Print ISSN: 2783-2813
Online ISSN: 2717-0446
Journal of Industry & University
Homepage: http://jiu.ir

Commercialization Modelling of The Knowledge With Emphasis on The Role of Science and Technology Parks in Relation to the University-Industry Interaction

* Narjes Davari ** Mohamad Hasan Pardakhtchi *** Gholam Ali Ahmady

* PhD student in educational management, Department of Educational Sciences, North Tehran Azad University, Tehran, Iran. narjesdavari64@gmail.com
** Professor, Department of Educational Sciences, Shahid Beheshti University, Tehran, Iran. mhpardakhtchi@gmail.com
***Associate Professor, Curriculum Studies Department, Shahid Rajaee Tarbiat University, Tehran, Iran. ahmadygholamali@gmail.com

Received: 08.02.2024 Accepted: 03.10.2024

Abstract

The purpose of this research is to provide a model of commercialization of knowledge with emphasis on the role of science and technology parks in connection with the interaction between universities and industry. For this purpose, the grand theory method has been used. The statistical population includes a number of managers and experts of knowledge-based companies located in Arak Science and Technology Park. In the qualitative part, 12 people were selected by purposive sampling, and in the validation part of the model (quantitative part), 420 people were selected by stratified random sampling, and finally 400 responses were included in the analysis. have been Data collection tools were used in the qualitative part of semi-structured interviews and in the quantitative part, researcher-made questionnaires were used. The validity of the commercialization model was confirmed by the construct validity of the reflective measurement model, and its reliability was confirmed by common reliability tests. The findings showed that the central phenomenon of the research was the commercialization of knowledge and the causal conditions identified in this research are: entrepreneurial attitude, scientific view of the industry, pristine business environment, rich and abundant resources. The obtained background conditions include society, university, industry, and knowledge-based companies. It has been stated that the role of society in the commercialization of knowledge was very important.

Keywords: Commercialization of Knowledge, Science and Technology Parks, Interaction Between University and Industry, Knowledge-Based Companies, Science and Technology Park.

Corresponding Author: Narjes Davari - Narjesdavari64@gmail.com

Introduction

• Statement of the problem

In today's business, research has become an economic factor, and commercialization is also an important part of the innovation process, and no new product, service, or technology can successfully enter the market without commercialization. Creating a suitable platform for the supply of knowledge and technology, in addition to providing economic values, also leads to economic growth and development in the society (Makani Yamchi, 2012, 39). Scientific centers and universities also play a valuable role in the production of science and its commercialization in interaction with the industry. The knowledge produced by university researchers and scientific and research institutions has been recognized as a potential key driver for the advancement of technology (Ahmadi, 2013, 23). Commercialization of knowledge and technology is an important part of the innovation process, and no technology or product can enter the market successfully without going through this process. Commercialization of knowledge has been defined as the process of transferring knowledge and technology from research and academic centers to existing industries or new businesses (Degeeter, 2004). Commercialization is a process in which all possible opportunities are used to create profits for investment in the field of technological innovation (Dilcher, 2002, 14). For many new technologies, commercialization means increasing the scale from the prototype to mass production and obtaining more resources (Yadollahi Farsi and Kalatahai, 2013, 26). After more than a decade has passed since the formation of science and technology parks in Iran, some of its many challenges have caused that, according to the mission that has been defined for them, they cannot play a significant role in the country's economic foundation. One of the challenges faced by science and technology parks in the country is the lack of an efficient performance evaluation system to accurately evaluate and monitor the parks in order to help their development (Mousavi, 2012, 73). The establishment of knowledge-based companies in science and technology parks in order to commercialize ideas is one of the first serious works that have been done in the country in order to implement the transformation of innovations into technology. Although the establishment of such companies is a positive step in this field, there are still limitations such as restrictions on the manner and place of establishment, the lack of sufficient government support, and the fear of establishing such companies due to the uncertainty of their fate in the future, preventing us from reaching The goals mentioned in the 20-year vision have been prevented (Shahabuddin, 2014, 27).

• Objective:

The purpose of this research is to provide a model of commercialization of knowledge with emphasis on the role of science and technology parks in connection with the interaction between universities and industry.

• Methodology

For this purpose, it has been combined with the exploratory research approach and the grand theory method has been used. The statistical population includes a number of managers and experts of knowledge-based companies located in Arak Science and Technology Park. In the qualitative part, 12 people were selected by purposive sampling method and in the model validation part (quantitative part) using Morgan's table, 420 people were selected by stratified random sampling method, and finally 400 responses were included in the analysis. have been Data collection tools were used in the qualitative part of semi-structured interviews and in the quantitative part, researcher-made questionnaires were used. The validity of the

commercialization model was confirmed by the construct validity of the reflective measurement model and its reliability was confirmed by the shared reliability tests.

- **Research Findings**

In this part of the research, 112 primary codes were obtained, and 31 concepts were obtained from the primary codes of this research. After identifying and naming the existing concepts, similar concepts were named based on the integrated logic (level two coding) and each one was named as a category. Scientific educational dimension: Scientific educational dimension includes concepts such as practical education, scientific quality and education through seminars. In scientific education, internships and practical training for commercialization of knowledge are proposed. In other words, students can be familiarized with entrepreneurial actions and activities through entrepreneurial education. Financial and economic dimension: Financial support for knowledge-based companies is one of the most important components that enable the movement and growth of knowledge-based companies and entrepreneurial activities. There are different types of financial support for knowledge-based companies. Sometimes direct financial support can pave the way, sometimes tax exemptions and sometimes introducing investors and knowledge-based companies to each other. Also, to carry out business activities in the economic market, they must have economic stability. Economic instability can destroy knowledge-based companies. Management dimension: The most important components that are considered in the management dimension are expert and elite human resource management, problem solving, business model, competitive advantage and planning. In order to manage elite human resources on the path of knowledge commercialization and entrepreneurial activities, it is necessary to first identify innovative, elite and expert human resources and trust them. Dimension of structures and processes: The components that are considered in the dimension of structures and processes are the modification of the description of duties of science and technology parks, modification of work processes. In revising the description of the tasks of science and technology parks, it is necessary to review and revise the description of the tasks of the parks. Communication dimension: The component in the communication dimension is the connection between the university and the industry. The relationship between university and industry is so important that all the components of the communication dimension were placed under the category of university-industry relationship. Legal number: the most important legal components of knowledge commercialization are strategic laws and protective laws. Socio-cultural dimension: Commercialization of knowledge should be created in a context where the culture of using academic knowledge lies. Supporting dimension: In supporting knowledge-based companies, there are components such as real support for knowledge-based companies, support for knowledge-based products and services, marketing support for companies including creating a market platform for knowledge-based products and media support and Advertisements from companies, including the support of the media and virtual space and various platforms. The components of support for the idea maker include psychological support for the idea maker and legal support for the idea maker. Next, the opportunities: the opportunities available in the country on the way to commercialize knowledge that can be exploited include technological opportunities, international space opportunities, human resources opportunities, business space opportunities and opportunities Rich resources. Threats dimension: The threats that the commercialization of knowledge involves are scientific, educational, economic, international threats, mismanagement of human resources, lack of privatization and mismanagement of start-ups.

Conclusion

Considering that the central province is one of the industrial poles of the country, it has made it very easy for the communication between the industry and the university for the purpose of commercialization. One of the factors identified as a background factor in this research is knowledge-based companies. Knowledge-based companies are knowledge-based businesses that have been formed with the aim of sustainable conversion of knowledge into wealth, and their economic activities are based and accompanied by research and development activities in the field of new and advanced technologies, and thus lead to The development of the knowledge-based economy in a society becomes a basis for the commercialization of knowledge.

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