

Investigate the Potential Commercialization of Knowledge in Engineering and Construction Management of National Iranian South Oilfields Company

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ABSTRACT

Scholars' ideas and research findings in case of commercialization, can result in entrepreneurship and creating wealth and finally economic social welfare and development. For the commercialization of knowledge it is necessary to identify processes, methods and forming and underlying factors to be used in commercialization decision making. This survey has determined knowledge commercialization capability in Engineering and Construction Management in National Iranian South Oil Company, rich regions based on some effective infrastructure factors on it including senior management role, market-oriented and customer focus, participation and interaction, intellectual property management and the role of individual factors. The present survey is based on applied goal and case and field methods. Its statistical society includes experts and scholars of this management. Sampling was randomly simple and collection tools was formed like research questionnaire. Statistical tests like T, Kolmogorov-Smirnov tests Confirmatory Factor Analysis and Chi-Square Test for data analysis. Researcher results show engineering and construction management of knowledge commercialization capabilities that in Friedman Ranking Test, individual factors role has had the most potential and after that they are participation and interaction, intellectual property management, senior management role and market oriented and customer focus.

KEYWORDS: Research findings, knowledge commercialization, knowledge commercial factors in NISOC (National Iranian South Oil Company)

1. INTRODUCTION

At increasing competition nowadays world, many industries have no opportunity to perform basic researches. For this reason, majority of companies have to study critical and necessary researches, only. Global communications, many sciences and knowledge's becomes publicly and buying science from its owner being more possible and easier, necessary to restudy and creating new sciences is destroyed. Research is important due to innovation and innovation is important because its economical benefit. At present world, research lost its cultural traits, its conventional meaning of this word, and changed to an economical factor. Now, "pure science" step has passed. and science – research institutions should openly submit their services to economy and trade. Research centers should exit from "be target" and change to a tool for developing economy. At present age, we should follow solution ways to learn us, how to change "idea" to "product" and increase rate of "science" to "wealth" transforming procedure. Knowledge commercialization, the process of changing science to products and services, is a very effective method for transmitting mind's ideas or laboratory to a larger world, which has important role to synthetic consideration at regional or national levels for research and innovation and can be an important factor for economical development. (26)

1-1 knowledge commercialization definition

By glimpse on presented definitions in professional magazines, books and texts at management technology field, three complete different viewpoint can be seen about knowledge commercialization:

First viewpoint is pertaining to experts that regards knowledge commercialization as a connected chain, from creating idea to sell and applying science by final customer. For instance, Goldsmith regarded commercialization in broadly meaning of word, a developing process of a business via study of measuring an idea possibility and its applied and its acceptance at market. From this view, commercialization is a process which transform science to an economical successful product. At this direction from idea and concept to acceptance a specific market is exist. Commercialization is a coordination between technical and commercial decision making processes (and results of these

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decisions) to perform a successful transferring from creating idea to buy in market . Commercialization frame of product is main arrangement of all inseparable phases of a product's at developing process . Commercialization is process of transferring of technology or an innovative concept from idea at market . In other word , knowledge commercialization is usually defines, as a process of making a product which is proper for a particular market with acceptable price that can fulfills market needs .experts which are favoring second knowledge commercialization viewpoint image it like transferring knowledge . For example Jane defined science commercialization as transferring knowledge and technology from a person or group to another group for use it at system , process , product or a method of work . From this view only knowledge transfers from research centrals to exist industries or new businesses .

Third viewpoint pertained to experts who act at marketing domain or developing new product in companies . These experts suppose that knowledge commercialization is final activity into developing new product cycle . One of the most famous person of this viewpoint says that , commercialization is a process which includes final phase of 8 phases of developing new product process . From this view producing new product passes through different phases and company examines that if this idea should develop or its develop process should be stop . But at commercialization phase , product makes prepare for going into market . At this phase management should decides when , where , who and how to introduce the product. (10)

By considering posed definitions that regarded different aspects of commercialization concept , thus significant posed definitions on this background presented in (Table 1) and base on performed inference from presented definitions review and analysis a definition from knowledge commercialization is deduced, proper with human knowledge space as below : knowledge commercialization is a process which by its ideas , skills and produced invention in organization (research results in case of methods , tools, processes , training shops , consultative services and) being available and using by other organizations and society. (23)

Table 1. Significant posed definitions about commercialization

Row	Definitions
1	Knowledge commercialization is a process that change produced science in universities or research organizations into presentable products at market or industrial processes , this circulation need to solemn cooperation and interaction between higher education centers and research organizations of government, industrial companies , financial and investor organizations , entrepreneurs and scientific individuals. (8)
2	Commercialization include generating a new idea and implementing it on a product of process which cause for dynamic growing of national economy and higher occupation and increasing pure profit for innovative business entity. (1)
3	Researches commercialization is a circulation that transform produced knowledge in research organization into products which are presentable to market. (29)
4	Commercialization is a process for developing a business through study of an idea possibility evaluation and its applied to its acceptance in market. (28)
5	Commercialization is a process that begins from technology-market viewpoint and complete to stable operations of product proper with market. (19)

1-2 Research history

Knowledge commercialization has a long history , in the past , however few and limit , obtained technologies from scientific researches were presented to market and became commercialized , but apparently knowledge commercialization commenced concurrent with cooperation discussions between university and industry . Cooperation between industry and university started with Moriel law at 1862 which university system begun lands endowment. (20) many critics believe that interaction between university and industry really form processes and outgoings which are relate to science commercialization. (22)

During commercialization history , researchers have recognized two commercialization wave . First wave started at initial 1980's .This wave can be recognized by establishing

“ traditional” science parks ,which often they aim was taking advanced companies in And increasing private budgets for university studies, were the sign of growing cooperation with present industries . Second wave accelerated at second half of 1990's ,by more focus on branched companies and by innovation right endowment and submission innovations license , general cooperation with industry and university students activities at commercialization projects is separable than first wave. (27) thereafter , this new viewpoint expanded a complex of main elements which are include :Transferring technology and licensing offices , incubator facilities and companies with joint investment. (7)

By review previous papers and researches apparent that two main current of studies perused science commercialization , one is “ transferring technology” current at 1980's , that posed commercialization

should be seen as transferring technology process from university to industry . For promotion commercialization , university should pay attention with stimulation split to barriers and contrast between engaged parties at this transferring process . Second current is “ entities and organizations resources “. This current appeared at beginning of 21 century and cites that favorable resources of entities and organizations include fundamentals of commercial supporting ,organizational stimulations access to capital and risk investment , they have important role at promotion research commercial operation. (3)

By regard on paper volume limitation , effective factors on knowledge commercialization which were presented by researchers and research institutes are summarized in (table 2) , now discussing about them .

Table 2 . Effective factors on knowledge commercialization (research variables)

Effective factors on knowledge commercialization	Resources
Base market and focus on customer	Jouly(1997),Rosa &Roz (2007), Goktepe(2004),Couper(1979),Sarmad saiedi& Mamaghani(1389) , Burnet&Montta (1993) , Jahed(1390)
Major management role	Couper (1979) , Fakour & Haji hoseini(1387) , Fakour (1383) , Migoun pouri et al (1390) , Siegel et al (2004) , Lacetera (2009) , Burnet&Montta (1993), Jahed (1390)
Intellectual ownership management	Howard (2005) , Goktepe(2004), Haji hoseini& Fakour (1387) , Fakour (1383) , Pour ezat et al (1389) , Debackere (2005) , Jahed (1390)
Partnership and interaction	Yadolahi farsi & Amini (1390) , Howard (2005) , Goktepe (2004) ,Haji hoseini & Fakour (1387) , Fakour (1383)
Individual factors role	Hashemnia et al (1388) , Migoun pouri & Ahmadi (1390) ,Chiu & Chang(2009) , Grady (2002) , Jahed et al (1390)

By regard on said at research history research concept model (**Fig. 1**) is being presented , for showing relation between research components . Thus in all phases , theoretical format is regarded in research design, for report’s results enrichment , organizing interviews , gathering and managing data and not a type of biasing .Undoubtedly , there is no stable standard at knowledge commercialization , because commercialization is influenced by social ceremonies and customs , organizations paradigms ,market environment , government policies and many small and large components which ability of modeling them is hard and difficult . In other hand , knowledge commercialization process is not a simple and linear process , rather the process is more complicated and different performers with various abilities play in it .

This process need to skills such as developing product , market evaluation , market strategies , financial resources management ,production engineering and management , accountancy and (17) due to the fact that each one of strategies , models , concepts and factors has different tools which effect on commercialization , but this paper aim is no discussing about all these factors and concepts . At this study we tried that focus on group factors that regarded as key success , in different researches , key success factors are divided to two groups external factors and internal factors (5) and (24) Because the weight of these factors are internal , so that attend to them can even plain external factors weaknesses , nearly . and on the other side effectiveness of organization on external factors (infrastructures , national innovation system , universities and research centers , under risk cashes and) is difficult .We discuss about important internal and key success factors include : market base and focus on customer , role of major management , intellectual ownership management role , individual factors role , partnership and interaction and individual factors role subject .

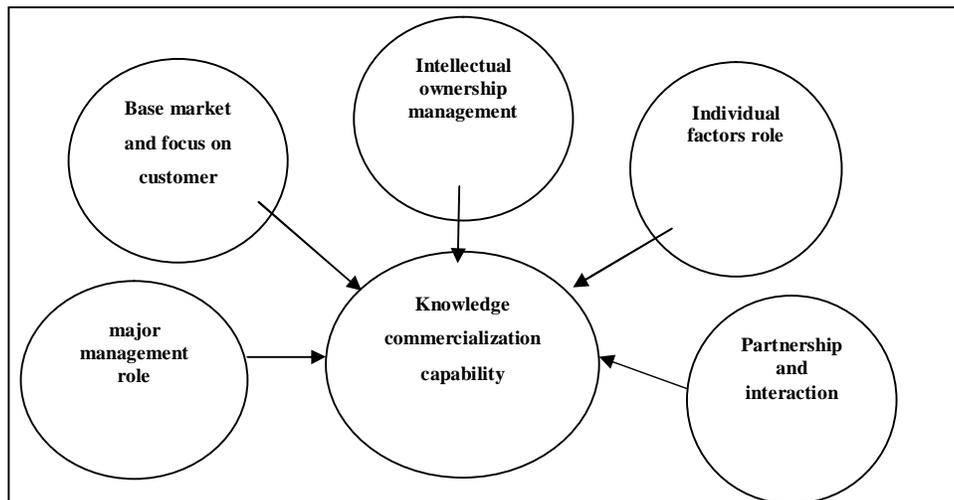


Figure. 1 . Research concept model (made by researcher)

2- Problem declaration

By regard on 20 years outlook document of republic Islamic of Iran (14) and its emphasis on necessary of developing technology and its growing (32), regime's expedient recognition society at article 1 of regime's general policies for developing and growing technology at country, under title of ((developing technology by meaning of promotion Iran's position at world's technology, producing knowledge, obtaining wealth and increasing national power)) for reinforcement national impetus for growing and developing science and technology, policy making and codifying strategic programs and reform regime's management structure, appointing priority for supporting science and technology, emphasis on training human force and absorbing human properties and encouraging self-assurance and self-dependant mentalities, reinforcement and organizing cooperation between university and research centers and academies with industrial and technical section and governmental and nongovernmental services, amending and completing laws and requirements particularly at commercial and custom for purpose of changing procedure of goods and services imports, to science and technology transferring process, reinforcement spiritual and preparing applied researches and innovative expanding, promotion academies role, reinforcement international cooperation and at article 2 under title of ((reinforcement national infrastructures and technological capacities)) cited that, willpower for raising pure science quality level and scientific managing researches at science and technology fields, growing industries and services based on new sciences and technologies, emphasis on increasing research share at technology from national total production, supporting national production and exportation merchandises that depend on native and traditional technologies and supporting of establishment and development of scientific and technological zones and parks. (32)

At second chapter of fifth development program at articles "د" and "و" clauses 16 and 17 completely, and articles "ز", "ط" and "ی" clause 18, in compare to fourth development program, more emphasized on knowledge commercialization, supporting its process and using scientific and technological findings for developing country. establishment and activities of scientific and technological deputy of president, developing grow centers and scientific and technological parks and approving laws for supporting elites and researchers are other items which caused for raising researchers motives for creating science and technology. Whereas, oil section is the most important section and preparing many changes in country. Changing in this section can effect on other economical and social sections. Rresearch in oil industry is being performed at different backgrounds such as, study discoveries and productive resources, producing complicated derivatives from petroleum, chemical materials, catalysts and even designing new units. research activities at oil industry are in forms that along with looking to final scientific advances, also thinking to scientific and applied solutions for

problem solving and production and operational traits so that by applying and implementing researches results, decreasing losses and costs, increasing incomings and promotion beneficiaries.

By regard on fact that key of developing technology and self-dependant at applied and developing researches is covered in producing equipments and materials inside country. From other viewpoint avoiding from oil-dependant economy depends on pass through researches and organizing capitals and if we accept this viewpoint that society capability of using results of researches of engineering and construction management will increase, which potentially are commercialization, knowledge commercialization is an important lost ring of this management on the way of developing and promotion country and creating wealth and income and solving economical problems, because major manager caused organization to this image which by existing necessary potential capacity for knowledge commercialization, how can present a scientific answer to this question that, whether engineering and construction management has capability of itself knowledge commercialization? at this study we try to find answer the question.

3- Research method

Present study from purpose viewpoint is applied and from collecting data viewpoint is a survey research. Research statistical society include 50 experts and researchers which are skill at research and engineering and construction management technology, they work at national company of oil productive areas of south during research at 2012 and working at their positions. Statistical sample volume estimated 44 persons by using kookran formula and sample randomly selected. Present study domain limited to research and development subjects. Its time limitation formed from gathered data during 2012 and its location domain is engineering and construction management of national company of oil productive areas of south. Collecting data was performed in two way Library and questionnaire studies. Research questionnaire produced by researcher and its questions and interviews were codified by using

research literature . From extracted complex of components from interviews a questionnaire was codified with 45 interview connected with effective factors on knowledge commercialization then adjusted and submitted to 5 experts . By their opinions study performed tentatively and by summarizing their opinions final questionnaire prepared in addition of census

Section with 11 questions about market base and focus on customer , 5 question about major management role , 7 questions about intellectual ownership management , 5 questions about partnership and interaction , 17 questions about individual factors role . From distributed questionnaire 43 were selected and used by regard on precision value of answering to questions and integrity . For appointing measuring tool validity , containing validity was used , this type of validity depend on experts judgment .Judges were 5 persons of experts of organization . For final calculation of questionnaire Krounbakh method was used and its value for each variable at (Table 3) shows that it is proper . For analyzing data , descriptive and deductive statistics method were utilized . For data normal distribution ,Kolmogoroff-smirnoff test was used , T-test for examining variables effects and Friedman test was used for factors precedence ranking . Data was analyzed by SPSS software .

Table 3 .Cronbach alpha value for every variable

Variable title	Cronbach alpha value
Base market and focus on customer	0.73
Major management role	0.77
Intellectual ownership management	0.74
Partnership and interaction	0.79
Individual factors role	0.76

4 – Research findings

For certainty of whether presented model will confirm or not and also sureness of correctly performing of grouping questions in case of dependant variables (ability of knowledge commercialization) and independent variables (base market and focus on customer , major management role , intellectual ownership management, partnership and interaction and individual factors role) , for doing this work factor confirmation analysis method used . Base on confirmation analysis model all 45 variables of questionnaire were scrutinized by taking into account of 0.3 proof as rational guidance considerable load(Table 4) , their correlation is acceptable and at ranking factors divided to 5 factors which are according with model's independent variables grouping . From factor confirmation analysis model only using for evaluating model validity . That has acceptable validity .

Table 4. Confirmation factor analysis test

correlation	Variable title	correlation	Variable title	correlation	Variable title
0.928	Base market and focus on customer	0.896	Individual factors role	0.917	Major management role
0.929		0.842		0.918	
0.924		0.907		0.926	
0.896		0.874		0.911	
0.926		0.896		0.913	
0.928		0.864		0.916	Idea ownership management
0.942		0.878		0.905	
0.949		0.890		0.778	
0.896		0.884		0.878	
0.932		0.876		0.873	
0.922	0.866	0.918	Partnership and interaction		
	0.874	0.902			
	0.870	0.913			
	0.890	0.892			
	0.904	0.942			
	0.874	0.943			
	0.884	0.890			

Table 5 . kolmogoroff-smirnof test results on variables

Specification Variable title	Individual factors role	Partnership and interaction	Intellectual ownership management	Major management	Base market and focus on customer
Quantity	43				
Average	4.13819	3.53023	3.27127	3.23593	3.21163
standard deviation	0.530775	0.583722	0.509721	0.567874	0.588212
Accurate	0.360	0.197	0.229	0.152	0.133
Positive	0.142	0.197	0.229	0.113	0.124
Negative	-0.360	-0.089	-0.143	-0.152	-0.133
kolmogoroff-smirnof	0.842	1.289	0.436	0.997	0.872
Meaningful level	0.536	0.072	0.554	0.273	0.433

By observing(**Table 5**) findings , zero theory at Kolmogoroff-smirnof test is consist of following data from favorite distribution which in this test refers to normal distribution .

Versus theory is consist of non-following data from favorite distribution and by considering showed meaningful level into above table for every independent variable , value is more than 0.05 (regarded certainty level is 95%) and not refusing zero theory , data distribution was supposed according with normal distribution .

Table 6. T –test result by test (value = 3)

variable	quantity	average	Standard deviation	T	independence grade	Meaningful level	Average difference
Ability of science commercialization	43	3.40	0.50	5.28	42	0.000	0.40
Base market and focus on customer		3.21	0.56	7.40		0.047	0.03
Major management role		3.23	0.58	8.28		0.045	0.11
Intellectual ownership management		3.27	0.50	2.73		0.009	0.21
Partnership and interaction		3.53	0.58	5.95		0.000	0.53
Individual factors role		4.13	0.53	14.06		0.000	1.13

By looking on distribution normality , for describing and explanation research variables , a sample was used from T-test (**Table 6**) by test value equal to 3 and certainty value 95%(tolerance 5%) as can be seen in table 5 meaningful level for every variable is less than 0.05 , which shows that under examination variable has capability for science commercialization , on this situation and by regarding under examination factor's Average which is more than 3 , mentioned factor is forcefully present in statistical society .

Table 7 . Fridman test for ranking examined variables

priorities	Variable title	Ranks average
1	Individual factors role	4.16
2	Partnership and interaction	3.66
3	intellectual ownership management	2.44
4	Major management role	2.41
5	Base market and focus on customer	2.29

Table 8. λ^2 test for appointing variables distribution monotony

quantity	43
λ^2	97.638
Independence grade	4
Tolerance level	0.000

By observing calculated kaydou statistics at (**Table 8**), greater than 11.07 crisis value at independence grade 4 and tolerance level is 0.05 , thus equality of ranks of five variables is refused. Showed results (**Table 7**), cite that maximum average value relates to individual factors role on the other side , average value relates to base market and focus on customer , which managers by considering this ranking and comparing it with themselves purpose ,Can do necessary actions for increasing themselves capability of science commercialization for every favorite variable that they have tendency.

5 – Discussion and conclusion

Results and findings of every study are the most important section of the study , until by examination findings and substantiation of its theories, opening a way to improvement and sublimity, results from statistical test show that all examined variables at engineering and construction management have potential of turning into commercialization (by meaningful level less than 0.05) , and because each average were more than 3 these factors were observed forcefully in society . Variable " individual factors role " had maximum potential and " base market and focus on customer " had minimum potential and others were between both mentioned , " partnership and interaction " , " intellectual ownership management " and " major management role " ,as the sequence .

By observing results of quantity section for removing organization weak points , recommendations and advices is submitted in format of two sections ,applicable and research recommendations for mangers and next researchers about knowledge commercialization .

5-1 applicable recommendations

For base market and focus on customer :

- Organization perform provident processes for developing technology and future research for defining important technological priorities for different periods of time and present these studies to itself researchers .
- Possibility measuring studies for product being commercialized based on below indices
 - Technical and economical value (technical and economical rationalization)
 - Intellectual ownership value from record and applicable viewpoints .
 - Evaluating market from value and request viewpoints
- Organization should codify a correct , general and provident strategy according with production income purpose through selling research results and introducing its abilities to its outside customers this strategy comprise of two factors :
 - 1) Acquainting with sale environment traits of research results , at this phase below questions should be answered :
 - What traits new generation of special technology has ?
 - Which component of this technology has major changes?
 - What companies active in this domain and what activities they are doing ?
 - Who are the present and future competitors ?
 - What phase of cycle life the technology is taking place ?
 - 2) Having a plan for selling research results , at this phase below question should be answered :
 - For start the activity, what thing should be regarded ?
 - To what limit was dependent on customers ?
 - What is the best method for attract customer ?

About major management role :

- Codifying laws , regulations and applicable instructions for developing technology and amending promoted laws for persuasion researchers of this domain , with regarding material and virtual rights of researchers
- Codifying policies and design and implementing effective programs for creating and raising organization's strength and capacity
- To create favorite culture and plural for supporting creative and transferring technology
- To advice managers and responsible personnel at necessary to professional research and correct marketing processes and commercializing scientific-research consequences toward developing technological innovations and creating economical added value at industry .
- To prepare suitable background for zonal obligation and creating necessary motives between managers by research and development section
- Head managers should be industrious for material and virtual supporting of their researchers .
- Organization to form effective and up-to-date data banks , expand them , until from one side preventing parallel work , disperse works and rework which loss capitals , on the other side introduce and acquaint their researchers with new consequences .
- By holding training shops and seminars , acquaint their researchers with final advances in technology and up-to-date consequences and from this way conditions being prepare for creating new ideas and applications .

About interaction and partnership :

- By considering to scientific and technological institutes roles comprise of parks and growing technology centers at the present as a section of innovative infrastructures for realizing operations and activities such as transferring and distributing technology Entrepreneurism , commercializing research findings through consultant services and attracting partnership and decreasing institutes risks and It is obvious that these parks are being designed ,so that have ability to reinforce and encourage industrials growing , based on science and organizations that their activities have more added value . thus suggest that organization to make a relation with these institutes .
- whereas participating to projects , congresses , and national, regional and international major programs is an opportunity for showing abilities to customers and acquainting with new ideas , recommend that organization participate to mentioned items with more enthusiasm

About individual factors role :

Researcher:

- Strengthen themselves relationship skills , problem cognition , team making , marketing , networking and commercialization .
- Improve themselves informative skills for access to needed scientific and technical data and relation with researchers of other organizations .
- Making relation with abroad specialists and researchers for recognition products and services that can be presented at internal market and trying for localizing and transferring these products and services into country .

Organization:

- At selection and recruitment persons for research and commercialization activities their traits should be more consider

5-2 Research recommendations

Suggest to researchers perform this research at other research organizations and examine its possibility of expanding and peruse its results whereas can divide effective factors of science commercialization to two external and internal factors , thus for completing present study, a research about effective environmental factors on science commercialization can be useful .

REFERENCES

- [1] Astebro,Th. (2004): Key Success Factors for Technological Entrepreneurs' R&D Projects, IEEE Transactions on Engineering Management, 51:314-321.
- [2] Burnet,W.,Monetta,D.(1993):How the Gas Research Institute(GRI)Helped Transform the US Natural Gas Industry.Franz Edelman Award Papers, 23: 44-58.
- [3] Chiu,Sh .,Chang,K.(2009).Organizational Structure,Support mechanism,and Commercialization performance:A governance perspective,International Journal of Commerce and Management,vol 19:183-194.
- [4] Cooper, R. G. (1979):The Dimensions of Industrial New Product Success and Failure,Journal of Marketing, 43: 93-103.
- [5] Daneshkohan,H.,Bigdeli,M.(1389):Key factors for success and failure product development project,the forth national Iranian technology management,Tehran,access at: <http://www.civilica.com/Paper-MTIC04-137.html>
- [6] Debackere, K. (2005):The role of academic technology transfer organizations in improving industry science links,Research Policy, 34:321-342.
- [7] Etzkowitz, H., Webster, A. (2000): The Future of The University and the University of the Future: Evolution of Ivory Tower to Entrepreneurial Paradigm, Research Policy, 29:313-330.
- [8] Fakour,B.(1383):Reasech results commercialization,Rahyaf journal,14:53-58.
- [9] Goktepe,D. (2004): Investigation of University Industry Technology Transfer Cases: A Conceptual and Methodological Approach, Division of Innovation-LTH Lund University.Available at: www.infra.kth.se/cesis/cesis/conference/Devrim%20Goktepe.pdf.
- [10] Goudarzi,M.,Bamdadsoufi,J.,Erabi,M.,Amiri,M.(1390):Process model for technology commercialization of public Iranian's research institutions, Journal of science & technology policy,2:41-56.
- [11] Grady,J.K.O.(2002):Influence of Personal and Environmental Factors on Academic Medical Research Decisions to Commercialize the Results of their Research,A Dissertation Submitted in Partial Satisfication the Requirements for the Degree of Doctor of Philosophy,University of West Canada.

- [12] Hashemniya, Sh., Emadzadeh, M., Samadi, S., Saketi, P. (1388): Investigate the factors affecting individual income industrial academic research at the university of Iran, Journal of research and planning in higher education, 2:1-20.
- [13] Howard, J. (2005): The emerging business of Knowledge transfer, Department of Education, Science and Training, Australian Government, Online Available at: Howard_Partners_Business_of_Knowledge_Transfer_Report.pdf.
- [14] Iranian twenty years vision (1382).
- [15] Jahed, H. (1390): Identify and explain the factors affecting the commercialization of research results, phd thesis, Islamic Azad university/science & research/Tehran.
- [16] Jahed, H., Arasteh, H., Jafari, P. (1390): Identify and explain the individual factors influencing in commercialization of research results: case study in Islamic azad university/science & research, Journal of science & technology policy, 1:1-16.
- [17] Jahandideh, M., Akhavanfard, M. (1384): Research results commercialization, the third international Iranian management conferences, Tehran, access at: http://www.civilica.com/Paper-IRIMC03-IRIMC03_181.html
- [18] Hajihoseyni, H., Fakour, B. (1387): University entrepreneurship and research commercialization in Iranian university, Journal of science & technology policy, 1:59-70.
- [19] Jolly, V.J. (1997): commercializing new technologies: getting from mind to market. Harvard business school press. Online available at: http://books.google.com/books?id=wxCjNljWdZoC&pg=PA1&lpg=PA1&dq=jolly%20Bcommercializing+new+technology&source=bl&ots=hjacjfOSwR&sig=1IEOzhALsbrvP1dt4rpK3Ja4bjk&hl=en&ei=unVYs7hLImGnQPruq3dCQ&sa=X&oi=book_result&ct=result&resnum=3
- [20] Karlsson, M. (2007): Commercialization of Research Results in United States: An Overview of Federal and Academic Technology Transfer, IPTS, Swedish Institute for Growth Policy Studies, Available at: www.innovation.lv/ino2/publications/A2004_007.pdf
- [21] Lacetera, A. (2009): Academic entrepreneurship, Managerial and Decision Economics, 30:443-464.
- [22] Markman, G. D., Gianiodis, P. T., Phan, P. H. (2008): Full-time faculty or part-time entrepreneurs. IEEE transactions on Engineering Management, 55:29-36.
- [23] Mousaei, A. (1387): Model design to identify opportunities and commercialization of their R& D centers, Journal of growth & technology policy, 14:13-20.
- [24] Meygounpouri, K., Khojamli, B., Toghraei, M., Dehkordi, A. (1390): Identify research results commercialization key influence factors, national Iranian conference, access at: http://www.civilica.com/Paper-NCECEJ01-NCECEJ01_149.html
- [25] Pourezat, E., Gholipour, A., Nadirkhalo, S. (1389): Barriers to university entrepreneurship and knowledge commercialization in Tehran university, Journal of science & technology policy, 4:65-75.
- [26] Radfar, R., Khamse, A., Madani, H. (1388): Necessary to develop new product, innovations, R&D and technology, Journal of science & technology policy, 18:22-31.
- [27] Rasmussen, E., Gulbrandsen, M. (2006): Initiatives to promote commercialization of university knowledge, Technovation, 26: 518-33.
- [28] Rosa, J., Rose, A. (2007): Report on Interviews on the Commercialisation of Innovation. Ottawa, Science, innovation and Electronic Information Division, Statistics Canada: Catalogue no.88F0006XIE-No004.
- [29] Salter, A.J; Martin, B.R. (2001): The economic benefits of publicly funded basic research: a critical review. Research Policy, 30:509-532.
- [30] Sarmadsaeidi, S., Mamghani, A. (1389): Identify and rank key factors influencing product development Saypa automobile manufacture group, the forth international business management conferences, Tehran, access at: http://www.civilica.com/Paper-IMMC04-IMMC04_018.html
- [31] Siegel, Donald S., Waldman, David A., Atwater, Leanne E., Albert N. (2004): Toward a model of the effective transfer of scientific knowledge from academics to practitioners: qualitative evidence from the commercialization of university technologies, J. Eng. Technol. Manage; 21: 115-142.
- [32] The Iranian general policy for science & technology development. (1383).
- [33] Yadolahifarsi, J., Amini, Z. (1390): Identify institutional and environmental factors affecting technology transfer in three fields of biotechnology, community Journal of park & growth centers, 28:27-33.