

Received: May 2023 Accepted: June 2023

DOI: <https://doi.org/10.58262/ks.v11i2.337>

Local Industrial Development Based on Innovation in Higher Education Under the Economic Philosophy of Engels and Marx

Mahmoud¹, Haghbejaneb²

Abstract

Local industrial development based on innovation in higher education is necessary and necessary because the future and industrial progress will be good when it can be economically justified. Accordingly, this research was conducted with the aim of local industrial development based on innovation in higher education and the development of the industrial sector in agriculture. According to the results obtained from the research, the development of local industrial development is necessary to expand jobs with entrepreneurship and innovation. In other words, entrepreneurship is necessary for career success in any academic field. The field of agriculture is one of the fields in which, due to the large number of graduates, it is necessary to carry out a series of entrepreneurship operations to at least reduce the amount of this field in the workplace by employing people in this field. The current research has tried to evaluate the level of entrepreneurship in this field through researcher-made questionnaires and surveys conducted by students in this field at China Agricultural University.

Keywords: industrial development, agriculture, entrepreneurship, innovation, China.

Introduction

The relationship between industry and university refers to systematic mechanisms that facilitate and strengthen the connection between the scientific and academic field with the practical field and industries [1]. Universities should educate and provide the talents of society with a practical approach and make them available to industries. In other words, the way of university education should be in accordance with the needs of the labor market [2].

Today's world is the world of education and research and their connection with industry and society [3]. The link between university and industry is one of the most well-known ways to achieve economic and social development in such a way that the development of difficult societies has become dependent on the link between these two institutions [4]. In other words, achieving national development requires the attention of both industry and universities. The necessity of solidarity between industry and university arises from mutual needs and the need to speed up the development process [5].

Due to its very positive effects and consequences in creating technological, economic and social transformation, the development of the relationship between industry and university has long been the focus of academic and industry policy makers and planners, and many efforts have

¹ Department of Humanities and Social Sciences, Bojnourd Branch, Islamic Azad University, Bojnourd, Iran
Email: M.haghbejaneb@iauh.ac.ir

² Chancellor, Quchan Branch, Islamic Azad University, Quchan, Iran

been made to create an effective link between industry and university. According to the explanations given, this research is carried out with the aim of local industrial development based on innovation in higher education under the economic philosophy of Engels and Marx.

Theoretical

The Importance of the Relationship Between Industry and University

In recent years, the motivation of various universities to develop the focus from pure research and development to the development of applied sciences and entering the business world has increased. Many large universities have developed technology transfer programs, which resulted in the development of technology growth centers and close connections with technology parks [6]. The progress of these programs has led to a closer relationship between universities and different industries. In this way, universities can play a more active role in the economy of countries [7].

The concept of entrepreneurial university as the third generation of the higher education system is rooted in the relationship between industry and university. On the one hand, the university is the supplier of the required expert human resources at the high level, and on the other hand, many scientific, research, and laboratory capabilities are located in the universities [8]. That is, the two basic preconditions for the country's industrial development have been defined in universities. On the other hand, the industry is also considered the executive arm of universities in transforming knowledge into technology and developing innovation and entrepreneurship [10].

The cooperation and relationship between industry and university, or in other words, the relationship between academic researchers and scientists in the industrial and commercial field, has a historical record. Research has shown that universities, as the most important participants in knowledge-based industrial centers, serve the government, organizations, institutions, and industry in three ways [11-12-13-14]:

- Education and production of graduates in important fields related to the required sectors of the industry
- Carrying out basic and practical projects
- Cooperation with organizations, institutions, and industry to innovate and create new technologies

The Necessity of University-Industry Connection

The relationship between industry and university is a process that is formed over time and is derived from national needs and necessities in historical periods. This connection is an issue that has been discussed in society in the past years and many theoretical and practical measures have been taken in this field. University and industry are the two main institutions of society in today's knowledge-oriented world [15].

In the third millennium, the necessity of communication and interaction between these two institutions is felt more than ever. The necessity of communication between university and industry is the result of the mutual needs of these two institutions and speeding up the development process. The industry needs trained and specialized manpower for technical and managerial jobs as well as research and development. Therefore, if the capabilities that exist in universities are used to meet the needs of society, the first steps will be taken for industrial self-sufficiency with the aim of national development [16].

Communication and cooperation between universities and industry are of particular importance in the scientific progress of countries and are considered an important component in the development of knowledge in countries. In most the developed countries, scientific growth in universities can be seen as a result of their close cooperation with industries, and industrial development in a competitive environment is a result of having a purposeful and demand-oriented relationship between industries and universities. With the collaboration of the university and industry, academic researchers can obtain the necessary financial resources for research after they have presented their vision and the industry has accepted it. Companies can also learn the necessary skills and use them for the promotion of scientific progress and innovation of their products [16].

The Benefits of Connecting Universities and Industries

Historically, from an industry perspective, the university is the place to train and identify future employees. With the evolution of the world's economic systems, companies, and industries have become inclined to cooperate with universities that conduct research using knowledge and technology. Cooperation and communication between industry and university brings many advantages, some of which are mentioned below [15-17]:

Social Benefits

Society benefits from academic and industrial research by producing innovative products and technologies. Academic research supported by industry often translates into practical applications that benefit society.

Academic Interests

The interaction and communication between the industry and the university have many benefits for the university, and for this reason, it has received the attention of the universities. The goal of some universities is to obtain potential financial benefits from the connection with the industry, register points, and obtain certificates that result from the commercialization of the university. Sometimes the benefits of industry-sponsored research are shared between companies and universities. In addition, through the connection between the industry and the university, professors benefit from more advanced scientific equipment. Also, many job opportunities will be provided for university students and graduates [18].

Benefits for Industrial Companies

Cooperation and communication between industry and university as one of the accelerating factors of research activities of industrial companies and cause the development of these companies. Academic researchers contribute to industrial scientists with current research that may be useful for the design and development of innovative processes and potential products; to identify Of course, any university that cooperates with industrial centers; faces challenges [19]. These challenges are as follows [20]:

- Failure to produce qualified graduates for industrial cooperation
- Lack of proper understanding of industrial nature
- Lack of access to sufficient resources
- Ignoring universities as an effective contributor to the economy
- Lack of real determination of universities to seriously cooperate with industries

Pathology is very simple in China. Government organizations are the largest institutions that attract

a large amount of labor. The nature of government institutions is such that goals such as employment, adherence to principles and laws, and such things conflict with the spirit of research. The large non-governmental industries of the country are also generally managed by owners (capitalists), not managers. The perspective of an owner is far from the perspective of an academic manager. Therefore, there is no room for the emergence of talents in the workforce of these industries [21,22] Finally, there are small and medium-sized companies and entrepreneurs. The field of entrepreneurship in China is associated with so many bumps and obstacles that most of the elites tend to migrate and give the gift of entrepreneurship in the country to it.

In general, it can be concluded that strengthening the relationship between industry and university is one of the important factors in the progress of any country. This is even though in China, despite the high potential, this connection is not sufficient. In other words, the necessary environment and platform for the talents of the country are not provided and the scientific and industrial society of the country is not research oriented. On the one hand, universities do not properly provide scientific and practical skills to students. On the other hand, the owners of industries and companies do not show happiness to the researchers and they are not welcomed. It seems that in recent years, considering that universities have become large commercial and economic enterprises, this gap will expand even more.

Research Methodology

Based on the purpose, this research is part of "applied" research. The purpose of applied research is to develop applied knowledge in a specific field. More precisely, applied research is an attempt to answer a scientific problem that exists in the real world.

According to the nature of the subject, which is "local industrial development based on innovation in higher education", and because this research will be studied in 2023, so the present research is based on how to obtain the required data (plan research), descriptive-survey of cross-sectional type.

The statistical population in this research is the agricultural students of China Agricultural University, who are 30 people. The method of data collection was carried out in two ways: library and field. It was done in the library to collect the materials and the background and to implement the questionnaire in the field.

Considering that a researcher-made questionnaire was used in this research, CVR was used to determine validity and Cronbach's alpha was used for reliability. The validity of this questionnaire was confirmed and its reliability was found to be equal to 0.86, which showed that this questionnaire has high reliability. SPSS VERSION 20 software was also used for data analysis.

Analysis of Findings

Demographic Characteristics

15 women and 25 men participated in this research, which is shown in the table below.

Table 1: Gender.

	frequency	percent	Valid Percent
Female	15	37.5	37.5
Man	25	62.5	62.5

Total	40	100.0	100.0
-------	----	-------	-------

40 students answered the questionnaire from 10 age groups, The largest age group is 22 and 23 years old, which includes 0.42% of the total number of people, and the smallest age group is between 27 and 28 years old. It includes 0.05 percent of all people. Entrepreneurs in the agricultural sector can play an important role in the employment of agricultural graduates.

Table 2. The Results of the First Hypothesis Test.

Test Value = 0					
t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
18.000	16	.000	1.059	.93	1.18

According to the above table, it can be seen that the significance level of the lower table is 0.05. So it can be concluded that entrepreneurs in the agricultural sector can play an important role in the employment of agricultural graduates. Therefore, the research hypothesis is confirmed and the null hypothesis is rejected.

2- Entrepreneurship in the agricultural sector is well-established in Chinese universities.

Table 3: Entrepreneurship.

	Number of views	Expected number	left over
Yes	16	20.0	-4.0
No	24	20.0	4.0
Total	40		

Table 4. Chi Test Results.

Test Statistics	
	ejade
Chi-Square	1.600 ^a
df	1
Asymp. Sig.	.206

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 20.0.

According to the above tables, it can be seen that among the 40 people in the sample, 16 people have become entrepreneurs and the other 24 people have not been able to do entrepreneurship in their field of entrepreneurship. Also, according to the significant level of the table, which is more than 0.05, it can be concluded that entrepreneurship in the agricultural sector is not well established.

3- Most of the agricultural graduates have worked in this sector through entrepreneurship.

The results of the second hypothesis test

Test Value = 15					
t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
28.499	39	.000	101.02500	93.8549	108.1951

According to the above table, it can be seen that the significance level of the lower table is 0.05.

So it can be concluded that most of the agricultural graduates have been working in this sector through entrepreneurship, therefore the research hypothesis is confirmed and the null hypothesis is rejected.

Conclusion

By analyzing and interpreting the first hypothesis (entrepreneurs in the agricultural sector can play an important role in the employment of agricultural graduates), it can be concluded that the significance level is lower than 0.05. So, it can be said that entrepreneurs in the agricultural sector can play an important role in the employment of agricultural graduates. Therefore, the research hypothesis is confirmed and the null hypothesis is rejected.

According to the analysis of the second hypothesis (entrepreneurship is well established in the agricultural department of the China Agricultural University), it can be concluded that 16 of the 40 people in the sample have become entrepreneurs and the other 24 people have not been able to do entrepreneurship in their field. Also, according to the significant level of the table, which is more than 0.05, it can be concluded that entrepreneurship in the agricultural sector of China province is not well established.

According to the third hypothesis (most agricultural graduates have worked in this sector through entrepreneurship), it can be concluded that the significance level is lower than 0.05. So it can be concluded that most of the agricultural graduates have been working in this sector through entrepreneurship, therefore the research hypothesis is confirmed and the null hypothesis is rejected.

5-2- Suggestions

It is suggested that similar research be done in this field to determine the level of entrepreneurship in this field. It is also suggested that if similar research is carried out in this field, the level of statistics should be done on a large scale and more questions should be raised in this field so that the discussion of entrepreneurship in this field can be clarified.

5-2-1- Practical Suggestions

In the field of higher agricultural education: moving towards inclusiveness in universities (must be student-centered).

Add courses in the field of entrepreneurship in agricultural colleges for agricultural students.

The cooperation of the Agricultural Jihad Organization with the Faculty of Agriculture in improving the practical skills of students in the field of agriculture, sustainable and appropriate macroeconomic policies for the development of agriculture, taking into account the macroeconomic environment required for the development of entrepreneurship; Creating a favorable environment for entrepreneurial activities starts at the national level. Governments should provide the conditions in which we can witness economic stability at the macro level. Basic policies for macroeconomics, policy sustainability, and having a reasonable definition of property rights are very important;

Appropriate programs and policies for the development and cultivation of entrepreneurial qualities and skills in the human resources of the agricultural sector through formal and informal training;

Trying to keep the economy closed and supporting the domestic economy is one of the obstacles to entrepreneurship. National agricultural policies, such as subsidies for the price of agricultural goods, are not suitable for entrepreneurship, considering that they guarantee a minimum income for people (it cultivates this idea in people's minds).

Promoting Entrepreneurial Culture in Rural Areas and at Different Levels

Agricultural promotion can play a very valuable role in the development of entrepreneurship in rural areas (agricultural and non-agricultural), but the promoters themselves should already have an entrepreneurial perspective. They should try to look at agriculture as only one of the possible activities in the village that can contribute to the development of the village. They should try to discover new uses of land in different regions based on the potential of the region and other factors affecting the economic growth and development of the region and then try to guide the villagers in the direction of this new activity.

References

- [1]. O'Dwyer M, Filieri R, O'Malley L. Establishing successful university–industry collaborations: Barriers and enablers deconstructed. *The Journal of Technology Transfer*. 2023 Jun;48(3):900-31.
- [2]. Cai Y. Towards a new model of EU-China innovation cooperation: Bridging missing links between international university collaboration and international industry collaboration. *Technovation*. 2023 Jan 1;119:102553.
- [3]. Toan TT. Opportunities and challenges for quality of human resource in public sector of Vietnam's logistics industry. *International journal of public sector performance management*. 2023.
- [4]. Rose, J. R., & Bharadwaj, N. (2023). Sustainable innovation: Additive manufacturing and the emergence of a cyclical take-make-transmigrate process at a pioneering industry–university collaboration. *Journal of Product Innovation Management*, 40(4), 433-450.
- [5]. Caviggioli F, Colombelli A, De Marco A, Scellato G, Ughetto E. Co-evolution patterns of university patenting and technological specialization in European regions. *The Journal of Technology Transfer*. 2023 Feb;48(1):216-39.
- [6]. Ribeiro SX, Nagano MS. On the relation between knowledge management and university–industry–government collaboration in Brazilian national institutes of science and technology. *VINE Journal of Information and Knowledge Management Systems*. 2023 May 29;53(4):808-29.
- [7]. Li L, Kang K, Sohaib O. Investigating factors affecting Chinese tertiary students' online-startup motivation based on the COM-B behaviour changing theory. *Journal of Entrepreneurship in Emerging Economies*. 2023 Apr 27;15(3):566-88.
- [8]. AlMalki HA, Durugbo CM. Evaluating critical institutional factors of Industry 4.0 for education reform. *Technological Forecasting and Social Change*. 2023 Mar 1;188:122327.
- [9]. Siegel D, Bogers ML, Jennings PD, Xue L. Technology transfer from national/federal labs and public research institutes: Managerial and policy implications. *Research Policy*. 2023 Jan 1;52(1):104646.
- [10]. Ngoc NM, Tien NH. Solutions for Development of High-Quality Human Resource in Binh Duong Industrial Province of Vietnam. *International journal of business and globalisation*. 2023.
- [11]. Cheng H, Huang S, Yu Y, Zhang Z, Jiang M. The 2011 collaborative innovation plan,

- university-industry collaboration and achievement transformation of universities: Evidence from China. *Journal of the Knowledge Economy*. 2023 Jun;14(2):1249-74.
- [12]. Wang M, Wang Y, Mardani A. Empirical analysis of the influencing factors of knowledge sharing in industrial technology innovation strategic alliances. *Journal of Business Research*. 2023 Mar 1;157:113635.
- [13]. Ezeuduji IO, Nzama AT, Nkosi GS, Kheswa TP, Shokane AL. Stakeholder perceptions of university-industry collaboration on tourism and business students' employability in two continents. *Journal of Teaching in Travel & Tourism*. 2023 Jul 3;23(3):330-53.
- [14]. Lattu AS, Cai Y. Institutional logics in the open science practices of university–industry research collaboration. *Science and Public Policy*. 2023 Jun 17:1-2.
- [15]. Kornai J. Overcentralization in economic administration: A critical analysis based on experience in Hungarian light industry. Oxford University Press; 2023 May 11.
- [16]. McCartney G, Kwok SS. Closing the gap between hospitality industry and academia research agendas: an exploratory analysis case study. *Journal of Quality Assurance in Hospitality & Tourism*. 2023 Mar 4;24(2):192-210.
- [17]. Bagno RB, Freitas JS. Setting the three-stage R&D shared portfolio methodology: an innovative approach to industry–university collaboration. *Revista de Gestao*. 2023 Jul 19;30(3):282-98.
- [18]. Govindan K, Nasr AK, Saeed Heidary M, Nosrati-Abarghoee S, Mina H. Prioritizing adoption barriers of platforms based on blockchain technology from balanced scorecard perspectives in healthcare industry: A structural approach. *International Journal of Production Research*. 2023 Jun 3;61(11):3512-26.
- [19]. Zhang R, Tang Y, Zhang Y, Wang Z. Collaborative relationship discovery in green building technology innovation: Evidence from patents in China's construction industry. *Journal of Cleaner Production*. 2023 Mar 10;391:136041.
- [20]. Manoharan K, Dissanayake P, Pathirana C, Deegahawature D, Silva R. Assessment of critical factors influencing the performance of labour in Sri Lankan construction industry. *International Journal of Construction Management*. 2023 Jan 2;23(1):144-55.
- [21]. ,2 AC, Gospel AC, Otuosorochi AI, Somtochukwu IV. Industrial and community waste management: global perspective. *American Journal of Physical Sciences*. 2023;1(1):1-6.
- [22]. Pilechian A. Analysis of the form and content of Farah Ossouli's work preserved in the Metropolitan Museum. *kurmanj* 2023; 5 (2) :1-6