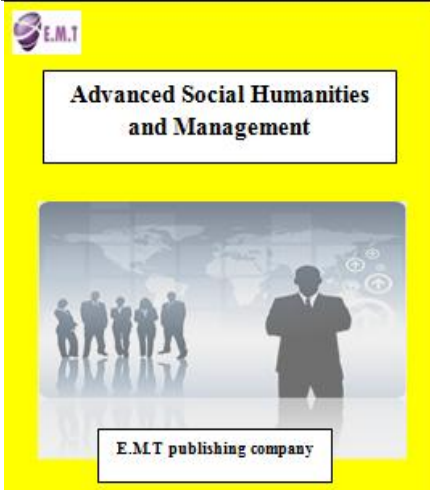


## Knowledge- based businesses and commercializing knowledge and technology.

### (A case study: Shahrekord sports industry)

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#### Abstract:

The purpose of this research was to investigate the effect of knowledge- based businesses on commercializing knowledge and technology in Shahrekord sports industry. In this research, 214 individuals were chosen and sample volume in Morgan's sampling method. In order to gather the information, individual information and also researcher – made questionnaires were used. Pearson's correlation coefficient showed that there is a positive and significant relationship between knowledge – based businesses components as well as knowledge and technology commercialization ( $P < 0.05$ ). Results obtained out of t- student test as well as one- way variance test analysis showed that there is no significant difference in realizing knowledge- based businesses considering the ethnographic variables (gender, service background, and employment status). In addition, there was no significant difference between knowledge and technology commercialization in terms of the ethnographic variables (gender, service background, employment status, and educational levels ( $P < 0.05$ )). Multivariable regression analysis showed that knowledge- based businesses are

capable of predicting the growth in knowledge and technology commercialization.

#### Key words:

knowledge and technology commercialization, knowledge- based businesses, knowledge- based economy Introduction

#### Introduction

Entering the era of wisdom as well as development and change trend of organizational aspects has caused so many changes. Advancement in informational and communicational technologies as well as becoming the knowledge important as a determinative factor in competitiveness and organizational utility have made special requirements for the organization. Traditional perceptions emphasize on the factors that face with a fundamental challenge in the organization confrontation with new environmental complexities and requirements. In such circumstances, leading organizations make attempt to do widespread. And fundamental changes in their structures and procedures in order to succeed and survive, and also try to be converted in to knowledge- based organizations.

In a knowledge- based economy, economic growth and entrepreneurship are fulfilled proportionate to the innovation capacity, that means the achievements resulting from the researches plans should continuously be changed through making investments in to product, procedure, and or novel systems.

Having access to investment capacities for entrepreneurs and researchers is considered as an important factor in making innovation and also using the technological power in the national economy. Development in modern economy demands affixed trend in investment. Since the result obtained from innovative and creative activities is somewhat uncertain, credit giving institutes and banks often show little interest in investing in the innovative activities conducted by newly – formed firms. Knowledge- based economy change all of the settings in business, economic structure, utility, management type, etc, and has also such features as freeing business and globalizing administration, information and communication technology, managing knowledge, changing the economy structurally, making changes in labor force and place, increasing the consumers' choices, making government small, as well as promoting electronic business (e- commerce). Knowledge- based economy is a kind of economy being established directly on the basis of production, distribution, and consumption of

knowledge and information. The term of knowledge- based economy and information economy entered the America's economical literature in 1960s, but the revolutions made in 90s replenished and revived this term. While the organization for Economic co- operation and Development (OECD) made many attempts to indexation regarding the knowledge- based economy, it did not reach to a comprehensive conclusion until 1995; in the very year, a codified and systematic framework about the term of knowledge- based economy was published in OECD in ministerial document format of Canada's science and technology diplomacization committee. This document has been the determiner of new models positions in terms as growth and innovations performances in the economy, and also the prefect completion in such a way being able to determine both the production coefficient as well as the publication coefficient and knowledge enjoyment has been refereed to. Therefore, delineating the theoretical position of knowledge, the manner of interaction and averts occurred in the outer world like the accelerating trend of markets convergence, globalization, more competition, and most importantly the gazing spurt in information and communication technology has prepared the setting for compiling an executive pattern out of this development paradigm. From this decade on, very widespread attempts were conducted in developing, integrating, and reinforcing the concept of knowledge- based economy, and also the boundaries existing between the knowledge- based economy and production economy were made clear pivots (Smith, K. 2002). Nowadays, developed countries' economies turn around small and medium establishments, in such a way that these small and medium establishments form a wide volume and range of active establishment's activities in developing and even developed countries as Japan and Europe. This may be one of the reasons for rapid progress in technology during the last decade. These transformations are kinds of pattern changing and getting away from the traditional types based on physical products and mere scale. Maybe, change and transformation is the only fixed thing being able to be found these days. In a knowledge based economy, economic growth and making employment are fulfilled proportionate to innovation capacity. In this paper, first a conceptual framework including the definition and kinds of know ledge, knowledge – based economy, basic procedures in knowledge- based economy, effective factors in knowledge- based economy, knowledge networks, and indexed of measuring knowledge- based economy are presented. Then, some countries' plans and experiences in terms of knowledge- based economy are examined, and so is knowledge and technology commercialization in the following.

### **Conceptual framework**

Knowledge consists of a flow of experiences, values, existing information, and systematic expert approaches that provide a framework for evaluating and using novel experiences and information. Knowledge is made inside the individual's mind and then applied Not only. In knowledge documents and savings, but also working trends, organizational procedures, actions, and norms, is it the knowledge in the organization being manifested. Another definition expresses that knowledge is an accumulated saving of information and skills that is obtained out of the information consumed by its receiver (Zac, 1999). Asia- pacific Economic cooperation considers four steps for knowledge flow: 1) Having access to knowledge, 2) making knowledge, 3) spreading knowledge, and 4) consuming knowledge. Procedures of producing knowledge, distributing, transferring, and also applying it are four basic procedures in knowledge based economies. The volume and manner of the relationship among these procedures together is a distinguishment of modern from traditional economies. In traditional economies, the volume of these procedures is low and also their relationship is linear, meaning that first knowledge is produced, then distributed and transferred, and finally it is applied. There is no direct relationship between using the knowledge and producing it, but a one- way indirect relationship has been shaped thanks to knowledge transference, that does not support any dynamism.

In a knowledge- based economy, the first three procedures have formed and expanded knowledge in a mutual relationship to each other. In the fourth procedure, industries consumption and modern parts in economy are put forward. In fact, the dynamism of fourth procedure and its mutual relationship with the first three procedures of knowledge guarantees the emergence and development of knowledge- based economy. Through two channels from the procedure of knowledge production to the procedures of its distribution and transformation, knowledge flows. The knowledge flowed in to the transformation procedure, having been enriched to the procedure of suing it, flows. The knowledge flowed in to the distribution procedure during different educational levels, is published among the people in the society. Knowledge- based economy holds reflexive flows from knowledge, meaning that knowledge also flows from the other procedures to the one producing it. In fact, one of the basic channels of knowledge flow is the one from the application procedure to the production one. The knowledge

flowing in this channel is the one relating to its manner and relationship with the issues of application procedure. This flow is the dynamism of economic system as well as differentiator of traditional economies from knowledge-based ones (Hogan, 2006).

First, in order to clarify more the concept of knowledge-based economy; its difference with industrial and agricultural economies is stated. Land, labor force, and natural resources were key pivots in agricultural economy growth, and also in industrial economy the foundations were made on investment and machineries where management played a key role in their application (Danaeifard, 1383).

However, in knowledge-based economy, science and technology, innovation, and entrepreneurship make the main foundations of economy that are all rooted in knowledge accumulation. Accordingly, knowledge based economy is a kind of economy in which producing and applying knowledge plays a key role in economic growth and wealth making. Traditional factors of production namely labor force, investment, raw material, and entrepreneurship are still left, but knowledge has been considered as the main key of growth, creating new values, and also making a basis for maintaining the competitive situation. Therefore, this kind of economy refers to two remarkable features: 1) knowledge, compared with the past, is more important both quantitatively and qualitatively (Leydessorff, L. 2002).

Since the knowledge-based economy shows a conceptual view of some kind of economy, sometimes it can be defined better by recognizing its features. Among the noticeable features of knowledge-based economy, the following ones can be named: education and making investment in human capital, government's supportive policies, information and communication technology, and also existing a suitable social, political, economic, and legal environment for making investment. Production and business are main prerequisites for knowledge-based economy. Knowledge-based economy flourishes just when social, political, economic, and legal frameworks of a country are arranged for establishing the above mentioned features. In a knowledge-based economy, enjoying an open environment for business and investment is considered as a motivation for innovating and also fulfilling the technologies that consist of economization got from the scale. Governmental policies play also a pivotal role in such economies (Me'mar Nejad, 1384).

Defining the technology commercialization

Cambridge Advanced Learner's Dictionary has defined the terms "commercialization" and "technology" as "organizing something for making profit" as well as "practical study and knowledge in using the scientific discoveries, especially in the field of industry", respectively. However, technology commercialization is a procedure in which a technology is presented in the market in the format of a product, service, or a new procedure, and also this procedure consists of all the activities like from idea creation to designing its initial experimental sample, producing, marketing, and selling the final product. In examining different scientific books and sources, using the term: "technology commercialization" is more common in the cases where is the producer party (the player who expands and commercializes technology). For example, in such sources as Stone and et al. (2005), Benjamin (2006), Larg and et al. (2000) where the technology producers have been governmental research in institutes, laboratories, or organizations, the term "technology commercialization" has been applied.

On the other hand, commercialization pattern or commercialization procedure has usually been referred to in the literature of commercialization. Commercialization pattern (framework) describes simultaneous decisions and activities that along with the procedure of technology development optimize all the required technical and commercial decisions for introducing a technology to the market to the market successfully. According to Markham and King on (2004), a technology is a basis with the power of being used in different applications and providing the access to miscellaneous markets; they are called under the title of relationship among technology, product, and market. In the present world where everything has really been globalized, companies have to choose but develop their new products in order to increase their competitiveness. Perhaps developing the new product would be one of the important activities to each company consist of one of the most dangerous decision makings in each company, and also take many years and millions of dollars to develop a product whose failure probability be often more than access to success (Bandarian, 2007).

## Review of literature

In research called "role and position of economy", Sadeghi and Azarbayejani (1385) concluded that knowledge-based economy is effective on labor force demand as well as knowledge and technology indexes in Iran. They believe that the labor force with higher level of knowledge will be able to make dynamism and technological

evolution in production cycle and also cause the capacity of knowledge production and export as well as competition power in international markets to be increases.

Using the data taken from the universal bank, Emadzadeh and shahnazi (1387) compared the wisdom level of Iran's economy pivot with the selective countries' economies. They reached to the conclusion that Iran's challenges regarding the knowledge- based economy are of two kinds: first, the low level of absolute size of some indexes, and second the lack of harmony and balance among these indexes.

In a research titles "institutional entrepreneurship development along with management of know ledge- based thought capital", Ibrahimian et al. (1391) dealt with explaining entrepreneurship, its importance and necessity, as well as expressing thought capital and know ledge management. Accordingly, it is concluded that entrepreneurship plays a major role in making new job opportunities, bringing wealth, decreasing poverty, and making income or individuals and governments. Nowadays, the role of entrepreneurship in countries' economic developments is so crucial that it is reminded as economic development motor and all countries make attempt to develop entrepreneurship within them. Changing human's capitals in to the organized thought properties, knowledge management makes values for the organization. In a research titled "role and position of knowledge – based economy in forming special areas of science and technology", Akbari et al. (1391) concluded that the new economy is a consequence of globalization and knowledge revolution that has transformed all the areas of business, economic structure, utilization, type of management, etc. knowledge- based economy is directly dependent on education, production, distribution, and application of knowledge in all economical activities. In this kind of economy, knowledge is the source and strategic base of inputs, procedures, systems, and outputs, and also causes their efficiencies to be doubled. Therefore, determining the degree of national economic success as well as the establishments in knowledge – based economy is related to effectiveness in obtaining and applying knowledge. In present era, technology is the most important factor in the system of wealth production. Emergence of new technologies as well as globalization of research and development has transformed nature and realm of industrial competitiveness. At present, technological activities are considered a key factor in making international relative advantage. In a research titled "role of education and relationship between social investment and entrepreneurship", Bezaz brother's et al. (1391) concluded that education is the foundation and basis of human growth and development, and also human development in turn guarantees information technology development. One of the important purposes of the country's higher education system is to educate the specialized and needed human force for the society. Although universities and country's higher educational institutions have made some attempts in this regard, lack of matching university courses with society needs has unfortunately caused the graduated students not to have required expertise and efficiency. Considering the conducted investigations and since the degree of risk possibility in private and industrial sectors is very high, it is recommended that universities as public areas support people to provide them with more opportunity for growth through making a competitive environment.

In addition, establishing research- investigation institutions and centers dependent on the universities can be very effective. In other words, it will help students to make their potentials practical. The current study, adopting a scientific- analytic approach, reviews the role of universities and higher educational institutions in developing the financial affordance system and also introduces technological- scientific parks born through the interaction between universities and industry as objective and real sample.

### **Research methodology**

This research is descriptive- co relational that has been conducted using the questionnaire in a field – based manner. Research statistical population consisted of all employees of shahrekord sports private sector. Based on the obtained information, 485 estimations are made out of which 214 questionnaires were selected for final analysis after distributing the questionnaire among the experts and omitting the incomplete cases. In order to gather the required information, three questionnaires were used: personal specifications questionnaire including personal specifications that was provided based on the research need to the information related to the testers' personal features.

The provided questionnaire consists of 40 questions and items are valued based on Locket five value scale. In addition, the degree of questionnaire reliability calculated by Alpha Runback method was obtained 0.64 that is indicative of the acceptable validity of the measurement tool.

Statistical method: Having gathered the information and extracted it to be analyzed, descriptive statistics (mean, median, and standard deviation) as well as in fantail statistics in clucking Pearson correlation coefficient test, t-



student test, one –way variance analysis test, and multi- variable regression analysis were used by using SPSS software, 16<sup>th</sup> version.

Research findings and results: Describing population features of the research sample

Table: Respondents’ ages distribution

Age distribution					
25 to 32 years old		33 to 40 years old		Over 40 years old	
Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
52	0.24	138	0.64	24	0.12

Table 2: Respondents’ service backgrounds

Respondents’ service backgrounds					
6 to 12 years		13 to 19 years		Over 19 years	
Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
75	0.35	107	0.50	30	0.15

As it can be seen in tables No. 1, most respondents are in age group of 33 to 40 years old (64 percent) and with service backgrounds of 13 to 19 years (50 percent). In examining research hypotheses, professors’ views were examined in relation to economy.

Table 3: t- test in terms of comparison of value average of the effects of the cases related to main components of knowledge- based economy.

Main components of knowledge – based economy	Average level	Mean	SD	T	Level of significance
1) Access to knowledge	3	3.06	0.95	0.45	* 0.005
2) knowledge making	3	3.46	1.22	2.60	* 0.01
3) knowledge distribution	3	3.21	1	1.44	* 0.01
4) knowledge consumption	3	3.73	0.79	6.38	* 0.001
Sum of factors	3	3.44	0.84	3.2	* 0.001

\* It is significant at the significance level of  $P < 0.05$

As it can be seen in table 3, it can be inferred from t- test statistical results that since the mean (3.44) is higher than the average level (3) at significance level of  $P < 0.05$ , all of the factors are effective in knowledge- based economy.

Table 4: correlation test of main components of knowledge – based economy with knowledge and technology commercialization

Main components of knowledge – based economy	Knowledge and technology commercialization	
	Correlation coefficient	Significance level
1) Access to knowledge	0.685	* 0.001
2) knowledge making	0.641	* 0.001
3) knowledge distribution	0.411	* 0.00
4) knowledge consumption	0.420	* 0.01
Sum of factors	0.562	* 0.001

\* It is significant at significance level of  $P < 0.05$

As it can be seen from table 3, it can be inferred out of the correlation test statistical results that there is the most and least correlation between access to knowledge and knowledge and technology commercialization in respondents’ views as well as between knowledge consumption and knowledge and technology commercialization in respondents’ views as 0.685 and 0.420, respectively.

Table 5: Average status of knowledge- based economy components with growth in knowledge technology commercialization in terms of some of population features.

Variable	Knowledge- based economy	Comparison	Knowledge and technology	Comparison
	M (sd)	P	M (sd)	P

Gender	Female	3.77 (0.81)	0.753	3.81 (0.61)	0.531
	Male	3.95 (0.65)		3.42 (0.73)	
Service background	6-12	3.28 (0.57)	0.628	3.32 (0.37)	0.475
	12-19	3.58 (0.65)		3.44 (0.45)	
	20 years and higher	3.47 (0.61)		3.3 (0.88)	
Employment status	Formal	3.27 (0.54)	0.654	3.15 (0.70)	0.823
	Contractual	3.65 (0.67)		3.36 (0.491)	
	conditional	3.07 (0.81)		3.95 (0.73)	
* P<0.05					

Table 6: prediction equation of knowledge – based economy based on knowledge and technology commercialization

Step by step regression	B	S.E	Beta	T	P
Width from origin	1.547	0.223		6.233	0.000
Iran's economy	0.244	0.079	0.310	3.210	0.000

In current research, the average of giving answers to components in the province Refah bank employees' views for predicting knowledge- based economy based on knowledge and technology commercialization is higher than the average of measurement spectrum, i.e. 3.

Results showed that there is no significant difference between realizing knowledge- based economy in the province Refah bank employee' views and some of the population variables (gender, service background, and employment status). According to the information obtained out of the research, there is a positive and significant relationship between knowledge – based economy and knowledge and technology commercialization. In other words, economical growth components of Iran's economy increase significantly by applying the prediction of knowledge – based economy based on knowledge and technology commercialization. The possible reason of this agreement maybe this that the mentioned variables affect really each other that more researches are needed in this regard. So, the mentioned hypothesis confirmation is justifiable. It is inferred in total conclusion that paying attention to aspects of knowledge – based economy can cause economical growth of Iran's economy to be increased. Besides, multi- variable regression in step by step method showed that knowledge- based economy can predict growth increase of knowledge and technology commercialization. Accordingly, economists are recommended to pay a special attention to all of the components of knowledge- based economy.

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