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## Identify factors affecting the internationalization dimension in entrepreneurial university and its role in creating a knowledge-based economy

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### Abstract

**Purpose:** This research has been designed to identify the effective components of the internationalization of the entrepreneurial university that contribute to the creation of knowledge-based economics.

**Methodology:** The research method was a blended method and the statistical population included experts and experts in the field of growth centers in Islamic Azad universities in Fars province. In the qualitative section of 11 people in the interview process and in the quantitative section with a population of 976 people, 277 people participated as an example in this study. The data gathering tool was an interview and a researcher-made questionnaire. After validation, its reliability was 0.83. Descriptive statistics were used to analyze the data and exploratory and confirmatory factor analysis was used in the inferential part. **Findings:** The results of the research of findings showed that the continuous validation components of the university in order to achieve international standards, conduct innovations and international initiatives on campus, the relationship of faculty members with foreign graduates with the highest factor load (0.88) And the component of the application of the system of international education in the university with the least factor load (0.63) of the total variance explained, and other components were important in the following order respectively. **Discussion:** The coefficient of the effect of components in the internationalization of the entrepreneurial university in creating a knowledge-based economy alone is the highest coefficient of influence on the continuous validation component of the university in order to achieve international standards, carry out innovations and international initiatives on campus, the relationship of faculty members with Foreign graduates with 0.88 and the least in the component of using the distance education system at university.

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## 1. Introduction

Today's world and its relations are very complex and varied. The reason for this is also innovation in various systems. Academic, Organizational, Communication, and Production (Guerrero, 2014). The mission of universities in the context of time is in line with global developments and in line with the objective of responding to the needs of societies and moving towards participation in the entrepreneurial paradigm (Behzadi et al., 2014). The focus on universities in several Recent years have attracted the attention of many researchers due to the economic benefits of knowledge (Gibb, 2012). Obviously, the universities and the higher education system, in order to better align with the process of indigenous, regional and international economic development, are moving toward the transformation of their traditional role, which is merely the production of knowledge, toward the entrepreneurial university, which, in addition to producing knowledge and Creating ideas transforms them into action, moving. Indeed, the idea of knowledge-based development and country development programs has imposed on entrepreneurship an envoy to universities. This trend can be seen in developed countries since the late 1980s. To be entrepreneurial, the university has to have a great deal of autonomy in relation to government and industry, while also having a great deal of interaction (Etzkowitz, 2003, quoted by Aghajani, 2013).

The path to the Entrepreneurial University is a relatively long and challenging path. In this way, the first step is to find a strategic vision and prioritize the university through dialogue with the providers or providers of academic resources; the second step is to create an active role for the university in commercializing the intellectual property of the members of the board of directors Science, staff and students; the third step is to play a role in the proactive role of the university in improving the efficiency of the innovation environment in the region through the sharing of efforts with industry actors and attracting government participation; therefore, the move towards academic entrepreneurship is responsive to internal changes that Management is not possible without new activity (Ghasem Nejad, 2010).

The status of knowledge as a valuable resource in creating economic growth, the realization of a knowledge-based economy, has created new expectations of the university in order to play a new role as the commercialization of research along with previous roles, education and research (Todorovic et al. 2015). An entrepreneurial university means a university in which all members' activities, such as education, research, etc. are managed, administered and implemented in such a way that the university is regarded as an entity or pseudo-business enterprise. That is, the orientation of these activities is for profitability as well as gaining competitive economic advantages (Dabic et al., 2015). In this view, based on the rapid adaptation of environmental changes, the distinct distinction in how it is managed with traditional universities, the pursuit of new activities based on the development of entrepreneurial culture at all levels of the university, its contribution to economic development by creating investment or commercialization of knowledge and Technology, job creation, as a result of an increase in the level of welfare, and the reduction of social frauds, etc. (Guerrero, 2014). Also, the entrepreneurial university is also important in the knowledge economy, due to its economic outputs such as patent, concession contracts, birth generations, employment creation, and the transfer of science and technology to the industry (Savas B & Alkan, 2015).

In fact, the main reason for the emergence of a knowledge-based economy was the emergence of innovation and knowledge-based entrepreneurship. Entrepreneurship training experiences in some countries, regardless of specific culture and religion, show that entrepreneurship education can be trained by entrepreneurship education and can be entrepreneurship research. The university is a good place for knowledge-based innovation due to its basic features such as human capital in the form of students and faculty members. Therefore, the university can be entrepreneurial as the most important reference for

the production and dissemination of new knowledge (Najafi Moghadam, 2006, quoted by Talebi and Zare Yekta, 2008). The study of the economies of knowledge-based countries shows that skilled graduates are one of the most important strategies for transferring knowledge from universities by virtue of their ability to participate in conducting basic research. These people, while entering the industry, have at the same time learned a high level of applied education, research and applied science, and are also associated with specialized and academic networks, so they are capable of conducting research and developing ideas. They solve complex problems.

## 2. literature Review

Kargar et al. (2018) conducted a research entitled "Social Analysis of Modeling the Creation of Knowledge Based Companies in Islamic Azad University Departments of Gilan Province". The results of this research showed that among individual Awal, the component of creativity and innovation of the individual, in the management factors, the component of the support of university administrators from the founders of knowledge-based companies in universities, in the organizational factors, the component of the establishment of knowledge-based companies according to needs The region and the existing disciplines, in environmental factors, are an important component of business planning for converting the idea into a product by the government in building knowledge-based companies. Fadai (2017) conducted a research entitled "A Model for Creating an Entrepreneurial University Based on Futuristic Techniques and the Production of Science in Iran's Educational System". The results of the research showed that entrepreneurial university has a significant effect on predictive techniques and science production in educational system. The dimensions and components of the entrepreneurial university in Iran's educational system are organizational verbs, individual attitude, flexibility, reward, entrepreneurial leadership, entrepreneurial culture.

Khosrow Abadi (2016) conducted a research entitled "Presentation of a model for explaining the role of the organization's dual role in forming an entrepreneurial university". The results of the research showed that all the dimensions and components of organizational two-sidedness (development thinking, capability, development planning, structure, flexibility, management, entrepreneurial orientation, culture, exploration, vision, competitiveness, strategy, structure, Adaptability, management, and culture), exploration and exploitation have an impact on entrepreneurial universities. And dimensions of service quality, financial resources, entrepreneurial capabilities, organizational structure, organizational culture, educational and research policies, management and leadership, national and regional contextual factors, and international factors as dimensions of the entrepreneurial university. Samadi Mireklae et al. (2014) A study entitled "Evaluation of Indicators of the Third Millennium University (Entrepreneurial University) at Mazandaran University through Fuzzy Inference System" found that the characteristics and indicators of the entrepreneurial university at Mazandaran University were components of the vision, mission and University strategy; Governance and university administration; organizational structure, multidisciplinary and multidisciplinary, power of influence and use of diverse resources, management of stakeholders and community values, graduates, knowledge transfer, growth center, risk financing In university-based companies, internationalization and ultimately entrepreneurial and learning education Enterprise-level inappropriate.

Dalmarco et al. (2018) assist companies in research entitled "Entrepreneurship in the transfer of scientific knowledge", and they contribute to the expansion of socio-economic development in South Brazilian business universities by exploratory case studies. The five dimensions of entrepreneurship prospects, external relations, access to academic resources, creativity and research management of entrepreneurs and managers of business incubators have been mentioned as important tools in promoting entrepreneurship and the quality of entrepreneurship education in addition to Encourage close links with applied academic research

to launch business plans for their businesses in the outdoors. Finally, although new firms have failed in academic patents, they have played an important and dynamic role in social and economic development.

Fichter and Tiemann (2018) in a research entitled "The Impact of University Areas in Support of Continued Entrepreneurship in Four Universities of Germany and the United States", showed by case study that the areas of the environment, the institutional framework, key people, and external interactions in Entrepreneurship affects the university and confirms the assumption that the role of key people as inventors, makers, or network makers is important. In addition to these areas, studies have shown that more factors have contributed to university entrepreneurship, including the main activities for developing university support systems (research and development projects and dialogue processes), organizational history, competitive fields of universities, interest and the demand for students can be named.

Crecente-Romero et al. (2018) in a research paper entitled "The Entrepreneurship Route can increase the quality of the 25-year-old university graduate youth in the European Union." Survey research showed that in analyzing the relationship between initial entrepreneurial rates, training costs and levels There is a good quality relationship between entrepreneurship and the activity of young students. But there is no relationship between educational investment and the entrepreneurial activities of young students at the university. Guerro et al. (2017) in a research entitled "The Impact of Pyramid Agencies on the Entrepreneurship Activities of Universities and Higher Education Institutions in Mexico," demonstrated by the experimental research method that the past two decades have been the transfer of knowledge-based economics and are interesting applications for field activists And also the relationship between universities, institutions and government for entrepreneurship in research fields such as innovation, knowledge transfer, entrepreneurship, and has provided academic entrepreneurship and general entrepreneurship.

### 3. Methodology

The present study is aimed at identifying the effective components of the internationalization of the entrepreneurial university and its role in creating a knowledge-based economy in order to provide a model in the Islamic Azad universities of Fars province. The current research is applied in terms of the time of data collection. The method of research was descriptive-survey. According to the purpose and nature of the research, mixed or mixed research method has been used through integration of qualitative and quantitative methods. In this project, the researcher first qualitatively examines the subject of the research with limited participants and then proceeds on the basis of qualitative findings in relation to the construction of the tool. Considering the above issues, because in this research the main purpose of the role of effective factors of internationalization of university of entrepreneurship in creating knowledge economy is to provide model in Islamic Azad universities of Fars province, in addition to deep study and more knowledge of the subject In the field of internationalization of the University of Entrepreneurship and knowledge economy, as well as the recognition of the internationalization dimensions of the University of Entrepreneurship and Knowledge Economy in Islamic Azad universities in Fars province, in addition to the theoretical foundations of the interview, for further understanding, then a few approaches to Qualitative results confirmation is used. The study of mixed methods involves the compilation and analysis of quantitative and qualitative data in which data are collected simultaneously or sequentially. Due to the necessity of qualitative research before the quantitative method, in this research, exploratory design and classification model have been used as one of the research strategies in mixed methods.

#### 4. Findings

A sample sampling method was used to determine the samples of this research and to determine the group of experts. If the purpose of the interview is to discover and describe the opinions and attitudes of the interviewees, then, depending on the time and resources available, 25 to 10 samples could be completed in this field. The demographic data of the studied samples are presented in Table (1). The interview process was conducted during the period from winter of 1395 to spring of 1396.

**Table 1.** Demographics of the interviewees

Specialty field and interviewees	Geographical location of the research areas studied	Responsibility of interviewed people	Academic Rank	Field of Study
Ministry of Science, Research and Technology	Islamic Azad University, Shiraz Branch	Management of Economic Affairs and Basis of Knowledge	Associate Professor	Industrial Management
Ministry of Science, Research and Technology	Islamic Azad University of Fasa	University President	Assistant Professor	Economic Geology
Ministry of Science, Research and Technology	Islamic Azad University of Fasa	Research management	Assistant Professor	Agriculture
Ministry of Science, Research and Technology	Islamic Azad University of Marvdasht	Director of the Center for the Development of University of Technology Units	Assistant Professor	applied mathematics
Ministry of Science, Research and Technology	Islamic Azad University of Rice	Deputy of Education and Research of the University	Assistant Professor	statistics
Ministry of Science, Research and Technology	Islamic Azad University Estahban branch	University Deputy Assistant	Assistant Professor	Theology and Islamic Sciences
Ministry of Science, Research and Technology	Islamic Azad University of Sarvestan Branch	Research Officer	Assistant Professor	Architecture
Ministry of Science, Research and Technology	Islamic Azad University of Shiraz	Educational Assistant	Associate Professor	Physical Education
Ministry of Science, Research and Technology	Islamic Azad University, Firouz Abad	Research Officer	Assistant Professor	Management
Ministry of Science, Research and Technology	Islamic Azad University, , Firouz Abad	University Deputy Assistant	Assistant Professor	Management
Ministry of Science, Research and Technology	Islamic Azad University of abadeh	Faculty head	Assistant Professor	Persian the literature

## A. Findings in the qualitative research section

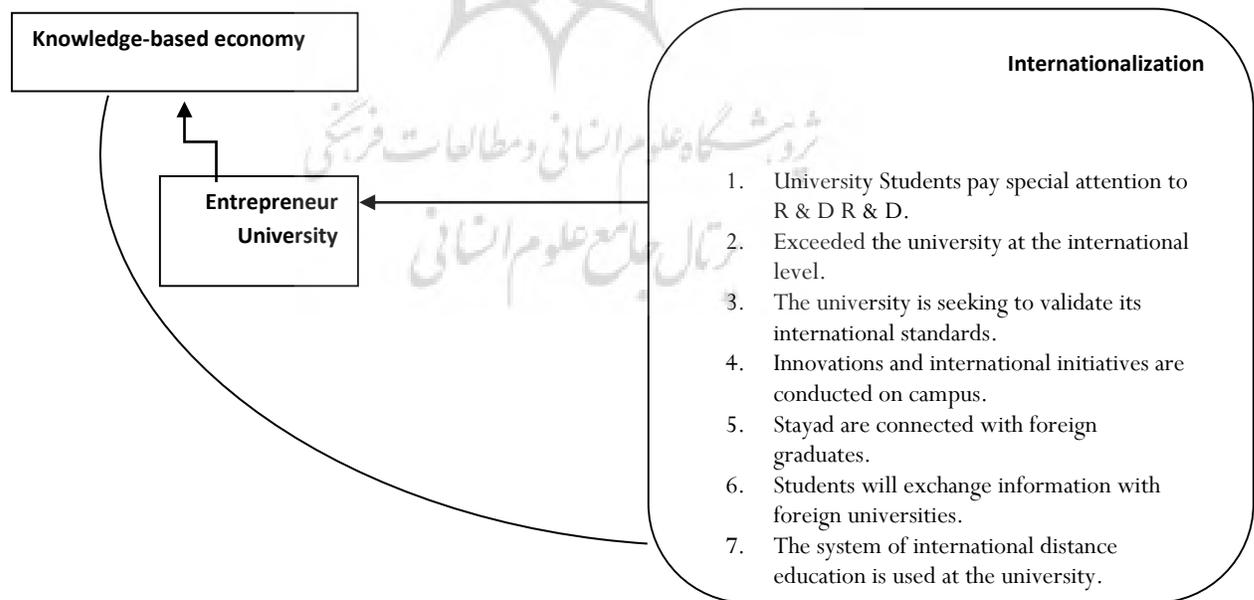
From the analysis of qualitative research data, 110 initial code codes were obtained at the open source coding stage. After reviewing and matching these codes and removing repeat codes, common codes were counted (Table 2).

**Table 2.** Results of interview analysis and open source coding: concepts, main categories and subcategories

Factor (main)	Component (sub)
Internationalization	University professors pay particular attention to R & D R & D. University level is developed on the international level. The university pays its credentials to achieve international standards. Innovations and international initiatives are conducted on campus. Teachers are associated with foreign graduates. Students exchange information with foreign universities. The international distance education system is used at the university.

First question: What are the components of the internationalization of the entrepreneurial university and its role in creating the knowledge economy base?

Based on the analysis of qualitative data derived from deep interviews and exploration and coding and analysis of qualitative data derived from in-depth interviews and Exploring and coding and analyzing the contents of the text of the interviews, while also conforming to the theoretical foundations, according to the participants, in order to answer this research question, the factors identified in the internationalization of the entrepreneurial university that can be used to create the knowledge economy. The basis of impact is classified into 7 components, which are shown in Table (2). Figure (1) shows the coding and paradigmatic model of the formation of the knowledge-based economy based on qualitative research data. This conceptual pattern represents the relationship between the main dimension and the sub-components (internationalization) derived from the qualitative process. The research's assumption is that the dimension of internationalization and related components directly contribute to the creation of knowledge-based economics.



**Figure 1.** Pattern of coding and paradigm based on qualitative research findings

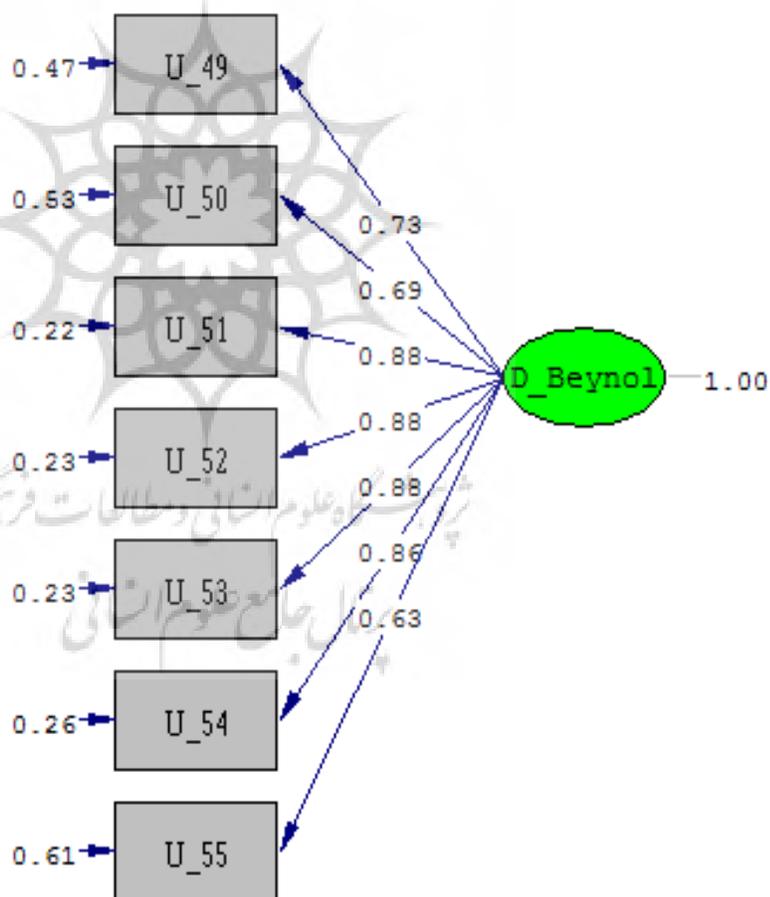
### B) Findings in the quantitative section:

The data of the variables of the research were normalized using Kolmogorov-Smirnov and Shapiro-Wilk tests, the results of which are reflected in the table below.

**Table 3.** Shapiro Wilco and Kolmogorov-Smirnov tests

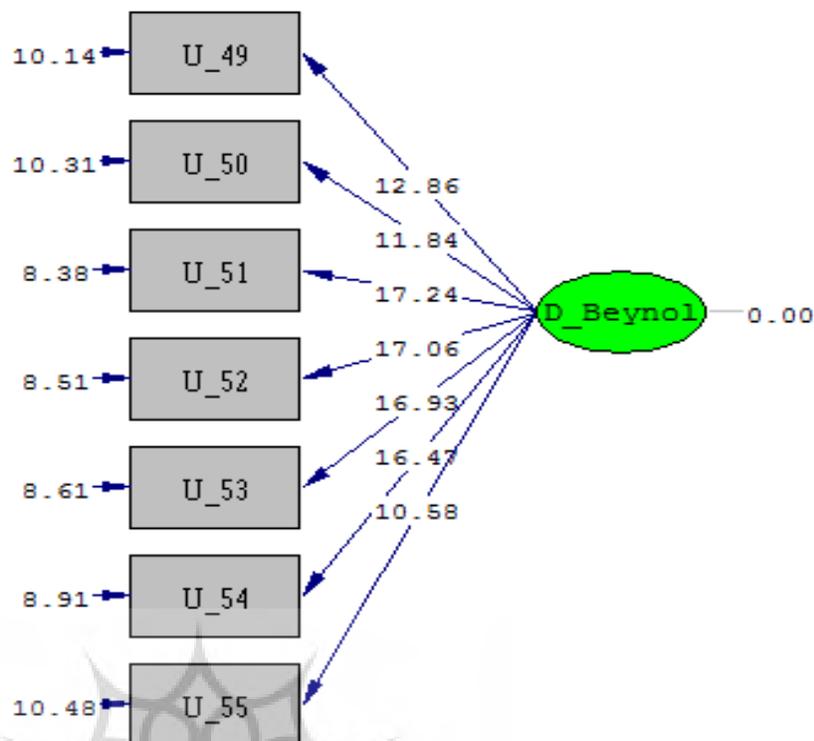
Kolmogorov-Smirnov tests			. Shapiro Wilco		
index	degree of freedom	significant	index	degree of freedom	significant
0.134	253	0.134	0.964	253	0.740

As shown in the table above, the significance level in all variables is greater than 0.05, in other words, the distribution of all factors is normal. Second question: What is the contribution of each of the influential factors in the internationalization of the entrepreneurial university in establishing a knowledge-based economy in Islamic Azad universities in Fars province? Given that in the above model, the paths between variables have the same dimensions are. In Fig. 2, the estimation of the standard coefficients of the paths along with the factor load of each variable is given.



Chi-Square=26.20, df=14, P-value=0.07438, RMSEA=0.057

**Figure 2.** Structural model of international dimension in the estimation of standard coefficients



Chi-Square=26.20, df=14, P-value=0.07438, RMSEA=0.057

Figure 3. The structural model of international dimension in the meaningful state of coefficients

As shown in Fig. 2, all parameters of the internationalization dimension, along with the factor loads, are shown in the following tables in summary form.

Table 4. Estimates for Internationalization

Result	T value	Factor load	Route (Question number)
Accepted	12.86	0.73	Item 49 <-- Internalization
Accepted	11.84	0.69	Item 50 <-- Internalization
Accepted	17.24	0.88	Item 51 <-- Internalization
Accepted	17.06	0.88	Item 52 <-- Internalization
Accepted	16.93	0.88	Item 53 <-- Internalization
Accepted	16.47	0.86	Item 54 <-- Internalization
Accepted	10.58	0.63	Item 55 <-- Internalization

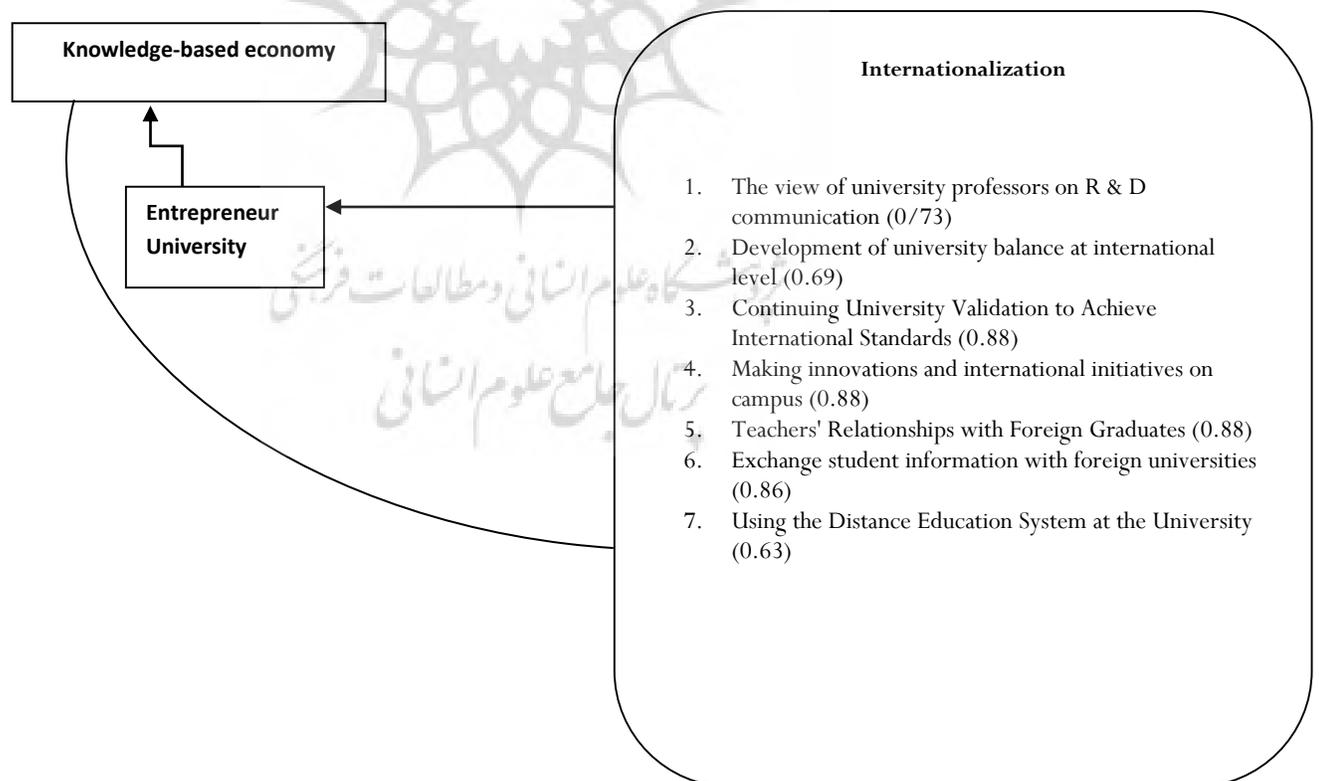
As shown in the table above, standardized load factors for internationalization issues are of a desirable situation.

Question 3: What model can be used to identify the effective components of internationalization at the University of Entrepreneurship in creating a knowledge-based economy?

In order to determine the appropriate model for identifying the effective components of the internationalization dimension at the University of Entrepreneurship in creating an economy The basic knowledge has been used for confirmatory factor analysis model. A confirmatory factor analysis is used when the researcher has a large amount of knowledge of the underlying infrastructure. Based on theoretical knowledge, empirical research and previous studies, the researcher hypothesizes that there is a relationship between the observed variables and the fundamental factors, and then assumes this assumption. In confirmatory factor analysis after determining the pre-empirical factors, by determining the fitness of the determined factor model, the optimal adaptation of the observed and observed factor structures is tested (Hooman, 2008, quoted from Hafezian, 2014). The following table describes the effective components of the organizational structure of the entrepreneurial university.

**Table 5.** Naming the components of internationalization dimension

Title	component	variable
U_49	University professors pay particular attention to R & D R & D.	
U_50	University level is developed on the international level.	
U_51	The university pays its credentials to achieve international standards.	internationalization
U_52	Innovations and international initiatives are conducted on campus.	
U_53	Teachers are associated with foreign graduates.	
U_54	Students exchange information with foreign universities.	
U_55	The international distance education system is used at the university.	



**Figure 4.** Final pattern based on research findings

Question 4: What is the fit of the proposed pattern?

After the final model was presented, the pattern fit was examined. The form (2) shows the fitted map diagram to the data. As shown by the X-2 and RMSEA indices, it provides a better fit for data. The outputs of the model are presented in Table (5).

**Table 6.** Model fitting indices for modeling an interpolation dimension

Fitness indexed		index
Accepted point	value	
Less than 3	1.87	Chi-square / df (degrees of freedom / chi)
Less than 1/0	0.057	RMSEA (root mean estimated error)
Above 9/0	0.96	CFI (Adjusted Fitness)
Above 9/0	0.96	NFI (softened fit)
Above 8/0	0.90	GFI (goodness of fit)
Above 8/0	0.81	AGFI (Good Modified Fit)

As can be seen, the fitting indices of the model are in a favorable position.

## 5. Discussion

First question: What are the effective components of internationalization at the University of Entrepreneurship and its role in building a knowledge-based economy?

Showed that 7 effective components were recognized as an international component of the University of Entrepreneurs, which include: the attention of university professors to R & D communication, the development of University level balance at international level, the continuous validation of the university in the direction Achieving international standards, conducting international innovations and initiatives on campus, connecting faculty with foreign graduates, exchanging student information with foreign universities, using the international distance education system at the university. In addition to the research literature, one can He acknowledged that one of the dimensions of the entrepreneurial university, Internationalization. Indeed, since the time of the formation of entrepreneurship and innovation and the phenomenon of globalization, this component was introduced, which meant the development of internationally produced sciences (Arnot, 2010). With internationalization, it is actually investing in entrepreneurship training, and universities are encouraged to bring their knowledge products to the world. Entrepreneurship and the spirit of innovation and internationalization as the spirit and core of the organization.

Second question: What is the contribution of each of the effective factors in the internationalization of the entrepreneurial university in establishing the knowledge economy in Islamic Azad universities in Fars province? Showed that the seven factors of the internationalization of the University of Entrepreneurs have contributed to the creation of a knowledge-based economy. The existence of internationalization at the university is very effective. But in the meantime, the continuing validation components of the university in pursuit of international standards, the implementation of innovations and international initiatives on campus, the relationship of faculty members with foreign graduates had the greatest contribution to the creation of knowledge-based economics. In this regard, it can be said that, in recent years, in the field of university management, in addition to the national tasks, international duties and responsibilities have been given to universities. According to international studies, one can observe that: (1) the transfer of knowledge from one country to another in a variety of ways, including media (books, electronic media and similar devices), physical mobility (conferences, studying) Overseas, faculty exchange, etc.), curriculum and joint research projects as well as transnational education, 2) international

education and research through cross-border and transnational programs, distance learning and other forms of (For example, international communication), and (3) transnational communication and transmissions through student mobility and studying abroad (Tahmasebzadeh and Karan, 2016). Therefore, if the university provides the groundwork for innovative projects and research as well as the continuous engagement of professors with foreign graduates, the creation of knowledge-based firms can play an important role. After this component, student exchange information with foreign universities is located. Students can have an effective role in establishing knowledge economics, as well as faculty members, by exchanging knowledge with overseas universities. The components of teacher attention to R & D communication Internationalization, the development of university level balances in the international level, and the implementation of the International Distance Education System will be at a later stage.

Question 3: What kind of model can be used to identify the effective components of internationalization at the University of Entrepreneurship in creating a knowledge-based economy?

The results of the confirmatory factor analysis in the case of direct standard coefficients and t-valued coefficients determine the relationships between the components of the internationalization dimension. The results of standard coefficients in determining the role of the components in the internationalization of the entrepreneurial university indicate that among the components, the continuing validation components of the university to achieve international standards, conduct innovations and international initiatives on campus, The relationship of faculty members with foreign graduates with standard coefficient (0.88), the highest and the highest impact on internationalization and t-valued coefficients, showed significant coefficients and parameters of the role of internationalization in the entrepreneurial university in establishing a knowledge-based economy. This template determines the role of the entrepreneurial university in building a knowledge-based economy. So, we can say that 7 factors affecting the internationalization of the entrepreneurial university in this model explain the role of entrepreneurial universities in building a knowledge-based economy. Figure 4 shows the final model of the components identified in the internationalization of the entrepreneurial university and its role in creating a knowledge-based economy with each of the influential factors.

Question 4: What is the fit of the proposed model?

After presenting the final model, the pattern fit was examined. As seen in Table (5), modeling indices such as adjusted fitness index, softened fitness, fitting fitness, moderately fitted fit is all at an acceptable and appropriate level. On the other hand, the root mean of the estimated error is 0.057, which is less than 0.1, and the average square root of the residual index is 1.87, which is a small amount, indicating that the pattern obtained from the highly adaptive indexes It is good and shows the suitability of the research model. Regarding the adjusted relationships of the variables based on the theoretical framework of the research and the qualitative, logical and necessary discipline, and its overall validity is confirmed.

Taking into account the research results, the following suggestions are presented: - More collaborative research projects at university. - The university will consider a specific budget for educational activities such as (study abroad, congresses, visits, conferences, conferences, joint international projects, etc.). - Infrastructure adapted to the international university in various educational, research, technology and service sectors. - Professors and students with foreign graduates to continuously communicate and exchange information. - A distance education system to attract creative and entrepreneurial students. - The field of implementation of international research projects at the university; - Participation with faculty members and their placement and encouragement for entrepreneurship and innovation at the university. For this purpose, weekly meetings consisting of faculty and faculty management can be formed and used their views. - Due to the importance of human resources in the field of university entrepreneurship, the Department of Human Resources Education will form a council to assess the quality of in-service training that will recognize and attract outstanding and innovative professors, as well

as assess the quality of course implementation. The council, through a structured needs assessment program, identifies the needs and priorities of universities and professors. - Allocation of necessary funding, as well as continuous monitoring of the budget for entrepreneurship and idea generation at universities by ministry and university officials. - The proposed model of this research can be used as a basis for developing university entrepreneurship programs in order to create a knowledge-based economy. Therefore, it is suggested that higher education using this model will provide the conditions for improving entrepreneurship through a variety of methods.

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