitive advantage of businesses.

Ofcourse, the provision of information and communication technology on one hand and the globalization of the process of creating a business and entrepreneurship on the other hand can help to create an academic company. Creating and inviting companies and institutions to cooperate with higher education is one of the effective measures in improving the competitive advantage of businesses. In fact, the interactions of universities with industry and government in the form of industrial clusters (Porter, 1998; Adner and Kapoor, 2010), knowledge-based entrepreneurship, cultivation of skilled human capital, knowledge capital (intellectual capital), social capital and information technology. In the long and short term, it will represent the role of higher education in enhancing the competitive advantage of knowledge-based businesses. In fact, the governing system of higher education should not only supply high-quality, innovative and high-efficiency products to the society, but also should be diligent in their development, because the improvement of the competitive advantage of businesses at the national level depends on It is (Geiger, 2004).

According to the research conducted, higher education with a decentralized and competitive structure with the aim of innovation and knowledge-based entrepreneurship are able to be an important source of competitive advantage of businesses at the national level by cultivating human capital with knowledge, skills and capabilities. But the construction of the university-centered business ecosystem actually begins when the products offered by the university are introduced; Calling companies and institutions for cooperation; share ideas with partners; The location of businesses should be determined and designed and entrepreneurial activities financed.

The development of higher education, on the one hand, helps to develop the culture of knowledge and innovation of human capital, and on the other hand, it helps to develop and absorb information technology in businesses and industries. On the contrary, he takes advantage of their development for his own benefit. Higher education and university research develop in interaction with each other, at the same time, their development means the development of the university. Developed higher education are the only institution that can lead the development of the knowledge-based business ecosystem. Of course, there is no need for the help of the government and knowledge-based companies in this work. Therefore, the development of cooperation between higher education and knowledge-based companies plays an important role in the development of the regional knowledge-based business ecosystem. In addition to helping the cooperation of complementary knowledge-based companies, it helps to develop knowledge culture and human capital innovation, research development, production of new technology, absorption of knowledge from abroad, etc. These programs will continue to increase risky investment in knowledge-based industries, develop cooperation between domestic and foreign companies, develop trade union cooperation, improve the level of development of regional industries and develop commercialization infrastructures.

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