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REVIEWING THE EFFECTS OF TECHNOLOGY MANAGEMENT ON INNOVATION IN AHVAZ JUNDISHAPUR UNIVERSITY OF MEDICAL SCIENCES, IRAN

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Abstract:
Technology management (management of technology or MOT) requires an extensive spectrum of capabilities in operational environments ranging from research and development to financial affairs (services) marketing and every other traditional management activity. Technological management needs to have an interdisciplinary approach and therefore requires a collection of different disciplines. While traditional management disciplines are pursuing how to allocate resources, technological management is not forced to allocate resources. In fact, it aims to further access and dominate the formation of the effects of technological variables on a business. Our country is classified among developing countries and technology transfer is recommended as a shortcut for access to state-of-the-art technologies, providing that technology transfer actually happens and Indigenization of transferred technologies to be considered. The present study examines the effects of technology on innovation in Ahvaz Jundishapur University of Medical Sciences. It is performed based on a descriptive study. For this purpose, four hypotheses have been raised in the study and the data required for this research were collected from 298 employees and managers from the university. The most important result of the present research is that the deployment of technology management and R&D (research and development) will lead to the promotion of quality functions and more importantly consolidation of innovation functions in the university of medical sciences. The value of Cronbach's alpha for these 24 elements is equal to 0.935 which represented that the data have reliability (are reliable). In conclusion, the Pearson correlation coefficient test was used to confirm or reject the research hypotheses.

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JEL: O14, M54, O32

Keywords: innovation, technology, correlation coefficient, reliability, research and development (R&D)

1. Introduction

The world is changing. Speed, innovation (changing), and complexity are among the most important components of the current (21st) century. New technologies have emerged and management systems must change accordingly. This paradigm shift has brought about a totally new space to businesses. Thus, nowadays we have to use various types of technologies, and these fast-paced and complex technologies have revolutionized our entire life occasions, emotional and inherent behaviors, and personal experiences. Plenty of new jobs have been created in accordance with the appearance of extensive technologies and many professions have been gotten rid of in return. Nowadays, companies have proved their innovative goals and technology creation as an intangible and tangible assets and gain a wealth-creating competitive advantage. Competitive advantage creation will be possible as a result of producing and presenting technology in the light of strategic management and thinking. The present paper points to the effects and the power of technology management in creating companies' profitability, citing that resource management and optimization would lead to profit creation and not technology per se. Some examples about the countries that through adopting this attitude have been placed in the category of the rich countries are presented.

The environment of modern markets and business which possesses a series of complex components and indicators has made it very difficult to compete and work. Nowadays, increasing global competition has divested many industries of the opportunity for fundamental and basic researches, most of which are forced to merely perform critical researches when needed. Companies that could initiate their wealth-creating (wealth creation) researches before the crisis began are now more successful than others in the breathtaking marathon of business world complicated competition. In today's business environment, no economic phenomenon is more important and elevated than wealth creation through technology and technological innovation. Companies are attempting to somehow create a competitive advantage in their industry market by using technological innovations, preparing themselves with opportunities to earn profit and wealth by selling that technology. Technology and innovation management are factors that promote the competitiveness strength (power of competition) of developed countries. Economic boom of the countries, industries and companies is dependent on effective technology management. Technology creates wealth. Technological knowledge study, research and development have been among the most fundamental solutions to create innovative and technological ideas alongside economic interests and commercialization of researches. It is obvious that "*innovation*

research and development is a permanent and dynamic process, not a cross-sectional and once-and-for-all (once for all) work" (Ahmadzadeh et al., 2007). Today, the difference among developed and developing countries results from technological thinking and its effect on economic development and growth (Aarabi et al., 2013). Innovation is crucial to get competitive advantage and companies' long-term success (long-term success of companies).

2. Overview of innovation and technology management concepts

A. Technology

Technology can be defined as all knowledge, products, processes, tools, methods, and systems that are employed to produce goods and services. To put it simply, technology is a procedure we take to get works done (Ahmadzadeh et al., 1386).

In fact, technology is a tool by which we can reach our goals. Technology is the processing of knowledge. In general, technology is merely applied to hardware tools, though it is something beyond hardware. Zeleny (1986) classified technologies into three categories: 1) hardware, 2 software, 3) brainware.

Technology is the knowledge to build goods and products as well as presenting services and optimization of how to use our limited resources. Technology is the result of knowledge development whether it is destructive (uncreative) or constructive (creative). Another definition of technology would be the utilization of science, experience, and human skills to meet the needs of human beings (Rahman Seresht et al., 2008). Technology has got three connected components: tools, skill, knowledge and information. Absence of one of these components and even lack of coordination among them will cause a change in technology performance and effectiveness, keeping it away from reaching its ideal (ultimate goal).

Technology transfer is the transfer of a production method (method of production) [from one place to another]. This transfer can take place from a research laboratory to a production (manufacturing) station or center or from one production station to another. Movement towards research, development and production is called vertical transfer, while movement from one production center to another is called horizontal transfer. Technology transfer may occur inside a factory by transferring a technology from one section to another. Technology may transfer from a factory to another as well. Therefore, technology is transferred from machinery, methods, processes, products producers to consumer factories. Ultimately, technology may cross national borders and be transferred to other countries. According to UNCTAD (United Nations Conference on Trade and Development), technology transfer is to import special technological factors from developed countries to developing countries in order to enable the latter to provide and deploy new manufacturing instruments (production tools) and to spread and develop the available instruments. The transfer of technical knowledge elements from one country to another can be done as follows (Rabiee, 2010).

B. Innovation

Some people consider innovation a modern word which is defined in a very different way according to its various uses in researches. After more than half a century from introduction of the term "innovation" into academic texts, perceptions made from this concept have gone through major and serious changes over the years.

- **Evolutionary models of technological innovation process**

Technological innovation process is the process of converting new ideas to goods (product, service) or a new or totally developed process. According to Freeman, innovative is a set of technical, industrial, and business operations. Therefore, it cannot be simply defined as linear templates. Prior to 1980s, models presented for the innovation process were considered to be based upon a simple linear process which was initiated by conducting a basic research, leading to the creation of ideas and eventually the production of new commodities or processes; however, after performing a wider research and scrutinizing the innovation process behavior in different conditions, several complexities were found and they could no longer be summarized in a linear process. Then, the nonlinear processes were evaluated and various researchers tried to identify their innovation processes.

Nowadays, creativity therapy for inefficient human resources is a very serious and novel debate and a way to spread culture and the norms of innovative thinking for working in organizations. One of the distinctive features of agile organizations is creativism in different organizational levels along with innovation management culture. An agile organization is capable of reacting and responding to constant and sudden environment changes (Bandarian, 2007) and recognizes opportunities and threats, strengths and weakness based on SWOT principles in order to survive in the business environment, persisting (breathing) by innovation management in a creativity-oriented (creativity-based) and creativity therapist environment. Certainly, an agile company or organization that has freed itself (got rid of) futile (vain) and additional forces is seeking to create technological innovations. This thinking cannot be accomplished without having a strategic viewpoint and management (This idea cannot be thought of except by having a strategic viewpoint and management).

Research and development have a direct effect on innovation, efficiency, quality, standard of living, market share, and effective factors that increase the competitive power of organizations. With the emergence of the globalization phenomenon and business methods (procedures), technology has gone through (experienced) many serious changes. Commercialization was one of the major changes of this phenomenon. It is an important part of innovation process, no technology and product will ever successfully enter the market without commercialization. The results of the volume of investment (investment value) in R&D (research and development) and innovative researches cannot be specified at first glance or over a short-term period of time.

C. Technology management

Technology management has got various definitions due to the wide scope of this field. Technology management can generally be defined as: a process of planning, guiding,

controlling and coordinating development and deployment of technological abilities to form and realize operational and strategic objectives of organizations.

In some researches, technology management is expressed as an ability to effectively use technical knowledge and skills. According to this definition, technology management is an attempt to promote the available technologies and create knowledge and new skills in response to today's competitive business environment. Technology management is an interdisciplinary professional area of study that incorporates and integrates sciences, engineering, knowledge, and management art. Its main focus is a kind of technology which is being dealt with as a basic element in wealth creation.

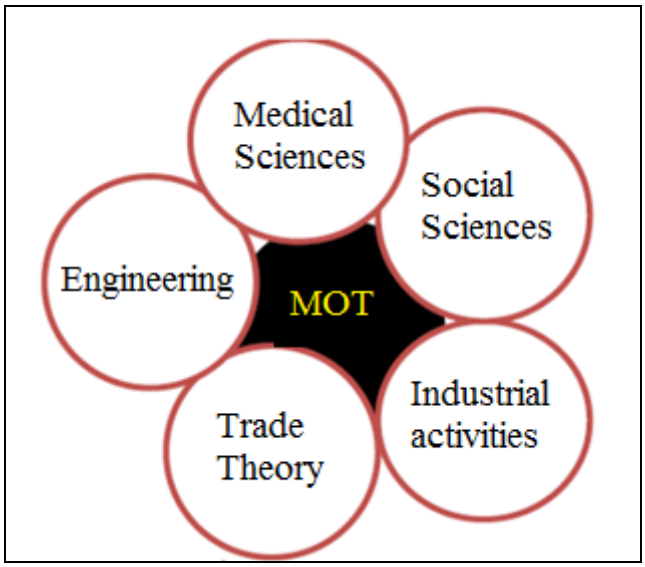

Figure 1: The interdisciplinary nature of technology management

Technology management consists of different activities of a company, as follows:

1. Research and Development (R&D);
2. Designing;
3. Production;
4. Marketing;
5. Financial;
6. Staff and human resources;
7. Information and information systems.

Technology management pertains both to the area of operational interests of an organization which deals with routine affairs of the staff and its domain, namely strategic interests that are focused on long-time topics and ultimate goals of the organization. The role of technology can be better understood by considering the product life cycle (Ghanbarnejad et al., 2012).

D. Indicators of technological innovation

Indicators of technological innovation can measure better conditions of technological innovation, though not fully capable of measuring innovation. Nevertheless, these indicators represent elements such as human resources, legal and economic structures. However, these indicators do not consist of all issues related to technological

innovation. In other words, it should not be assumed that an indicator can be created specifically for technological innovation, given that each indicator has its own certain strengths and weaknesses. Research on technological innovation situation demands not a specific indicator but a series of indicators related to different elements affecting technological innovation.

E. Quality

Whereas many researchers have described and identified quality dimensions (in the related literature), various definitions can be found for this concept in the literature. Thus, key management duties would be different in relation to winning competition based on quality and in various industry and markets as well. In the area of production and operations, managers should conform the final product specifications to customers' needs in order to gain quality-based competitive advantages. Quality-based competition requires appropriate investments as well as a comprehensive approach which would not take quality merely as a means to tackle problems or decrease duplication costs, but rather take it as an opportunity to improve customer satisfaction (satisfy customers' needs) (Davoodi et al., 2010).

3. Literature Review

Raja Irfan et al. (2010) stated in a study entitled *innovation management in China's strategy technology* highlighting the importance of industrialization and its role in understanding technological innovation throughout the stages of economic development. China set out to create a 15-year plan for the development of innovation-based economy. To perform this plan, strong and structured industrial foundations are required. Innovation clusters (clusters of innovation), areas with advanced technology and scientific parks, are the most important primary sources of technological innovation for economic growth and stability. Like other countries, China has tried to develop special strategic plans to boost its economy through science and technology and gaining access to inherent (essential) innovation. Recently, China is in the transition phase from a factor-based economy to a capital-based economy and therefore requires strong industrial foundations. Besides, to overcome such challenges, China needs to do the following actions: developing educational institutions whose aim is to provide active learning and promote innovation culture which satisfies the need for skilled workforce (labor), developing a strong financial system which helps SMEs (small and medium-sized enterprises) to establish business organization (enterprise), developing catalyst function through establishing the necessary foundations for R&D activities, special educational programs for owners and managers to equip them with modern knowledge and informant of how to compete in the world market, minimizing environmental degradation, implementing the strong intellectual property management system.

Bond (2004) suggested that technology and innovation are essential factors for state and regional competitiveness as well as key factors to get optimal economic performance.

Mairesse and Mohnen (2005) found that 1.0 increase in technological investment will increase the possibility of innovation by 0.20 in high-tech sections, this share or effect is higher and stronger for low-tech sections.

C. K. Barrett (1994) maintained that establishing formal regulation for rewards in a way to strengthen innovations course, the management information, deployment and strengthening of management levers are effective factors in promoting changes and organizational innovations (Mr. Fishani, 290, 1998); but generally, according to what is said about obstacles to innovation and changes taken place in organizations, it seems that organizational structure should be flexible, organizational climate should be free, members' needs should be met, and leadership should be democratic in order encourage innovation and change, decrease its obstacles, and facilitate the change process. Moreover, material and spiritual incentives, members' participation and cooperation in decision-making process, group cohesion (cohesiveness) and freedom of expression should be taken into consideration (Shirazi, 1994: 305).

Scarpetta and Tressel (2002) did not observe any evidence to prove the effect of technology transfer on the growth, when analyzing the industry-level of 18 countries (OECD) over the period of 1998-1984. Having reviewed firm-level data, Mairesse and Mohnen (2005) found that 1% increase in technological investment would lead to an increase in innovation possibility by 20% in high-tech sections, this share and effect is higher and stronger for low-tech sections (Khan, 2006).

Technology management is programmable through analyzing status curves, forecasting technological performance, and investing on R&D. The term *technology management maturity* refers to the degree of perfection and effectiveness of an organization in identifying, developing, managing, and controlling the technological capabilities of that organization (Miyazaki & Kijima 2000).

Prajogo, D. I., McDermott (2008), in their research entitled "*the effect of value chain activities on quality and innovation*", concluded that R&D management had a positive effect on product innovation. Furthermore, their research proved that factors like customer focus, process management, and supply and distribution channel management on product quality. In addition, supply and distribution channel management has a positive effect on product innovation.

Monroe and Noori (1988) maintained that efforts to adopt a technology depends on having a similar attitude to technology push and market pull in the first place, and then to management viewpoint towards technology, financial and technical resources of the company. Additionally, the integration of technology push and market pull takes place in order to stimulate innovation.

4. Research Model

This study aims to review the effect of technology management on organizational innovation. Variables in this model were adopted from the model presented by Sohal

and Prajogoin in 2006. In the present research, technology management is considered as the independent variable and innovation management as the dependent variable.

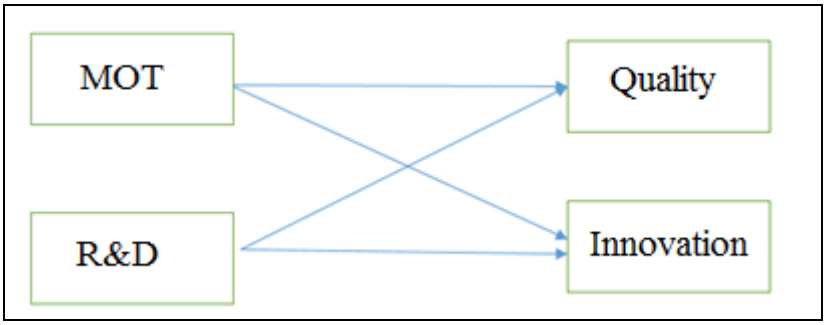

Figure 2: Theoretical Model

5. Hypotheses

H1: Technology management has a significant effect (impact) on quality.
H2: Technology management has a significant effect on innovation.
H3: R&D management has a significant effect on quality.
H4: R&D management has a significant effect on innovation.

6. Research Methodology

In this study, the philosophy of phenomenology (phenomenological theory) is used to get perspectives on Ahvaz Jundishapur University of Medical Sciences' strategies for technological communication and innovation as well as achieving the necessary results. The type of research conducted for writing this article is exploratory in nature; the deductive approach is used to collect, analyze, and interpret data. The data gathered from secondary sources, which consist of books, magazines, and research reports issued by the government as well as international firms are accessible through their websites.

The present research is considered exploratory-descriptive according to grouping researches in terms of gathering data procedures, i.e. research design which has dealt with the description of sample features and then generalization of these attributes to statistical population. Descriptive researches were classified into several categories; the correlation type was used in this research. In addition, the present research is considered exploratory-applied in terms of objective. Field method was used to collect data. Questionnaires were used as the tool for collecting data. The primary section of the questionnaire used in the research consists of observational questions. Having designed 29 questions in the questionnaire, it was attempted to collect and analyze the members' viewpoints of the statistical population towards question variables. The scale used here is the five-point Likert scale. Sampling process here is simple random sampling method. Statistical population of this research is Ahvaz Jundishapour University of Medical Sciences with more than 20,000 personnel within Khuzestan province. Since the structural equation modeling methodology is largely

similar to some aspects of multivariate regression, sample size determination principles in multivariate regression analysis can be used to determine sample size in the structural equation modeling. In multivariate regression analysis, the ratio of sample size (observations) to independent variables should not be lower than 5. Otherwise, results from regression equation will not be so generalizable. In general, sample size in the structural equation modeling methodology can be determined from 5 to 15 observations for each measured variable (Ghaffari Ashtiani et al., 2009).

That is, Q15 $q \leq n \leq 5$, where:

Q = number of observed variables (questionnaire statements);

N = sample size.

Since the present research questionnaire contains 24 questions, the questionnaires were distributed among 300 managers and experts in the statistical population, among which 298 were acceptable and then were analyzed.

7. Reliability Testing of the Variables

First, reliability of the questionnaire will be evaluated using Cronbach's alpha; therefore, the value of Cronbach's alpha for 24 elements of interest will be calculated. The table of results will be as follows:

Reliability Statistics	
Cronbach's Alpha	**N of Items**
.935	24

According to the table above, the value of Cronbach's alpha is 0.935 for the 24 elements that corroborates the extended value and reliability of the questionnaire. (if the statistical value of Cronbach's alpha is bigger than 0.6, the null hypothesis indicating the reliability of variables. In this study, based on the table above, it is concluded that the related hypothesis holds and the variables are reliable). (If the current study takes place in a different time and place, similar results will be obtained).

Finally, the value of Cronbach's alpha was reviewed for the validity of every individual elements of the questionnaire; they are shown in Table 1.

Table 1: Cronbach's alpha value obtained for each of the dimensions of the questionnaire

No.	**N of questions**	**Dimensions**	**Cronbach's alpha value**
1	8	MOT	0.747
2	6	R&D management	0.849
3	5	Quality	0.854
4	5	Innovation	0.861

8. Data Analysis

8.1 Descriptive Statistics: Information about Statistical Population in Terms of Gender, Age and Education

Information about population description indicators for the sample individuals is listed in several tables. This information shows gender, age, educational level, and work experience classification of the sample individuals.

Table 2 shows the descriptive information about gender, age, work experience, and educational level classification. From 298 of the total (whole) sample, 208 are male and 90 are female.

Table 2: Descriptive statistics

Features description		**N**	**Percentage**
Gender	Male (men)	208	69
	Female (women)	90	31
Age	<30	88	29.5
	30<n<45	85	28.5
	45<n<60	92	30.9
	>60	33	11.1
Work experience	<1 y	62	20.8
	1-2 y	41	13.8
	2-3 y	64	21.5
	>3 y	131	44
Level of education	Associate	44	77/16
	BA	125	42
	MA	84	18/28
	PhD	45	10/15

The table above shows descriptive information about age group classification of sample individuals, the age range of them is <30 (less than 30) to >60 (more than 60) years. Therefore, the minimum age of the sample size is less than the 66+ and the maximum age of the sample size is 45 - 60 years.

8.2. Inferential Statistics of the Research Variables

A. Hypothesis Testing

"*Hypothesis testing is a process during which the existence of a relationship or an assumed difference between variables claimed in the research hypotheses will be investigated*" (Zahuri, 2008). "*In this research, structural equation modeling method is used to test the hypotheses (assumptions). Structural equation modeling is a totally general and robust multivariate analysis technique from multivariate regression family which allows researchers to test a set of regression equation simultaneously*" (Ahmadi et al., 2008)

In structural equation method, two sets of coefficients are estimated among latent variables:

- Gamma (γ): represents the correlation coefficient between an "exogenous latent variable" and an "endogenous latent variable".
- Beta (β): represents the correlation coefficient between an endogenous latent variable and another endogenous latent variable.

In addition, *t*-statistics shows a significant relationship among latent variables which is computed by structural equation analysis" (Ghaffari Ashtiani et al., 2009: 10).

Results of hypothesis testing (hypothesis confirm/disconfirm) based on structural equation model are outlined in the following table. Results from structural equation modeling (SEM) suggest that all hypotheses of this research are confirmed at 95% confidence level. Because the obtained *t*-statistics is bigger than 96/1 for all hypotheses; as a result, the null hypothesis indicating a lack of relationship between two latent variables is disconfirmed (rejected) and the alternative hypothesis indicating a significant relationship between the two latent variables is confirmed.

H1: Technology management has a significant effect on quality.

In this section, the Pearson correlation coefficient is used to investigate the relationship between technology management and quality. The correlation coefficient of technology on product quality is calculated in the table above. According to the correlation coefficient measure, it can be said that there is a significant relationship between technology management and quality.

Dependent variable	Statistical indicator Independent variable	Correlation coefficient	Coefficient of determination	Significance level	Fault level	Test results
Quality	MOT	0/38	0/65	0/000	0/05	H0 rejected

H2: Technology management has a significant effect on innovation.

In the above table, the correlation coefficient of innovation strategies and technology management is calculated. Given the correlation coefficient (0.43), it can be said there is a significant relationship between innovation strategies and technology management.

Dependent variable	Statistical indicator Independent variable	Correlation coefficient	Coefficient of determination	Significance level	Fault level	Test results
Quality	MOT	0/43	0/54	0/000	0/05	H0 rejected

H3: R&D management has a significant effect on quality.

Given the correlation coefficient (0/23), it can be said that there is a significant relationship between quality strategies and R&D management; therefore, H3 is confirmed.

Dependent variable	Statistical indicator Independent variable	Correlation coefficient	Coefficient of determination	Significance level	Fault level	Test results
Quality	R&D management	0/23	0/97	0/045	0/05	H0 rejected

H4: R&D management has a significant effect on innovation.
Given the correlation coefficient (0/85), it can be said there is a significant relationship between R&D management strategies and innovation; therefore, H4 is also confirmed according to this statistic. Next, normality of the variables will be discussed.

Dependent variable	Statistical indicator Independent variable	Correlation coefficient	Coefficient of determination	Significance level	Fault level	Test results
Quality	R&D management	0/85	0/65	0/000	0/05	H0 rejected

According to Kolmogorov - Smirnov test results table, results and decision criteria (p-value), showing that all values of Kolmogorov - Smirnov statistic level are higher than 0.05 is indicative of the null hypothesis confirmation. Thus, there is no reason to reject the hypothesis "the intended sample is obtained from normal distribution". In other words, the distribution of this sample is normal.

Table 3: Kolmogorov–Smirnov test result table for research variables

Variable / Statistical indicators	Kolmogorov–Smirnov *z*-statistic	Significance level	Test result
MOT	65/0	0.00	Normal (normality of the test)
R&D management	0/86	0.00	Normal
Quality	0/98	0.00	Normal
Innovation	0/45	0.00	Normal

9. Concluding Remarks and Recommendations

The results of this study show a significant relationship between technology and innovation in the University of Medical Sciences.

Considering H1, since the significance level is (0/00) which is smaller than the fault level (0.00) and Pearson correlation coefficient is 0/38 according to Pearson test results, there is a direct and significant relationship between technology management and quality in the organization.

Results obtained from H1 testing correspond to theories and findings of researchers like Nonaka I. and H. Takeuchi (1995), Swan, J. S. Newell, Scarbrough (1999). Moreover, the results of this hypothesis is consistent with Prajogo et al. study results (2008). In their research "Impact of value chain activities on quality and

innovation", Prajogo et al. have concluded that R&D management has a positive impact on product innovation. In addition, their research showed that factors like customer focus, process management, supply and distribution channel management have an impact on product quality. Furthermore, supply and distribution channel management has a positive impact on product innovation. According to the results obtained, organizations must orchestrate (coordinate) technology management, R&D management and other resources in order to improve their capabilities in various fields, including in the field of innovation.

Considering H2, since the significance level is (0/00) which is smaller than the fault level (α = 0/ 01) and Pearson correlation coefficient is 0/43 according to Pearson test results, there is a direct and significant relationship between technology management and innovation.

Results obtained from H2 testing correspond to theories and findings of researchers like Alavi at al. (2001), Gloet at al. (2004).

According to the results obtained, organizations must orchestrate technology management, R&D management and other resources in order to improve their capabilities in various fields, including in the field of innovation. Organizations must meet (satisfy, respond to) market demands by expanding their R&D activities; moreover, they must pay special attention to technology management, R&D in order to be able to produce new and innovative products and improve product quality (the quality of their products). Because nowadays, organizations that are managed and guided in a way that innovation and product quality improvement become part of the daily activities of the organization as well as an important part of its culture are more successful in the area of competition. Meanwhile, technology management and R&D management both are key prerequisites in the fields of innovation performance and quality performance thereby contributing to gaining competitive advantage for organizations.

According to the special conditions and requirements of incubators and science parks in universities and their functional differences with other university sections and the crucial position of these centers in expanding tripartite interaction and cooperation of government, university, industry as well as supporting inventors, young innovators, and the producers of original ideas and novel thoughts, a number of practical recommendations will be presented in the final section to the managers of these centers in order be able to manage the incubators and science parks more successfully:

National success in innovation and generating new ideas (beliefs) not only necessitates support and facilitating the establishment of knowledge-based and innovative companies, but also requires support in order to assure growth and consolidation of financial position as well as offering management and economic consultations (consulting) to these companies; these services and supports in incubators and science parks are offered to companies during early years of their activity in which the risk of failure is high; therefore, paying an increased attention to the development of knowledge-based companies based in these centers by expanding academic

interactions, institutionalization of knowledge and experience sharing culture, and strengthening attention to innovation among them will lead to the stable and comprehensive development of the country.

In Iran, technology promotion has a direct impact on production expansion (growth). If necessary training takes place on initiatives (innovation) in the field of technology, this factor will become more apparent. In fact, technology management will increase the impact of technology on innovation and therefore on economic growth.

9.2 Recommendations and Executive (implementation) Strategies

- Planning towards on-the-job (in-service) training in order to increase personnel skills and upgrade the technical capabilities of the staff in the University of Medical Sciences.
- The university must pay attention to the expansion of research and development (R&D) units.
- Formulating and revising transparent protective (supportive) regulations of the University of Medical Sciences in order to get entrepreneurs and innovators benefit from required facilities (to endow the required facilities to entrepreneurs and innovators).

9.3 Suggestions for Future Research

- Evaluate technological innovation status in large organizations to compare its results with this study.
- Use operations research techniques (including Data Envelopment Analysis (DEA)) for rating companies in terms of technological innovation level.
- By reviewing new scientific studies and literature, conduct a more comprehensive study in terms of the elements of internal and external environments and individual features and investigate other effective factors on technological innovation.
- By performing a comprehensive study, design a comprehensive model of technological innovation in all organizations.

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Appendix:

In the name of Allah

The questionnaire available to you pertains to an academic research. The purpose of this research is to explore the impact of technology on innovation in Ahvaz Jundishapur University of Medical Sciences and Health Services. Certainly, your honest answers as hardworking managers and staff will lead the present research to its intended goals. The collected information will be treated as confidential and will only be used for research purposes. Quick return of the completed questionnaire would be highly appreciated.

Research fellow: Adibeh Jorfi
PhD Student of Business and Marketing Management

Part I: Individual and vocational features
1. sex: man ☐ ☐ woman
2. age ... year
3. level of education and field of study:
4. work experience.

Objective: Exploring the relationship between innovation and technology[ii]

N	Question	Completely Agree	Agree	Neither agree nor disagree	Disagree	Completely Disagree
1	In the past five years, investment in staff training has increased.					
2	The emphasis is on vocational training for employees.					
3	The organization encourages employees to learn through systematic units and by performing.					
4	The organization has increased financial rewards for employees.					
5	The organization has provided the opportunity for employees to gain economic benefits.					
6	The organization ensures family members of employees about their future income.					
7	Employees can earn social acceptance, respect, and dignity.					
8	Employees have the opportunity to accept the challenge of innovation.					

[ii]. Yuan Li, Yongbin Zhao and Yi Liu, "The relationship between HRM, technology and performance in China", International Journal of Manpower, Vol. 27, No. 7, 2006, pp. 679-697.

9	Employees have opportunities for personal development.					
10	During the process of innovation, the staff is not to blame for errors.					
11	There is a high degree of trust between leaders and employees.					
12	The organization builds brotherly relationships among employees.					
13	There are a lot of conditions for the return of investment in innovation.					
14	There is a lot of cash during the process of innovation.					
15	During the process of innovation, there are a lot of net assets.					
16	New ideas constantly arise in the manufacturing process.					
17	New products that are tested will most likely succeed.					
18	Shorter periods of time are spent on research and development of new products.					
19	In university, new and improved services and products introduced to the market have promoted the position of organization in industry.					
20	In our bank, new and evolved processes have promoted the position of organization in industry.					
21	Novelty and originality of our services and products is at the best possible level.					
22	Our new services new products expansion speed is in the best possible manner.					
23	We use the latest innovation technology in our services and products.					
24	In our organization, knowledge is acquired through person-to-person monitoring.					