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# Providing a model to identify factors influencing the creation of an entrepreneurial university in cities

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**Abstract**
This study was performed to identify factors affecting the entrepreneurial university. In order to achieve this goal, a sample of 173 faculty members (academic rank of associate professor or higher) in academic year of 2015-2016 was selected using the using relative stratified sampling and Cochran's formula. In this study, given the purpose and nature of research, for analysis of the data, exploratory and confirmatory factor analyses were used. The results of in-depth interviews and semi-structured and targeted interview with 14 qualified university professors led to the initial questionnaire developed by the researchers at 5-point Likert scale with 50 items; upon exploratory analysis, 9 items were excluded due to extraction value of commonality smaller than 0.5. Content validity of the questionnaire was approved by accredited academic experts. To assess the construct validity, convergent and divergent validity criteria were used. The results of factor loadings of each item showed that all items had factor loading of over 0.4 and average extracted variance of over 0.5, thus convergent validity of the variables was confirmed. In addition, the values of the square root of the average variance extracted (AVE) was highest, indicating the validity of divergent validity of the variables. Composite reliability and validity of the questionnaire for all variables showed high levels of 0.7. Results showed that the size and components affecting establishment of entrepreneurial university included internal factors (capabilities, management and leadership, structure, prospects, financial resources and research, cultural and education policies) and external factors (interaction with environment and internationalization of the university). Finally, test of the model using t-test showed that the size and the identified factors had a positive and significant impact on the entrepreneurial university.

**Key words:** *entrepreneurial university, external factors, internal factors, innovation*

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## Introduction

Currently, innovation is a definite challenge for global competition as well as the success of enterprises that need to know how to deal with the challenges of the operation as well as influence in the region for the creation and commercialization of new products and services. In advanced economies, the production only by resorting to methods and standardized processes is not sufficient to achieve competitive advantage. Organizations need capacity and skills to create innovation in the global market of design, invention, production and sale of new products faster than their competitors. Such capacity would lead to production of goods and services that are able to meet the needs of the market and an increase economic income in the long run. On the other hand, universities are known as engines of industrial competitiveness and economic progress. Accordingly, it can be argued that there is no doubt that the mission and activities of entrepreneurial universities can play a pivotal role in socio-economic development (NEDEVA, THOMAS, Caswill, Nielsen, 2013). Scientific knowledge, scientific societies and scientific organizations have been recognized as engines of industrial competitiveness and economic progress. Accordingly, it can be argued that there is no doubt that the mission and activities of entrepreneurial universities can play a pivotal role in socio-economic development. Entrepreneurial university has emerged in response to the increasing importance of knowledge in national and regional innovation systems as well as recognition of affordable, inventor and creative academic that is cause of transfer of knowledge and technology.

Over the past decade there have been dramatic changes in the responsibilities of universities, so that they have achieved a new entrepreneurial context different from that of traditional performance of traditional universiites. Entrepreneurship in University engaged higher education system in its third mission, namely, participation in the economic development, in addition to the two main tasks of education and research (Etkowitz, 2012). In addition to the traditional missions of teaching and research, university's third mission was developed, which enables the university to become "entrepreneurial university". In this regard, organizational environment and culture of the university changed to align with this new mission. Recent studies have shown that universities are entrepreneurs when they are not afraid of maximizing the commercialization potential of their ideas for value creation in the community and don't deem such an approach as a scientific threat to their academic values.

Gibb et al. studied the process of the formation and evolution of entrepreneurial culture and tendencies in academic environments as "A change in the mission of Universities as a result of two academic revolutions"; their views and classification is presented in Table 1 (Gibb, Coyle, Haskins.2013).

In this process, universities use their research and teaching capabilities to help transfer knowledge and technology, thus responding to social and economic demands. Accordingly, the approach pf entrepreneurial university is to motivate academics to review research outputs and knowledge creation from a different angle, whereby they can commercialize their research results.

It can be said that the Entrepreneur University is one that has the capability to produce and convert research ideas and outputs in the use of value chain activities. In general, the frameowork of entrepreneurial university has been made of the various traditional university systems in order to meet the extensive need for the creation of new companies and the creation of employment and productivity growth. Many universities throughout the developing and developed countries have begun such process during the current decade in response to quickly changing environment (GUERRERO, URBANO. 2010)). Wissema argues that the emergence of the entrepreneurial university has occurred as a result of 9 processes that



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| Period | Time of emergence | Approach | Mission | Academic model |
|---|---|---|---|---|
| First | Until the 19th century | The prevailing view was that variety in missions is causing a conflict of interests. | Single mission: protecting human knowledge and its dissemination | Learning-oriented university |
| Second | Late 19th century and early 20th century | Research was accepted as a legal obligation for universities and educational and research activities previously carried out separately in colleges and scientific communities were integrated and consolidated into the university system. | Two simultaneous missions: education and research | Research-oriented University- |
| Third | 70s and 80s | The relationship between the University and the industry underwent rapid development, and the issue of coordination-between university and industrial needs for the purpose of the introduction of new technology through integrating research in process of operation and use as new technological development policy became focus of attention. | Eemergence of third mission: the emphasis on the role of universities in economic and social development in addition to pursuit of the two previously said mission | Entrepreneur University |

Table 1. The process of the formation and evolution of entrepreneurial culture and tendencies

| | |
|---|---|
| 1 | Focus on quality as a result of massive demand from Students since 1960 |
| 2 | Impossiblity of administering of universities using the traditional methods thus increasing number of students and their strong affiliation with government departments |
| 3 | Globalization and its impact on universities and creation of competition in three aspects: students, academics and research agreements. |
| 4 | The emergence of interdisciplinary research and its resulting in difference with faculty members |
| 5 | Increased research costs |
| 6 | Challenges created by the deployment of highly specialized research institutions outside the university |
| 7 | Demand of the government that universities play a role in technology-based economy and growth in the knowledge-based economy |
| 8 | Research and development and organizational opportunities proposed as a result of university-industry collaboration |
| 9 | The emergence of an entrepreneurial university by IT companies |

Table 2. Process of reaching the entrepreneurial university

makes the transition to the entrepreneurial university. The following table shows these 9 proceses (Wissema. 2009):

The important thing is that entrepreneurial university literature considers university as an affiliated institution that focuses both on campus and on entrepreneurship studies. This requires a focus on the relationship between academia, government and industry (Gibb, Haskins, and Robertson. 2013).

Nedeva supports the role of universities in filling the innovation gap; he has two main reasons for his claim (NEDEVA. 2013):

1. Survival and continuity and stability are in-



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creasingly dependent on whether the university acts as a major player in the field of economy;
2. The composition and balance and motivation toward research, education and innovation and commercialization are both needs and opportunities for universities today.

Gibb et al. (2009) point out two reasons why universities needed to become entrepreneurs (Gibb, Hannon. Etzkowitz RINNE, R. & Koivula):

1. Much pressure on the higher education sector as a key element in responding to social and economic development;
2. The variable demand in knowledge-based society and therefore knowledge-based economy.

However, as for the search for a comprehensive definition of "entrepreneurial university" that works for literature of all different nations and cultures, the researcher acknowledges that there is no unified definition. The number of definitions of the entrepreneurial university in the literature shows that there is no consensus on this case. Below are some of the efforts of scientists to define the concepts of "entrepreneurial university", which show that despite some common elements, there is a lack of consensus.

Kirby et al. believe that successful pursuit of innovation at entrepreneurial university is a function of individual effort and entrepreneurial organizational capacity. It seems that innovation is impossible without them. These are the necessary and sufficient conditions for entrepreneurship, and only a flexible organizational culture and environment is conducive to the promotion and protection of such activities (Kirby, Guerrero and Urbano. 2011). Behzadi et al. (2014), in a study entitled "Development of a conceptual model of entrepreneurial university with an organizational entrepreneurial approach to entrepreneurial university" argued that entrepreneurial university comprised quality of graduates, publishing of scientific findings, fund raising, research contracts, patents, productive and generative, establishment of science and technology parks, entrepreneurial organizational culture, flexible organizational structure, entrepreneurial approach of professors, management, curriculum and features of students. Kordaij et al. (2012) studied features of Entrepreneur University and argued that paying attention to human resources, efforts to attract funds, strengthening the principle of initiative, decentralized structure to reduce bureaucracy are the efforts that can lead to entrepreneurial university. Yadollahi Farsi et al. (2011) argued that structural factors affecting the development of academic entrepreneurship are organizational structure, physical facilities, research system, financial system, human resources systems, organizational strategies, information resources, processes and working methods and control and monitoring system. Hasanqolipur et al (2011) argue that barriers to knowledge commercialization in university entrepreneurship include lack of competitive educational environment, the negative attitude to the idea of the university as a firm, laws and regulations' inefficiency, poor educational system, mutual distrust between academia and industry, financial problems, lack of skilled manpower, structural weakness and lack of strategic research document. Horthi (2014) conducted a research titled "Entrepreneur university and entrepreneurial environment" argued that entrepreneur university is based three factors affecting evolution of university, that is, university, external environment, and interaction between university and the external environment and also argued that dimensions for the entrepreneur university are management, structure, culture and mission of the organization.

Bronstain and Reihlen (2014) studied the model of entrepreneurial university to study dimensions affecting entrepreneurial university and identified them to be human resources, infrastructure, financial resources, strategies, and external environment. National Center for Entrepreneurship Education in England (NCEE) (2013) sharing their experi-



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| Author | Definition |
|---|---|
| Etzkowitz (2003) | It is a natural incubator, which provides support structures for teachers and students to start new investments: intellectual and commercial. |
| RINNE, R. & Koivula (2005) | Entrepreneurial university comprises creation of investment risks by professors, technicians, or students. |
| Trachem (2006) | Modern entrepreneur university is one that<br>- is a place for making income and achieving financial independence,<br>- sees its students as customers,<br>- in which professors and executives communicate with each other,<br>- is in touch with environments and institutions and organizations involved in the commercialization of education,<br>- Despite complaints about the deterioration of appearance, is really growing and improving. |
| Gibb & Hannon, 2006 | Entrepreneur university is one that has the ability to innovate, identify and create opportunities, work in teams, risks and respond to its challenges. Entrepreneurial university is a major change in organizational character to ensure a more promising position for the future. |
| Nevada, 2007 | Entrepreneur university seeks official efforts to invest in university research to ensure research results as business investment. Official efforts include organizational units with clear responsibility for ensuring progress and transfer of technology. |
| OECD ,2011 | It has two types of definition. In the first, an entrepreneurial university is a university that actively tries to innovate in the field of businesses and to be helpful in shaping the future of society and in the second, entrepreneurial university is an innovative, risk taking one that promotes entrepreneurial behavior. |
| Kirby et al., 2011 | Ability to innovate, identify and create opportunities, working in teams, take risks and dealing with challenges. |
| Bronstein, Reihlen, 2014 | Entrepreneurial university is based on two components: the university and the environment, which is based on the university's interaction with the environment. |

Table 3. Definitions of entrepreneurial by different scholars

ences based on development of the concept and practice of entrepreneur university argued that dimensions influencing entrepreneurial university are entrepreneurship education, internationalization of universities, transfer and development of knowledge, prospect and vision, and stakeholders' interaction and financial leverages. Organisation for Economic Co-operation and Development (OECD) (2012) made an examination of the factors affecting the development of an entrepreneurial university, and argued that the components of leadership, organizational capacity, individual capacity, teaching and learning and internationalization of university as factors affecting entrepreneurship of university.



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Although one of the most commonly used topics of university managers and academic and science and technology policy makers and managers is entrepreneurial university, its operation has been faced with many challenges so that many universities are first generation ones and many of them are second generation ones and third generation university has yet to be taken seriously in Iran. That's why many graduates lack the necessary technical and entrepreneurial skills and cannot find much success in the labor market and are unemployed. In Iran, the lack of relationship between industry and universities, which is main purpose is the third generation universities, has caused many educated people be unemployed as there is 6.8 million educated unemployed people as of 2015 of whom 730 thousands held master's and doctoral degrees (iranona.com, 2015), which means that 6.8 million have studied merely to obtain a degree. This is because of the fact that ideas, research, and commercialization is weakly followed in Iranian universities. Accordingly, the present study was an effort to identify effective factors in management of entrepreneurial university and tried to answer the following questions: What are dimensions and factors affecting entrepreneurial university? How much does each of identified factors affect talent management?



**Methodology**

This was an applied research in terms of objective and a heuristic combined one in terms of data collection method (design). Data was collected using interview, questionnaire, and libarary-based studies. Statistical population comprised all fulltime professors of North Khorasan province's universities in 2015-16 who academically ranked assistant professor or higher (n = 315, according to Management and Planning Organization's statistics). Population was studied in two steps: qualitative and quantitative. For qualitative part, targeted sampling was done up to saturation as follows: a list of academic scholars was prepared and then they were contacted and interview was done in open and semi-structured manner. Finally, 14 expert professors were included, and the data was saturated. Sample size in qualitative part was calculated to be 173 at error level of 0.05 using Cochran's formula. PLS software was used here due to limited sample and proper predictability of them in heuristic researches. Stratified sampling was using in quantitative part. Strata referred to scientific departments of universities (Azad, Payame Noor and Medical Sciences), and in proportion to sample size, samples in each stratum were selected randomly.

To achieve a comprehensive model and to answer to the questions in the quality and quantity parts of research, it wasnecessary to act on the basis of the steps specified below:

**Qualitative part**

**Step 1- Identifying the components and dimensions of Entrepreneur University**

To answer questions, components and dimensions of Entrepreneur University should be identified. To this end, having identified them through review of theories and interview with experts in qualitative part, expert's questionnaire was developed and modified in three steps. Through it, components and indices were checked, modified and approved.

The results of qualitative part was experts' questionnaire in two dimensions (internal and external) and 9 components or factors (management, prospect, structure, culture and common values, and education and research policies, capabilities, financial resources and interaction with the environment and internationalization of universities), which was designed on a 5-point Likert's scale scored 1-5.

**Step2 – Use of exploratory factor analysis to create measurement tool**

By doing the above steps, validity of the questionnaire was approved accredited academic experts. To assess construct validity, due to likelihood of factors not being independent of each other, varimax rotation – an exploratory factor analysis method - was used. Exploratory factor analysis tests basic structure of variables

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| | Scientific department | | | | | |
|---|---|---|---|---|---|---|
| | Humanities | Technology and engineering | Medicine | Basic sciences | Agriculture | Art |
| Number of professors | 110 | 35 | 100 | 45 | 20 | 5 |
| Sample size | 61 | 19 | 56 | 25 | 11 | 3 |

Table4. Determining of sample size based on scientific departments of North Khorasan province's universities

| Constructs | Mean | STD | Cronbach's alpha | Composite reliability | AVE | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|---|
| Entrepreneur University | 3.538 | 0.408 | 0.900 | 0.911 | 0.518 | 1.000 | | |
| Organizational factors. | 3.211 | 0.286 | 0.834 | 0.889 | 0.672 | 0.504 | 1.000 | |
| Environmental factors | 3.749 | 0.518 | 0.719 | 0.822 | 0.541 | 0.683 | 0.699 | 1.000 |

Table 5. Mean variance extracted, composite reliability and Cronbach's alpha coefficients

and factors related to them and the validity of questionnaire. To assess the construct validity, convergent and divergent validity of the two criteria were used, which are unique to PLS structural equation modeling.

For the convergent validity, criterion of average variance extracted (AVE) was used. The results of factor loadings of items of each factor and t index indicated that all items had factor loading of more than 0.4. All variables also had an average variance extracted of over 0.5, thus confirming convergent validity of the variables. In addition, comoarison of root square of AVE of each construct with values of correlation coefficient between constructs was performed for study of divergent validity. The square root of the average variance extracted. The square root of the average variance extracted in each row and columns showed highest value, indicating the divergent validity of the variables. Also, to determine reliability of data collection tool, Cronbach's alpha method was applied using Spss software and composite reliability as calculated by Smart PLS. The values of these coefficients for all variables were above 0.7 that indicated good reliability of questionnaire.

To determine if the data meet sufficient and necessary conditions for the implementation of the exploratory factor analysis, KMO and Bartlett's tests were conducted. KMO index is index of adequacy of variables and if its amount is less than 0.5, the data are not adequate for the implementation of factor analysis. Value between 0.5 and 0.69 are average for the implementation of factor analysis and when the value is above average and is 0.7, data are suitable for factor analysis. Based on the results, KMO index values were close to 1, which showed adecquacy of the data related to the identified factors for factor analysis.

Having ensured of ability to perform exploratory analysis, analysis process begins.

**Results**

The main objective of this study was to identify factors and indicators affecting the entrepreneurial university; the results of the data analysis are provided. As mentioned earlier,



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| Percent explained variance | Components | Result | KMO& Bartlett statistic | dimensions |
|---|---|---|---|---|
| 36.19% | Culture and common values<br>Prospect<br>Structure<br>Management and Leadership<br>Entrepreneurial capacity and capability<br>Education and research policy<br>Financial resources | Verify the adequacy and correlation of data | KMO=0.712<br>Sig=0.000 | Inner aspect |
| 86.73% | Interaction with the environment<br>Internationalization of universities | Verify the adequacy and correlation of data | KMO=0.703<br>Sig=0.000 | Outer aspect |

Table 6. KMO and Bartlett test results and exploratory factor analysis for dimensions and components of entrepreneurial university



based on the results of interviews with academic experts, 50 indicators were identified as initial indicators of entrepreneurial university. Exploratory factor analysis was performed to identify latent factors affecting entrepreneurial university. For the internal factors, based on the results of the qualitative part, exploratory factor analysis was conducted on the 40 indicators identified. 6 indices were excluded due to extraction values of smaller than 0.5 and the remaining 34 indicators were used to perform confirmatory factor analysis. The results of exploratory factor analysis showed that of the 34 indicators available, 7 main factors can be identified. These factors included: leadership, culture and values, structure, prospect, capability and ability of entrepreneurship, research and education policies and financial resources.

The results of a varimax rotation to identify seven factors; These factors explain 71.106% of the total variance, of which 8.960 percent was accounted for by management and leadership, 21.837 by prospect, 3.985 by culture and common values, 7.114 by financial resources, 8.052 by organizational structure, 6.735 by entrepreneurship capacity, and 10.976 by education policies management. The results are seen in the table below. In much the same way that exploratory factor analysis was conducted for the internal environment, for external aspect of entrepreneurial university, based on the results of qualitative analysis, 10 indicators were identified to measure this dimension. Since one of the commonality indices was of less than 0.5, it was excluded from the analysis and factor analysis was performed again. The results of exploratory factor analysis showed that of the 10 indices, two main factors can be identified. These factors were named as per opinion of professors aware of the topics of research and finally two factors of interaction with the environment and internationalization of universities were identified.

These two factors accounted for 75.173% of the total variance, of which share of interaction with the environment was 48.814% and internationalization of universities 26.359%. the results are presented in the table below.

In the qualitative part, factors affecting the entrepreneurial university were extracted and conceptual model would be as follows.

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| Indices | Factors | | | | | | |
|---|---|---|---|---|---|---|---|
| | Prospect | Educational and research policies | Management and leadership | Organizational structure | Financial resources | Entrepreneurial capacity | Organizational culture |
| Clear mission and objective | 0.620 | | | | | | |
| Specified research strategy | 0.739 | | | | | | |
| Research-oriented regulations | 0.793 | | | | | | |
| Alignment of prospect, decision and mission | 0.793 | | | | | | |
| Perception of current maket requirement | 0.787 | | | | | | |
| Specified strategy as to establishment of start-ups | 0.801 | | | | | | |
| Research budget of university | | | | | 0.774 | | |
| Fund raising | | | | | 0.728 | | |
| University's financial support of researchers | | | | | 0.803 | | |
| Financial autonomy of university | | | | | 0.743 | | |
| Power and influence of decision-making body in the allocation of financial resources and new income to the university | | | | | 0.696 | | |
| Capability of faculty members | | | | | | 0.780 | |
| Competitive university environment | | | | | | 0.750 | |
| Offer of interdisciplinary fields of study at the University | | | | | | 0.805 | |
| The number of commercialized research projects | | | | | | 0.728 | |
| The number of research centers and scientific parks associated with universities | | | | | | 0.674 | |
| Flexible organizational structure | | | | 0.916 | | | |
| Traditional university restructuring | | | | 0.888 | | | |
| Reduce excessive administrative formality | | | | 0.918 | | | |
| Lower organizational levels as much as possible | | | | 0.634 | | | |
| Willingness to take risks, and risk tolerance among staff | | | | | | | 0.710 |
| A passion for creativity and innovation in students and teachers | | | | | | | 0.880 |
| An organizational structure reflecting the culture of entrepreneurship | | | | | | | 0.690 |
| Industrial, culture, social, international research cooperation | | | | | | | 0.858 |
| Attention of knowledge quality of alumni | | 0.573 | | | | | |
| Providing research-based education | | 0.807 | | | | | |
| Training programs to be related with national economy | | 0.839 | | | | | |
| Training programs to be related to industry needs. | | 0.818 | | | | | |

Table 7. Results of exploratory factor analysis of internal factors

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Encouragement and rewarding of research | | 0.845 | | | | | |
| The ability to manage intellectual property | | | 0.709 | | | | |
| Flexibility and fast decision making in university | | | 0.709 | | | | |
| The allocation of funding and support of research projects | | | 0.719 | | | | |
| Strong and influential executive leadership | | | 0.756 | | | | |
| Supportive managerial approach to entrepreneurship and innovation | | | 0.879 | | | | |

Table 7. Results of exploratory factor analysis of internal factors

| Indices | Factors | |
|---|---|---|
| | Interaction with environment | Internationalization of university |
| The size of joint projects between university and industry and the private sector | 0.796 | 0.041 |
| The size of joint venture between university and industry and the private sector | .831 | 0.176 |
| The number of research projects in collaboration with groups outside the university | 0.849 | 0.124 |
| The number of joint projects with industry and the private sector | 0.840 | 0.185 |
| Reducing the gap in knowledge between university and industry | 0.804 | - 0.055 |
| Ability to communicate with local and regional and national entrepreneurs | 0.727 | 0.150 |
| The influence of the international environment | 0.122 | 0.966 |
| International environment in relation to education, research, research and development | 0.111 | 0.916 |
| Development of university at international level | 0.107 | 0.960 |

Table 8. The results of exploratory factor analysis of the external factors



**Step 3 - Confirmatory factor analysis of identified elements**

In response to the second question research, that is, the impact of the identified component on the entrepreneur university, this step is to identify the impact of the latent and observable variables on entrepreneur variables. That is, test of conceptual model was done using confirmatory factor analysis (path analysis) using Smart PLS 2 software. However, first, mean-variance approach should be used to evaluate the convergent validity of the research. Also, to test validity, composite reliability and validity were used components as shown in the table.

Above table shows that average variance was above 0.5 and Cronbach's alpha was above 0.7 and CR also assumed values above 0.6, indicating correlation between dimensions and components of research, also indicating positive and significant relation between components. In order to verify the significance of the rela-

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| Constructs | Mean | STD | Cron-bach's alpha | CR | AVE | | | |
|---|---|---|---|---|---|---|---|---|
| Entrepreneur University | 3.610 | 0.355 | 0.830 | 0.886 | 0.678 | 1.000 | | |
| Organizational factors. | 3.456 | 0.416 | 0.883 | 0.886 | 0.558 | 0.576 | 1.000 | |
| Environmental factors | 3.458 | 0.404 | 0.843 | 0.867 | 0.542 | 0.632 | 0.617 | 1.000 |

Table 9. Mean, standard deviation, coefficients of reliability, AVE and the correlation coefficient between the variables

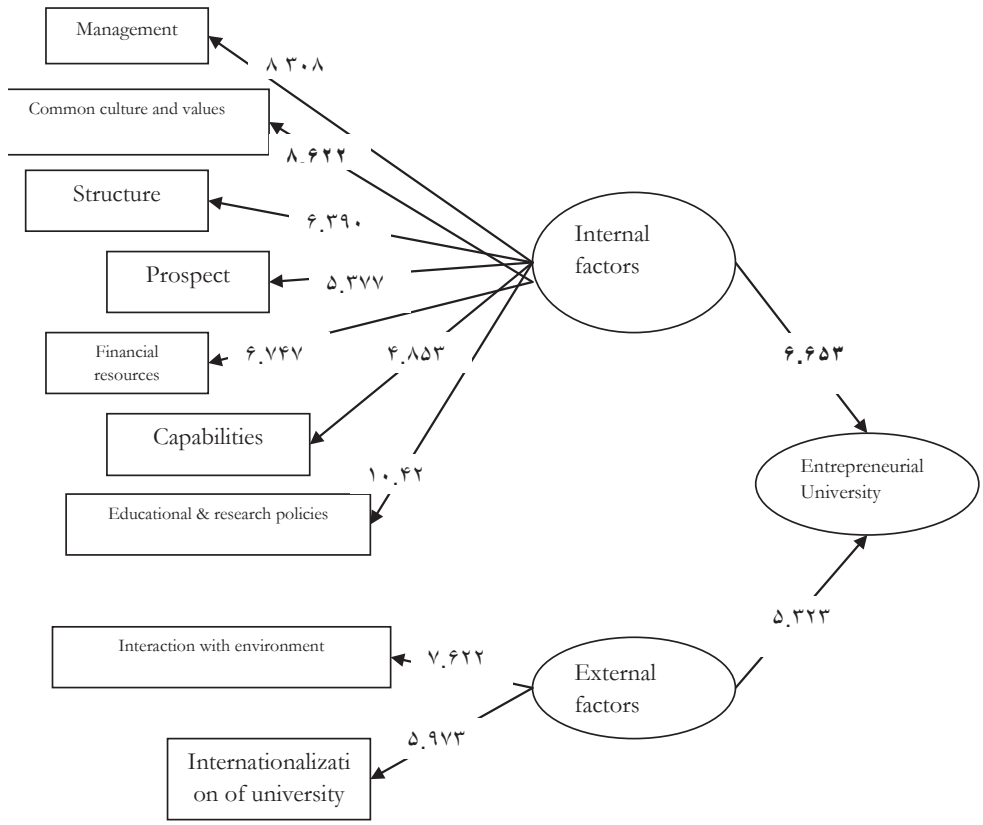



Figure 2. Research model based on t-statistic

tionship between variables, t-test was used in this study. Factor analysis presumes that each factor is related to a certain subset of variables. Using Smart PLS 2, t-test for model of research was done using standardized coefficients. Figure 2 shows elements identified in terms of the effect on entrepreneurial university at confidence level of 99 percent.

In order to evaluate the factor analysis model, GOF index, a criterion testing fit of the model to predict the endogenous variables was used. Goodness of fit of model is achieved when the path coefficient is significant and explained variance is acceptable and a high internal consistency of 0.05 for each of the constructs is established. Valid values of factor loadings also show the fit of model. Three values of 0.01, 0.25 and 0.36 respectively were introduced as weak, medium and strong values for GOF.


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| Factors | Commonalities | Coefficient of determination |
|---|---|---|
| Entrepreneur University | 0.514 | 0.427 |
| Organizational factors | 0.582 | 0.766 |
| Environmental factors | 0.621 | 0.709 |
| | 0.559 | 0.679 |

Table 10. Fit characteristic of organizational ambidexterity variables

$$Gof = \sqrt{\overline{communalities} \times \overline{R^2}} = \sqrt{0.559 * 0.679} = 0.824$$

GOF values calculated were greater than 0.36, indicating the proper fit of the research model; futher, all path coefficients were significant and explained variance was acceptable and internal consistency was higher than 0.05. There was a good fit between the data of this study and the factor structure of this scale and the items of this scale were consistent with the underlying constructs.

**Conclusion**

It should be considered that there is a gap between production of science and technological advancement of a country. Upon generation of knowledge, the country doesn't become self-sufficient in technology, but scientific publications must undergo processes to become usable technology in society. The context of scientific productions is university and access to them is possible using the process of commercialization. In addition, the commercialization of knowledge has provided a potential source of revenue for universities and other research institutions and reduced their dependence on public funding. Today, many educational institutions and universities should re-assess their overall goals and strategies. Such re-evaluation is a requirement of intense competition in the academic market as a laborious environment and a substantial part of it is funded by government sources. Given the nature of this study, a combined method was used to answer a question and achieve the target. For this purpose, in qualitative part, in interviews with 14 experts and university professors, basic concepts were recognized by open coding. Then these concepts were coded in the second phase for more consistency in form of 9 concepts in entrepreneurial university. Secondary and core concepts were named knowledge and experiences of expert professors based on existing literature and finally, the initial researcher-made questionnaire was developed on a 5-point Likert scale with 50 criteria in entrepreneurial university. Among the features of this study are performance of exploratory factor analysis, and confirmatory factor analysis. Using exploratory factor analysis, 8 indicators were excluded because of improper values of commonalities and factors with a high factor loading were obtained. Since it is not easy to interpret factor loadings without rotation, we rotated the factors to increase their interpretability. All factors identified from qualitative part had a high factor loading and accordingly, indices extracted in qualitative part were categorized. Exploratory factor analysis showed which item is more proper for each factor. In confirmatory factor analysis, significance of impact of size and components were studied. Results from t-statistic showed that size and components identified affected Entrepreneur University at confidence level of 95%. The results of test of first question showed that factors affecting the en-



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trepreneurial university in the universities of North Khorasan province were composed of two main factors (internal and external) and 9 factors (management, prospect, structure, culture and common values, and education and research policies, capabilities, financial resources and interaction with the environment and internationalization of universities). T test results showed that educational and research policies adopted by universities had the greatest impact on entrepreneur universities. The information of the curriculum of entrepreneur universities in developed countries and developing countries entrepreneurship shows the importance of education and research in the development of entrepreneurship and mentoring entrepreneurs. Today, the entrepreneur training courses based on information and communication technologies has not only made their ways in different school curriculum from elementary to high school, but also are provided in various academic disciplines. Processes and procedures adopted modern and innovative training methods as well as re-evaluation of educational and research activities aimed at increasing the quality of the university's policies could lead to the entrepreneurship of universities. Leadership in any organization provides ground for adoption of the in-organization strategies and in fact, defines required ground for business processes. So, it has an undeniable role in internal environment of university. It is because in the internal environment of the university, one may not succeed in the educational and research activities of the tniversity without having the appropriate leadership and management and such management and leadership of the university organizes the inner environment to achieve the goals of the organization. Appropriate organizational and administrative structure of universities is perhaps the greatest challenge today. Creating internal change is a complex process. This is because of two main reasons: universities are dependent on the past and have become tough and non-realistic overtime; they are related with human behaviors and have preserved their past habits and are reluctant to change them. Some of these individuals are also influenced by decision-making power, that is, people who control the largest segment, the largest budget and have the highest salaries. This is one of the most difficult elements of internal factors to create a proper balance in its campus; therefore, the implementation of appropriate organizational structure and management at the university right between the change activities and the business administration is essential for the implementation of the strategy. If this optimal balance is achieved, the organization's internal environment will dominate the outer one. On the other hand given that the organizational culture causes values, beliefs and principles that served as basis for the management system of the organization as well as a set of administrative actions and behaviors that reinforce the basic principles of the organization and the informal organizational behavior; therefore, its position among internal factors of Entrepreneur University is defendable. In fact, since the organizational culture in a learning organization such as a university is developed to deal with the dual problems of strength and flexibility as well as internal integration, it has a direct relationship with the inner environment of the university. Prospect or vision as another internal factor refers to a set of organizational values and norms leads to active participation of all employees in the development and implementation of organizational goals, such active participation, in particular, leads to improvement of the conditions and status of the inner environment and and help the internal environment and accordingly is known as one of the factors of internal environment. Achieving entrepreneurship in universities in the absence of human and physical capacities and capabilities seems far-fetched. Given that in today's competitive world, successful universities are able to benefit from the knowledge and research more and better, which is impossible



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without upgrading all components within the enterprise, and on the other hand, entrepreneurial capability originating from independence seeking, internal control, motivation for progress and creativity in individual personnel of organization, these features are undoubtedly originate from inner environment of organization. Financial resources and funds are required for establishment of entrepreneurial university. Research budget allocations can lead to the increased research and consequently technological development. Budget allocation and financial support can lead to commercialization and formation of productive companies. Finally, the internationalization of higher education (educational and research services development, and having customers at the transnational level), as well as interaction with the external environment of university (collaboration with industry and government) are factors with undeniable role. Internationalization can facilitate the process of becoming an entrepreneur by developing educational services, research, and customers because compliance with standards in all sectors is a key factor in the internationalization and being successful in today's competitive world, which provides ground for entrepreneur university given development of educational, research and customer services. Also, as every system uses a process to achieve intended output, Entrepreneur University should use interaction with government, industry and people as an effective process to form connection between university and outer environment and therefore, it has a reasonable place among outer environment components. Finally, given the approval of both out- and in-organization environments, it can be acknowledged the achievement of the entrepreneur university requires development of the capabilities of the university in the inner and outer environment in such a way that both aspects require attention. Comparison of the present research model with previous studies showed the consistence of model elements with them, so that in each of these studies, somehow one of the components were mentioned. Here we can refer to Behzadi et al (2014), Kordnaij et al. (2012), Yadollahi Farsi et al. (2011), Hasanqolipur et al (2011), Horthy (2014), Bronstain and Reihlen (2014) and the National center for entrepreneurship education in England (NCEE) (2013), O'Reilly and Tashmn (2013) and David Rudd, Mark (2013).



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