

Identifying factors affecting the commercialization of products of knowledge-based companies based in science and technology parks and growth centers

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Abstract

The aim of the current research is to identify the factors affecting the commercialization of the products of knowledge-based companies located in science and technology parks and growth centers. The research method is applicable according to its purpose, and qualitative in terms of its implementation. The statistical population of the research includes 12 experts and specialists in the field of knowledge-based centers in West Azarbaijan province, and the samples were selected using a purposeful sampling method. Data collection was done through semi-structured interviews. To analyze the data through data-based and coding, MAXQDA software was used. The results of the research showed that the model designed was identified by 14 indicators that includes causal conditions (management factors, information factors, financial factors), background conditions (laws and regulations, technological capabilities), core category (market factors, product factors), strategies (strengthening interactions, marketing and sales capabilities), consequences (economic development, knowledge-based economy, entrepreneurship development), intervening conditions (individual factors, cultural-social factors); explaining the components of commercialization of products of knowledge-based companies.

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Extended Abstract

Introduction

Ideation, research, innovation and technology based on it are valuable when they lead to wealth creation. Based on this, the industrial and economic improvement of any society depends on scientific and organized researches and the application of the results of these researches practically in order to meet the various needs of the society and improve the standard of living and well-being. Recognizing the needs of the consumer market, creating ideas, conducting research and studying for the development of technology and finally its commercialization are the inevitable stages of the birth and creation of a new technology (Cooper, 2019). Commercialization is an important part of the innovation process without which no product will successfully enter the market. Creating platforms for the supply of knowledge and technology, in addition to providing significant economic values for organizations, leads to the economic and technological growth of society. One of the main reasons for the speed of technological progress and development in industrialized countries has been the attention to the commercialization process of those countries (Safari, 2018). On the other hand, the lack of necessary ability to commercialize and implement research achievements in new products and processes and supply them to the market is one of the major weaknesses of developing countries in the process of industrialization. Studies show that out of about 1000 raw ideas, only 1 or 2 ideas succeed in the market. Ideas must be commercialized to become a successful and profitable business, and commercialization as a non-linear and complex process requires the role of different actors with different capabilities (Shamsi & Sadeghi, 2015). Knowledge-based companies are private or cooperative institutions engaged in activities in order to synergize science and wealth, develop a knowledge-based economy, realize scientific and economic goals, and commercialize the results of research and development in the field of superior technologies with great added value. In these companies, research and development is the core of activities, and the main advantage of these companies is the technical knowledge and scientific abilities of their personnel. In knowledge-based companies, economic growth and job creation are realized in proportion to the innovation capacity. This means that research and development achievements are continuously transformed into new products, processes or systems through investment; and access to investment capacities for entrepreneurs and researchers is an important factor in creating innovation and exploiting the power of technology in the national economy. Also, knowledge, innovation, skills and continuous learning play an important role in these companies (Karimi Yazdi et al, 2018). Therefore, in this research, we are looking for an answer to the question of how to identify the factors affecting the commercialization of the products of knowledge-based companies based in science and technology parks and growth centers.

Theoretical Framework

Commercialization

Commercialization includes all the activities required to convert an idea, technical knowledge, work method, practice, process, product, service, organizational form, technology or a combination of any of these capitals into value-creating opportunities (Asadi et al. 2021). Commercialization is a process that uses all possible potentials so that those who invest in technological innovation can obtain the benefits created by the innovation; in other words, technology commercialization is a part of technological innovation, and if we consider innovation from addressing the idea to entering the market, without commercialization; innovation and therefore technology will not exist. Technology commercialization is the process of creating the right product at the right price to meet the demand of a market. In

another definition of technology commercialization, technology and commercialization are separated from each other. In this definition, technology includes the product, and commercialization emphasizes creating a market, a brand name, and maximizing the profit from this market (Cooper, 2019).

Aghababayi et al, (2023) conducted a research entitled "Identification of factors of commercialization of technological projects in new knowledge-based companies". The findings of the research show that it is important to pay attention to the 5 criteria of technology, skill, knowledge, market, and policy and law for the commercialization of technological projects in new knowledge-based companies.

Van Doren et al, (2022) investigated the external commercialization of technology in emerging fields. From a study of 84 synthetic biology organizations, they found that disposal capacity mediates the relationship between management innovation and foreign technology commercialization. This study provides empirical evidence of the interdependence of various managerial and organizational processes required for foreign technology commercialization.

Research methodology

The research method is applicable according to its purpose, and qualitative in terms of its implementation. The statistical population of the research includes 12 experts and specialists in the field of knowledge-based centers in West Azarbaijan province, and the samples were selected using a purposeful sampling method. Data collection was done through semi-structured interviews.

Research findings

To analyze the data through data-based and coding, MAXQDA software was used. The results of the research showed that the model designed was identified by 14 indicators that includes causal conditions (management factors, information factors, financial factors), background conditions (laws and regulations, technological capabilities), core category (market factors, product factors), strategies (strengthening interactions, marketing and sales capabilities), consequences (economic development, knowledge-based economy, entrepreneurship development), intervening conditions (individual factors, cultural-social factors); explaining the components of commercialization of products of knowledge-based companies.

Conclusion

The present research was conducted with the aim of identifying the factors affecting the commercialization of the products of knowledge-based companies located in science and technology parks and growth centers. The results of this research are in agreement with the results of Aghababayi et al, (2023), Asadi et al, (2023), Van Doren et al, (2022), Stiri & Mehraayin (2022), Hoang (2022), Shan et al, (2021), Da Silva (2021), Assari & Niasti (2021), Deresihan et al, (2022), Azma et al, (2022), Alikhani et al, (2021), Tam et al, (2019), and Ho & Chuah (2019). Da Silva (2021) showed that there are other types of motivations for starting new investments for university students' entrepreneurship, such as financial, organizational, and technological factors. It also gathers information about the target market of the new investment, such as why startups choose certain markets, and also identified the main players competing with the startups.

According to the results of the research, the following suggestions are presented:

It is suggested that growth and technology centers hold management courses and workshops to familiarize managers with the concepts of managing business affairs in the field of finance, marketing, etc. It is suggested that in the field of information, research and development units

should be active in companies, and research should be done continuously. It is suggested that the government allocate financial funds to knowledge-based companies so that they can solve their problems in the field of risks associated with a sharp decrease in demand and market information.