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Factors Affecting Commercialization of Agricultural Innovation in Kermanshah Science and Technology Park, Iran

Nasibeh Pourfateh [1], Nader Naderi [2] and Farahnaz Rostami [3*]

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Abstract

Science and technology parks have been a major driver of both the commercialization of agricultural innovation and the financial success of many farm and agribusiness firms. Therefore, the main purpose of this study was to explain the factors affecting commercialization of agricultural innovation in Kermanshah Science and Technology Park. The experts of this center were sampled by the census method (N=110). Structural equation modeling was used to analyze the data. Research findings indicated that factors affecting commercialization of agricultural innovation in Kermanshah Science and Technology Park included support of small and medium enterprise firms, relationship of parks with universities and research centers, and consequence of commercialization for agricultural sectors and research centers.

Keywords:
agricultural innovation; commercialization; science and technology parks; Structural Equation Modeling

[1] M.Sc., Razi University, Kermanshah, Iran
[2] Assistant Professor, Razi University, Kermanshah, Iran
[3] Assistant Professor, Razi University, Kermanshah, Iran
** Corresponding author's email: fr304@yahoo.com*

INTRODUCTION

Providing a context of science leads to economic and technological growth for society and also economic value for organizations. The commercialization of innovation is so important that many research institutes have recognized the commercialization of their innovations using collaboration in research projects and consultation. Studies have shown that science and technology parks are still at the beginning of their activities and they have not been fully matured in structural and institutional (Arasteh & Jahed, 2010). The weak relationship of knowledge production centers such as universities and research centers with industry is the one of the barriers to the commercialization of science. Because of the importance of these problems, this study is intended to explain the factors affecting commercialization of innovations which output the agricultural faculties and agricultural research centers and its consequences to help managers and policy makers to leave old pattern and it is the most important feature for organization development (Arasteh & Jahed, 2010). Jimenez and Cegarra (2008) relate it to the fact that organizations that have the capacity for innovation will be able to respond to environmental challenges faster and better than non-innovative organizations and this in turn increase performances. The commercialization process of innovation is closely related to transfer of innovation and on the other hand it innovation transfer process from research centers to industry. Commercialization starts with the development of an idea, takes shape with the production of goods and the development-based services, and completes with the sale of goods and services to the end users. Commercialization is also considered as an innovation transfer from a person to another or from a group to another group. Aghajani and Talebnejad (2011) proposed a framework with four dimensions of personnel management, infrastructures, service, and output to evaluate growth centers in Iran. Infrastructure includes location, physical features required for growth center, management includes managers who can coach and founder of the new company and familiar with business, service includes office and business support services and administration, and outputs are products and services generated by the technological growth center. They concluded that the role of the growth center of the process and acts is more than its effect on the gained results by companies. The mentioned factors are divided into seven categories including structural factors, political factors, funding, high-risk, intellectual property systems, human factors, and cognitive and attitudinal factors. Arasteh and Jahed (2010) noted six roles for science and technology park in commercialization: generating and remaining competitive, supporting small companies, improving mutual relations with the government, academia, and society, technology entrepreneurship, creating opportunity for knowledge workers and employers, and working on risk reduction projects in science and technology. Sanni et al. (2010) stated that critical success factors for parks are physical facilities, low-cost incubator space, enough funding, strong regional universities offering graduate programs in management and engineering. Vila and Pages (2008) believe that critical factors influencing the success of parks are open standards and official activities, strong connection with the university and full-time professional management. Law (2005) has provided a framework for the assessment of technology incubators in the science and technology park, namely the sharing of resources, resource integration, consulting services, geographic proximity, and budget subsidies. Fukugawa (2006) showed that the science park in Japan based on new technology has more willingness to participate in collaborative research with institutions. Sohn and Moon (2004) provided a model to identify structures influencing the commercialization of the technology and assess the success of technology commercialization. They divided these factors into four categories: methods of technology transfer, technology transfer, technology receptors, and environmental conditions. Siegel and Westhead (2003) have stated that the main barriers to effective technology transfer from university to industry are cultural gap between industry and academia, lack of flexibility, bureaucracy, poor reward systems and other

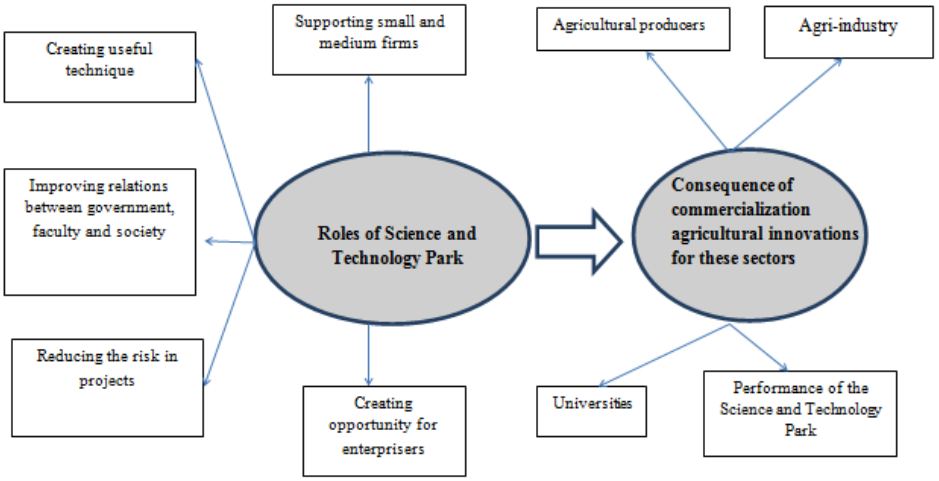

Figure 1. Conceptual Framework of the Research

management non-effective technology transfer offices. Shinn and Lamy (2006) believe that the way for commercialization of knowledge is that the boundaries between universities, research centers, and enterprises should be removed or wiped out. Arasteh and Jahed (2010) divided the general role of science and technology parks in commercialization into six stages. We present them with a little change here in five stages. These steps include: supporting small and medium firms, improving the relationship between government, society and universities, technology entrepreneurship, reducing risk science and technology projects, and creating opportunities for knowledge workers (Figure 1). So the main purpose of this study was to explain the factors affecting commercialization of agricultural innovation in Kermanshah Science and Technology Park.

MATERIALS AND METHODS

The study was designed as a descriptive-correlation survey to determine components of the agricultural innovation and commercialization model and achievements of commercialization in the Center of Agricultural Science and Technology Park in Kermanshah Province by using a confirmatory factor analysis. The method tests specific hypotheses about the structure of factor loadings and their internal consistency (Statsoft, 2009; Pallant, 2010). A total of 110 expert members of Science and Technology Park in Kermanshah Province were selected by the census method as a statistical population because of its small size. Structural equation modeling and multivariate analysis of variance were used to analyze the data. For the purpose of this study, a four-part questionnaire was developed. Part 1 was the cover letter explaining the objective of the study for respondents. Part 2 included questions about personal characteristics such as age, level of education, organizational position, career history, and field of study. Part 3 explained factors affecting commercialization of agricultural innovation, including supporting small and medium-size firms or SMEs (Y1), improving relations among government, universities and society (Y2), technology creation (Y3), risk reduction of Science and Technology Projects (Y4), and an opportunity for researchers and employers (Y5). Part 4 included results and consequence of commercialization in this sectors: agriculture (Z1), Science and Technology Park (Z2), university (Z3) and industry (Z4). In these two parts, the respondents were asked to quantify the items on a five-point Lickert scale. The mean scores were calculated and responses to importance were ranked. A panel of experts validated the instrument for face and content validity. Mean Cronbach's alpha for part 3 (α=0.84) and part 4 (α=0.88) was found to be 0.86, which made the Lickert scale sufficiently reliable (Bagozzi & Yi, 1988).

RESULTS AND DISCUSSION

The results of personal features showed that professional experts had an average age of 30 years, and also around 4.4 years' experience. The study of organizational position of respondents indicated that 57 percent of staff experts

Table 1
Personal Characteristics of Respondents

Item		Frequency	Percent	Cumulative percentage	Mean	SD	Mode
Age (years)	≤26	12	10.9	10.9	30.8	5.25	28
	27-33	74	67.3	78.2			
	34-40	17	15.5	93.7			
	41-47	6	5.9	99.6			
	≥48	1	.4	100			
Level of education	Diploma	10	9.1	9.1			Bachelor
	Bachelor	66	60	69.1			Expert
	Master	32	29.1	98.2			
	Ph.D.	2	1.8	100			
Organizational position	Directing Manager	53	48.2	48.2			
	Expert	57	51.5	100	4.4	3.47	5
Years of experience	1-3 years	52	47.3	47.3			
	4-9 years	48	43.6	90.9			
	10-16 years	8	7.3	98.2			
	More than 17	2	1.8	100			Industry
Field of Study	Agronomy	25	22.72	22.72			
	Agricultural Extension	18	16.36	39.08			
	Animal Science	14	12.72	51.80			
	Agricultural Machinery	10	9.09	60.89			
	Water Engineering	5	4.54	65.43			
	Soil Science	3	2.72	68.15			
	Plant Pathology	10	9.9	78.05			
	Industry and other fields	30	27.27	100			

and are the rest of the post was directing managers. Educational status of the respondents indicated that 60% of participants had a bachelor's degree, 85 percent had studied in the field of agriculture (Agriculture Extension, Animal Science, Machinery, Water engineering, Soil science, and Plant pathology), and 15 percent were in the industry and the economic fields (Table 1).

Importance and priority of agricultural innovation, commercialization process

As can be seen in Table 2, in cooperation of the Park with the private sector, has the most important, in support of small and medium enterprises and also attract credit from various institutions (private and public) has been the least important. Overall, the average rating for the support of small and medium enterprises is equal to 4.11 from 5. Also in the park relationships with universities and research centers, the results suggest that effective communication between park management and local executive authorities has the highest importance and communication between the park with the research, education and extension service has the lowest importance. In general, the average rating of factors associated with universities and research centers is equal to 4.01 out of 5. From the studied experts' point of view, the availability of scientific and high quality skills has the highest importance and the creation of a platform for cooperation between inventors and investors has the lowest importance. Generally, average ratings of the importance of technological entrepreneurship, commercialization of agricultural innovations is equal to 3.97 out of 5. In risk reduction stage of science and technology projects, specialized training and awareness courses, short-term and long-term feasibility of entrepreneurship and startup companies, has the highest importance

and availability of evaluating the regularity of measure effectiveness of implementing projects has the lowest importance. In addition, the average rating for reducing the risk factors related to science and technology projects is equal to 3.84 out of 5. In the field of opportunity for knowledge

Table 2
The Prioritization of Factors Affecting the Commercialization of Agricultural Innovation and Its Items

Item	Mean	SD	Rank
Small and medium enterprise support			
Providing appropriate physical facilities for each project, including laboratory equipment	4.10	1.05	8
Attracting different credit agencies (private and public)	4.00	1.05	9
Specialized educational services provided by the park	4.18	0.87	4
Availability of widespread electronic communication related industries based on agricultural production	3.95	0.77	2
Science and Technology Park in collaboration with the private sector	4.25	0.69	1
Organizing seminars, expert meetings and educational courses develop the science and technology by the park	4.03	1.00	7
Availability of clear mechanisms and structures for the management of intellectual property through patents and protect its research findings	4.04	0.83	3
Granting funds in accordance with the needs of new companies at every stage of their development	4.18	0.9	5
Availability of financial and legal incentives and support company	4.22	0.97	6
Parks relationships with universities and research centers			
Effective communication between park management and local executive authorities, provinces, universities and research centers	4.12	0.88	1
Proximity of the park to the universities and research centers	3.88	0.92	5
Communication and information exchange network and services between companies and universities in park	3.98	0.95	6
Relationship between the park with the Research, Education and Extension Service	4.01	1.04	7
Optimal use of existing capacities of universities, research institutes, manufacturing and service organizations.	4.08	0.93	2
Park relationship associated with academic professionals and faculty members	4.01	0.92	3
Joint research projects between universities and IT companies	4.00	0.95	4
Tech Entrepreneurs			
Consulting services - commercial and business education and marketing of science and technology park	4.04	0.83	2
Assistance in the utilization of capital and preparation for commercialization and marketing of new ideas, commercialization of R&D and innovative activities	4.01	0.87	4
Provision of field research projects related to technologies, processes, methods and new ideas	3.94	0.82	3
The availability of scientific expertise and high quality business skills	3.96	0.77	1
Creating cooperation between inventors and investors	4.03	1.01	7
Availability of positive interactions between firms	3.88	0.96	6
The use of services, resources and facilities shared by academic institutions and industry in the production technology	3.91	0.88	5
Science and technology risk reduction projects			
Having plans to support companies in the first phase of new product sales (such as support for the exhibition)	3.99	0.98	3
Having a team of market professionals	3.95	0.98	4
Availability of a combination of the functional and risk teams in organizing new products	3.84	0.89	2
Ability to predict long-term regular basis to make investment decisions	3.80	0.99	5
The infrastructure necessary to develop technologies such as workshops	3.80	1.00	6
Availability of assessment system for the effectiveness of implementing projects	3.55	1.05	7
Specialized training and briefings and short term and long term courses in entrepreneurship and emerging enterprises	3.96	0.89	1
Opportunity for knowledge workers and employers			
Availability of marketing plans groups	3.80	1.02	3
Attracting and retaining staff, researchers and managers do high-quality Agricultural Sciences	3.75	0.98	2
The use of information technology to diagnose Park Mall, process, creation of new methods for identifying customer needs and meeting customer requirements, client needs and service	3.94	0.95	1
Being close to the areas and towns, industrial parks and major transportation centers such as international airports	3.37	1.05	4

Scale: (1=very low, 2=low, 3=average, 4= high, 5= very high)

workers and their employers, Park usage of information technology to identify markets, creating new methods and process, and identifying customer needs and satisfying customer needs and service has the highest importance and also park proximity to industrial area and major transportation centers such as international airports has the lowest importance. Overall, the average rank of factors affecting opportunity for knowledge workers and employers is equal to 3.79 out of 5.

In addition to explaining each of the components of the five-fold in the commercialization of agricultural innovation factor, we have used analytical verification factor. For this purpose, the structural loadings of each indicator on the commercialization of innovation in Agricultural Science and Technology Park are estimated by t-value to evaluate their significance. At this stage, first-order factor and structural equation model were used to assess the role of indicators used for the formation of the Science and Technology Park in the commercialization of agricultural innovation analysis.

Regarding Table 3, it is indicated that all indicators of structural performance in commercialization of Science and Technology Innovation Park have t-value of greater than 1.96. Therefore, the hypothesis of being 0 which means it is not significant is rejected and significant relation based on the conformation analytical factor is confirmed. The results show that all selective indicators for assessing structural role in the commercialization of innovations in Agricultural Science and Technology Park are enough prices and also their validity and reliability are confirmed. According to the parameters given in Table 4, it can be seen that the Science and Technology Park Performance measurement model structures in agricultural innovation to commercialization have acceptable fitting index indicators for each construct is valid and acceptable. External model in AMOS software showed, evaluated fitted model for commercialization of agricultural innovation with variable affected (Figure 2).

Table 3
Factor Loading Model

Structure	Indicator	Evaluated Parameter	t-value	SE	AVE	CR	α
Science and technology park performance in agriculture product commercialization	Y5	0.701	---	---	0.51	0.81	0.94
	Y4	0.800	7.534	0.144			
	Y3	0.780	7.369	0.129			
	Y2	0.704	6.712	0.144			
	Y1	0.824	7.795	0.122			

Table 4
Fitting Index Model

Fitting index	Acceptability index	Reported value
Chi-square with degrees of freedom	≤3	1.92
NFI, Soft indicators fitness	0.90 ≤	0.96
Adaptive fitness index, CFI	0.90 ≤	0.98
Indicators of Compliance, GFI	0.90 ≤	0.96
The mean squared residue, RMR	≤ 0.05	0.01
The square root of the estimated variance of the error of approximation, RMSEA	≤ 0.08	0.09

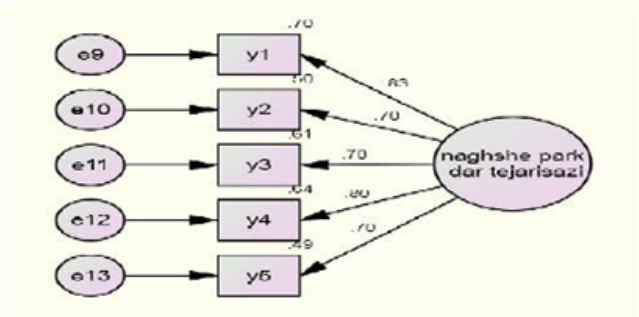

Figure 2. Evaluated Fitted Model for Commercialization of Agricultural Innovation

Importance and priority of outcomes and consequences of commercialization of agricultural innovations

As shown in Table 5, the results and outcomes of commercialization in agriculture, "the promotion of entrepreneurship and business development innovation in agriculture" is the most important factor, and the "protection of natural

Table 5

Prioritize Agricultural Innovation, Commercialization Achievements and Outcomes

α	Items	Mean	SD	Rank
	Agriculture			
	Promotion of entrepreneurship and business development of innovative technologies in agriculture	4.24	0.76	1
	Promotion of science and technology, agriculture, reducing gaps in knowledge and technology sector	4.50	0.84	2
	Shaping and implementation of innovation networks in agriculture through improved interaction and collaboration among science and technology universities, manufacturers, markets and other systems	4.01	0.75	3
	Development of the market and increase in the value-added chain of production and wealth creation in agriculture	4.18	0.79	4
	Enhancement of the quality of agricultural production	4.07	0.82	5
	Increasing rural incomes and farmers	4.09	0.86	6
	Longer life cycle in agricultural technology (using supplementary technology)	3.95	0.85	7
	Increasing prosperity in the rural small businesses affiliated with minor processing industries	4.07	0.91	8
	Increased innovation in agricultural production and expanding consumer markets	4.08	0.92	9
	GDP growth in local area	4.00	0.94	10
	Increasing concentration of capital in the manufacturing sector by reducing imported technologies	4.08	0.97	11
	Protection of natural resources through greater compliance with environmental technology	3.81	1.00	12
	Science and Technology Park			
	Promoting a culture of innovation and constructive competition among companies and institutions based in the science park	4.02	0.85	1
	Partnership and collaboration with professionals as a resource for teaching and applied research and economic development	3.98	0.87	2
	Achieving technology-driven economic development	3.92	0.86	3
	Minimizing duplication of research and development through frequent contact and exchange of ideas among researchers, institutions	3.98	0.89	4
0.91	Facilitating the process of technology transfer to industry	3.85	0.87	5
	Economic development zone	4.03	0.92	6
	More cooperation between the universities and research institutes and industry park	3.95	0.94	7
	Promoting economic development and increasing the value of investments in the field of technology	3.90	0.98	8
	Compatible favorable environment to attract academics and scientists, companies and	3.92	1.01	9
	entrepreneurs who want to start new investment	3.80	1.12	10
	Creating innovations in science and technology			
	Investments in science, research, technology development and training opportunities	4.11	1.95	11
	Universities and research centers			
	Development of infrastructure and capacity for research and technology in universities and research centers	4.03	0.80	1
	Development and evolution of organizational structure and management of universities and research centers in cooperation with another resource	3.94	0.84	2
	Promoting investment and intellectual property at universities and research centers with	4.01	0.86	3
	respect to the ideas and technology	3.96	0.85	4
	Evolution and synergies towards achieving the university's mission of university entrepreneurs			
	Increasing the efficiency and effectiveness of academic research findings in the field of	3.93	0.88	5
	agriculture through improved results	3.91	0.93	6
	Improving the social status of universities and research centers			
	Increasing agriculture students transfer and employment using with the development	3.98	0.98	7
	of technology-based businesses	3.79	0.99	8
	Directing and making more real of universities, research programs and research centers	3.86	1.12	9
	Earning funds for universities and research centers (reducing dependence on public funding)			
	Increasing the social value of urban agriculture disciplines	4.34	0.79	10
	Industry			
	Industry support and enhance the ability to export engineering services abroad	3.98	0.95	1
	Enhancing export competitiveness in domestic and gain higher share in world trade	3.97	0.99	2
	Raising the level of design and construction of the domestic products	3.88	0.99	3
	Promotion of new technologies and production using advanced technologies	3.87	0.99	4
	Creation of new jobs and new field of activity for professional work forces	4.00	1.04	5
	The development of related industries, both upstream and downstream	3.79	0.99	6
	Creating confidence in the applied research and development	3.90	1.16	7

Table 6
Factor Loading of Indicator and Structures and Commercialization Outcomes Measurement Mododel

Structure	Indicator	Evaluated Parameter	t-value	SE	AVE	CR	α
Achievements and outcomes	Z4 (Industry)	0.870	---	---			
	Z3 (University)	0.733	8.968	0.76			
	Z2 (Science and Technology Park)	0.915	12.272	0.66	0.55	0.82	0.94
	Z1 (Agriculture)	0.748	9.235	0.69			

resources through greater compliance with environmental technology" is the least important factor. Overall, the average rank of the achievements and outcomes of commercialization of agriculture is equal to 4.06 out of 5. Also in the part of the Science and Technology Park, according to the results of "upgrade/agriculture, culture of innovation and constructive competition among the companies in the park and on the institution of science and learning" has the most importance and "investments in science, research, technology development and training opportunities" has the lowest importance. Overall, the average rank of commercialization outcomes of the Science and Technology Park is equal to 3.95 out of 5. In terms of achievement in the commercialization of universities and research centers, developing infrastructure and capacity of universities and research and technology as a result of the acquisition of new resources and joint ventures has the highest importance and increasing social value fields and urban agriculture has the lowest importance. Overall, the average rating of the importance of outcomes related to commercialization of universities and research centers is equal to 3.98 out of 5. Achievements in the commercialization of the industry, as well as "industry support and enhance the ability to export engineering services to the highest important factor and to create confidence in the applied research and development" is the least important factor. Overall, the average rank of the commercialization for industry achievement is equal to 3.91 out of 5.

In order to assess the achievements and impact of the used indicators on shaping the agricultural innovation, commercialization, the first order analytical factor was used, whose results are shown in Table 6.

Regarding Table 6, it can be stated that all indicators of structural achievements and outcomes of commercialization of agricultural innovations have t-value of greater than 1.96. Thus, the assumption of being zero of indicator, meaning absence of significant structural role in the formation indicator is rejected and significant relationship on the basis of confirmatory factor analysis is confirmed. The results show that all selective indicators for assessing structural outcomes and consequences of the commercialization of agricultural innovations are prices enough and also validity and reliability are confirmed.

According to the indicators of fitness as seen in Table 7, it can be said that achievements measurement and impact model of the constructs in commercialization of agricultural innovations to fit the relationship between structure and indicators for each construct is valid and acceptable. So it can be said that the research findings are based on a model with the used indicator for assessing the factor structure have acceptable fitting.

Table 7
Fitting Index Model

Fitting index	Acceptability index	Reported value
Chi-square with degrees of freedom	≤3	3.259
NFI, Soft indicators fitness	0.90 ≤	0.97
Adaptive fitness index, CFI	0.90 ≤	0.98
Indicators of Compliance, GFI	0.90 ≤	0.97
The mean squared residue, RMR	≤ 0.05	0.01
The square root of the estimated variance of the error of approximation, RMSEA	≤ 0.08	0.14

Results showed that in evaluating the performance of Science and Technology Park in commercialization of innovations in agriculture in support of small and medium sized enterprises, Science and Technology Park in collaboration with the private sector is the most important and absorbing account of the various organs (private and public) is the least important factors. It seems that a park partnership with the private sector can produce better and easier-to-market innovations. As a result, they can expand the market for innovations generated in the park. These are similar to results reported by Davoodi and Kalantari (2011) and Kalantari (2010). About park relationships with universities and research centers, the utmost importance is effective communication between park management and local executive authorities, while the relationship between the park and the Research, Education and Extension system is the least important. It can be concluded that the parks are facing the financial difficulties due to limited demand for attendance at the park. Limited budget in research impacts park performance because these centers depend on government budgets. So the park is going to be able to use the resources available in the relationship with the executive authorities of the city and in this way, more features can be provided for companies in the park. These are similar to Salami et al. (2010) and Siegel and Westhead (2003). Based on research findings, the experts in the field of science and technology parks in the commercialization of agricultural innovations in the field of entrepreneurship believe that the availability of scientific expertise with high quality and skill have the highest importance and creating cooperation between inventors and investors have the lowest importance. Thus, it can be argued that park in the field of business consulting for startup companies puts special advisers, to strengthen Company's competitiveness on the track as well as the transfer of skills and business experience which enhances knowledge enterprises on market principles, so one of the benefits of the presence of the knowledge-based enterprises in the science and technology parks is the use of synergy for business skills. These findings are in agreement with Gordfaramarzi (2011), Arasteh and Jahed (2010) and Aghajani and Talebnejad (2011). Based on research findings about the reduction of project risks, specialized training and briefings and short term and long term courses in entrepreneurship and emerging enterprises are the most important factors and the least important is the assess system to evaluate the effectiveness of implementing projects. Risk of investing in agriculture sector is higher than in industry and services sectors. Also, the market has very high risks in agricultural production because of the low investment in agricultural innovation support mechanisms and the fact that the market for agricultural technology is also very limited. Therefore, entrepreneurship education programs to young companies can reduce project risk and cost of the loss of a large percentage of providing human, financial and material, and increasing the risk-taking by entrepreneurs, researchers and companies. Davoodi and Kalantari (2011) and Arasteh and Jahed (2010) reported similar results. Based on research findings, it was shown that the performance in commercialization of innovations in agricultural sector by science and technology park, in the field of opportunity for knowledge workers and employers, use of information technology to diagnose market, creating new processes and procedures and identifying customers' requirements and meeting customer needs and service are the most important and being close to the towns and industrial areas and major transportation centers such as international airports are the least important. It was concluded that information technology is a critical tool for organizations to achieve competitive advantage and organizational innovation. Thus, science and technology parks through information technology as the communication infrastructure within the enterprise can make a proper way to supply their products to customers. Using the powerful tools of information technology can help the marketing of products, and thus arises the concept of Internet Marketing. Internet marketing is the process of creating and maintaining relationships with clients in the areas of Internet to facilitate the exchange of ideas, goods and services in such a way that aims to satisfy two sides. These results are

aligned with the results reported by Manian and Saremi (2009) and Luftman et al. (2005). Based on the results observed in the outcome and consequences of agricultural innovation, commercialization, the promotion of entrepreneurship and innovative business development in the agricultural sector is the most important data, and the protection of natural resources through greater technology compliance is considered the least important. Thus, it can be concluded that the commercialization of agricultural innovations can increase its role in economic growth, job creation and the economic development of the society. On the other hand, it makes a massive employment of unemployed students in agricultural fields as well as private companies are presented in the agricultural sector that will allow the creation of new services. These findings are consistent with the findings of Nasaj Hoseini and Meraji (2005). Experts in the field of the achievements and outcomes of commercialization of agricultural innovations for the Science and Technology Park, promoting a culture of innovation and constructive competition among companies and institutions based on the science and knowledge are the most important drive, but investments in science, research, technology development and training opportunities are least important. Science and technology parks and incubators have comprehensive information about producers and consumers of science due to the nature of the tasks they are doing and at the same time have taken part in production processes, and weaknesses in any of the processes will lead to the reduced production and conveyance of knowledge, credibility and endangerment of their survival. So, they are trying to improve their competitive ability and their enterprises' and institutions' competitive ability to help their survival and growth. Improving competitiveness means improving quality, quantity, customer satisfaction, knowledge, intellectual and social capital, and these factors may increase the rate of commercialization of research findings. These are consistent with Arasteh and Jahed (2010). The results showed that in terms of achievements and outcomes of university research centers, innovation and the commercialization, businesses and joint ventures are the most important resources and increased social value of urban agriculture field drive for urban communities is the least important. This is because universities and research centers can pick up new ideas by contacting the park to enhance the information in relation to the market and the latest creates a specialized activity, as well as joint ventures between the park and the university. Based on research findings, studied the outcome and consequences of innovation to industrial commercialization, raising the potential for export of engineering services is the most important and confidence towards applied research and development is the least important. This is because of the fact that parks help technological units to increase industrial production in the country and this makes the industrial companies able to export their products to overseas, resulting in economic growth of the country that is by itself associated with an increase in the welfare of the people. Economic development can be followed over time. The results are consistent with Gordfaramrzi (2011). Confirmatory factor analysis results show that all the variables used to measure the performance in commercialization of agricultural innovations in Science and Technology Park were selected properly and their validity is confirmed. Therefore, the measurement model of measuring performance in Science and Technology Park for commercialization of agricultural innovations with respect to all variables is appropriate, acceptable and significant on the basis of the theory of conformity assessment. The results of Shinn and Lamy (2006), Mohammadi and Bigdelli (2012) and Manian and Saremi (2009) that considered the relationship between the park and universities take Park performance in supporting of the firm's effectiveness. Cocks (1985), Kalantari (2010) and Aghajani and TalebNejad (2011) mention supporting infrastructure such as location and business skills training as the functions of park. According to Malekzadeh and Kazemi (2010), Soleimani (2011), Lofsten and Lindalof (2001), Law (2005) and Salami et al. (2010), critical success factors of science and technology parks in the commercialization process and expedite the process of transforming ideas into product development and innovation include spatial factors, including proximity to the university and research centers,

proximity and easy access to convenient transportation facilities, proximity to markets and suppliers, critical factors include consulting services, marketing, training business by park resources and specialized equipment in parks, public services, management factors including directors dominating the debate on the Science and Technology Park, the local effective communication between park managers and executives of provinces, universities and research center and social and cultural factors, including the adoption of intellectual property, the spirit of entrepreneurship and innovation in society, to make a healthy competition. Arasteh and Jahed (2010), Rezaei et al. (2009), Fukugawa (2006), and Minshal (1983) also confirm these results. Confirmatory factor analysis results show that all variables used to measure the achievements and outcomes of commercialization of agricultural innovations were properly selected and their validity is confirmed. Therefore, the measurement model for measuring achievements and outcomes of commercialization of agricultural innovations with respect to all variables is appropriate and acceptable on the basis of the theory of conformity assessment. The results of Gordfaramarzi (2011) showed that the achievements of the park for the industrial sector include increasing technology in the country, creating confidence and development, raising the level of design and construction.

CONCLUSIONS

According to the results, there is a need to focus on improvement of the relationship between agricultural faculties and science and technology parks. Therefore, it is recommended to locate Science and Technology Park near the university or research centers. In addition, because of financial shortage, it is necessary to meet the physical facilities managers who rank low should do innovative solutions like other incubators to provide flexible space, the allocation of shared space and facilities and rental rates up allowed to renew the lease with regard to optimize the exploitation of their resources. Incubators can communicate with institutions such as universities, and research institutes and the private sector provide access to some manufacturing facilities such as workshops, laboratories and research, and development for entrepreneurs. This relationship requires a mutual benefit for both parties. According to research findings, since access to the skills and expertise is a priority to improve quality of business, the establishment of a network of information and transfer of experience and a network of business sponsors can increase the success rate of knowledge-based enterprise.

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