



## Reviews of the structural and behavioral barriers in entrepreneurship based on nanotechnology

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### ABSTRACT

*This research examines the factors affecting the entrepreneurs in the field of nanotechnology. Nanotechnology is the manipulation and control of materials in one to one hundred nanometers. Where the unique phenomenon of the new applications possible. Therefore, the development of entrepreneurship in a role worthy of nanotechnology for active participation in global markets, competitors, sustainable job creation, poverty reduction and the development of Justice, solve the problems of society, Government and the public sector. In this research the barriers to entrepreneurship in the nanotechnology from three dimensions of structural factors, environmental and behavioral survey. to collect the data for analysis, a standard questionnaire consists of two parts. Based on the analysis of the obtained data analysis research hypothesis has been approved and all research variables with no direct relationship in nanotechnology research.*

**Key words:** nanotechnology-entrepreneurship-development of entrepreneurship – entrepreneurship barriers – entrepreneurial tales

### INTRODUCTION

With this in mind the idea that nanotechnology's potential is intriguing future for the economy as an important area of technology Nano in scientific development and is known as the industrial revolution or the revolution of the third name technology (7). Economic effects of Nano in different countries mainly through the participation of companies update. Small and medium sized companies active in nanotechnology is an important bridge between the limits of science and the scope of the market and, due to the established character of the work of his creativity to be able to operate in environments with uncertainty. (5) Nanotechnology can cause of the fragile economy and trade markets are immature patient and ultimately cause transformation industries. most investors have thought that Bryan best connoisseurs of investment in the economic arena in utero and early stages of its growth. And according to the proper attitude to know early investment. But it seems that after 15 to 20 years the discovery efforts in nanotechnology and global macro investment in the field, we use the proper time interval (8). Since the economic growth and development of countries creativity indebted to their work activities, entrepreneurs and hence in the distant future is a prerequisite for economic progress and the power to compete in global markets is technology entrepreneurship development in nanotechnology. Evidence and look at the several obstacles in Iran proves that the work activities of the creativity there is a Nano domain hence sought to respond to the question of criminal investigation is the development of the work Creation in the field of nanotechnology what is faced with obstacles and barriers which impact more on nanotechnology and how can these obstacles be overcome.

### Literature research

The development of nanotechnology in entrepreneurship is creating and enhancing entrepreneurship and work tends to be creative and proceeded to set up the work in the field of nanotechnology with having the unique aspects and modern as a new concept and a new subject in the field of science and technology policy consider. Countries like as United States and States of Europe as the main investor countries and regions in research and technology development nano emphasizes (6)

1. Nanotechnology is related to control and manipulate or targeted review of materials in very small scale.
2. Definitions have stressed the particular measure that killing certain effects in nano-scale expression.
3. Nanotechnologies and new industrial technologies or new technological change has possible.

According to the predictions of early nanotechnology products market, a very rapid growth to predict nanotechnology products markets. In the most optimistic market forecast a total market value of all final products that includes an element of nanotechnology are related.

In 2004, the Research luxury Institute, based on a research approach is optimistic until 2014 amount to nanotechnology-related jobs, with 10 billion jobs forecast.

The United States, Japan and Europe investment in nanotechnology research and development have done; however, China and South Korea played a key role in this area as Indonesia players emerge. Based on new information, South Korea is the world's main role as a creator is raised. The data (V-P-N) for the years 2005-2010 Pioneer of the United States, Japan and Germany and France and England in the nanotechnology approval. in the post office Europe (A-P-O) 9848 patent of the nanotechnology January first 2008 were identified that 48 percent share of patents are related to the United States and 14 percent to Japan and 10 percent to Germany of total in the next ranking.(6)

Progress in nanotechnology can be based on the anticipated time for the presentation of products on the market cad divide into the first generation, second and third one.

**1-First generation:** accessible technology in the short term with the field of nanotechnology is that we have very close or in the future (about five years as a product can be put on the main characteristic of this group is that they are almost completed in the research sector and the need to develop) limited and supplementary product to enter the market.

**2- Second generation:** accessible technology in the medium term:

Not enough technology that still have to mature and more laboratory and research phase and is expected to be a period of time, 5 to 12 years are available. More research processes in the world now focus on this category of products achieve the medium term.

**3- Third generation of accessible technology:** in the long run:

Serious assaults on it long-term (12 to 20 years) more general and more put the underlying can be in this category. Generally, States emphasizes in their long-term plans and desired fields and axes.(1)

**Some of the business opportunities in nanotechnology:**

- The production of industrial products and materials (lighter materials, programmable, solidified and smart, cost reduction, increasing the life of the new tools based on new principles and architecture, molecular manufacturing, etc.)
- Allied health, pharmacy and health care (new imaging technologies for early detection of illnesses like cancer disease and treatment methods work more and more new drugs come cheap-do I get vision and hearing assistance, etc.)
- Electronics and computers (nano-transistors faster with computers and chip-new generation of Nano devices and processor trackers.)
- Natural resources and the environment (water desalting and tabloid – reducing gasoline consumption by changing tires in the cars eco-friendly and ...)
- Energy (improves and converts solar energy into electricity to hydrogen energy thermal conversion improvement special energy-hydrogen storage, etc.)
- Tools for military and national security (new weapons-more information on mastering the tools of protection against microbial and chemical weapons (3).

**The main aspects of nanotechnology can be named the following:**

1-nano materials: chemicals are engineered as building blocks as nanotechnology-based products. Metal organic nano materials can be plastic-like and inorganic soils – such as ceramic or composite materials to form.

2-nano-manipulation: the process of creating complex structures is that the Nano (bottom-up) means an atom to Atom or molecule to molecule.

3-the nano structure: Nano engineering process and includes structures with Nano-meter scale to help the process of Lito soft Lito hard x-ray or x-ray that the way from the top to the bottom of the well said.

4-Self layout: this process involves organizing themselves to atoms, molecules or ions in complex structures or types of objects that the bottom-up approach.

5-nanoelectronics: Electronics packaging tools that are the exact circuit they contain electronic components at nano-scale (2)

**The most likely areas of nanotechnology impacts they will appear as follows:**

**Productivity:** nanotechnology into the mainstream of the industry and a lot of companies make to the future of nanotechnology with a significant allocation of resources for its development.

**Sustainable development:** almost all of the applications of nanotechnology in the environment as well as more stable and cleaner processes for promising industries contribute to sustainable development.

**Quality of life:** Nanotechnology in agriculture either exceeds the health and energy and the rest of the basin related to human welfare indicator Nano capabilities and increase quality of life of men.

**Convergence technologies:** more Nano-effects through convergence with other technologies, such as biotechnology and information technology will occur. Converged technologies power the ability to create enormous economic growth in Iran, such as the creation of sources of employment and improvement of the national internal security defense in various fields.(3)

**Research methodology**

On the research of three-branches model that is a kind of logical models, Based on this model, all concepts, events and organizational phenomena can be in the form of a theoretical model of the three branches (the structure, behavior and environment) studied and analyzed.(4)

**Research hypothesis**

1. Structural obstacles with the lack of entrepreneurs in the area of nanotechnology have a significant relationship.
2. Behavioral obstacles with the lack of entrepreneurs in the area of nanotechnology have a significant relationship.
3. Environmental obstacles with the lack of entrepreneurs in the area of nanotechnology have a significant relationship.

The present research of the type of application and its descriptive statistical population consists of all the Vice-Presidents and managers and experts in the relevant field of nano in active centers in Tehran, Iran. According to the statistical sample of Cochran formula including 110 persons from 250 persons in society that to collect research data is distributed a questionnaire containing two sections among them, and in addition to being standardized by supervisors and a few people informed people consultant confirmed and in has significant validity. In order to determine the reliability used the cronbach's alpha method and the result was 0.91.

**Statistical analysis**

This part of the study has been divided into two parts: describes the data/data analysis.

According to the results obtained in the first part of the 69% of individuals participating in the research were male and about 92 percent people with Bachelor degree and above and also in about 60 percent of the people have less than 5 years experience and 41/8 percent the history of activities in the field of nano-between 5 to 10 years. And among companies with about 65/5 percent nano employees worked less than 10 people and 11/8 percent of them have 40 people and above employees.

With checking life variable of the company, about 50% people in a company with less than 5 years, and 30 percent of companies will lay off between 5 to 10 years and 10 percent of companies with 10 to 15 years between the life and the rest of life with over 15 years.

In this research, in order to check the data of the test being normal Smirnoff Colmo Groff is used because of the significant level is and this is less than0.05, thus the test of hypothesis HO-based being rejected at the normal case questions.

According to the Binomial test to check the status of each component of the research questionnaire questions and we can say that at the level of the right questions to ask to ensure that the research questions 95percent measurement of barriers to entrepreneurs in the field of nanotechnology.

In order to study the relationship between the barriers to entrepreneurship, or non-active companies in the field of nanotechnology entrepreneurs using path analysis method of LazerI software used in this model relations between the alternatives model are as follows.

**1-the relationship between barriers of entrepreneurs with each other:**

According to the following table for information on any environmental variable, structural and behavioral barriers 3 together direct relationship.

**Table 1: Table of values of the final path models**

Direct relations between variables in the model		The amount of Standardized	The standard error	The value of t	A significant level
<b>Structural barriers</b>	Structural barriers	0.75	0.1	10.49	P<0.01
	Environmental barriers	0.35	0.1	3.50	P<0.05
<b>The behavioral obstacles</b>	The behavioral obstacles	0.52	0.1	5.33	P<0.01
<b>Lack of entrepreneur classes with obstacles</b>	Structural barriers	0.71	0.1	4.72	P<0.05
	The behavioral obstacles	0.64	0.1	4.49	P<0.05
	Environmental barriers	0.49	0.1	2.82	P<0.05

## 2. the relationship between the lack of entrepreneurs in nanotechnology with its barriers:

According to the results obtained from the analysis of the path and the table below to reject the hypothesis of action and finally all three approved research hypothesis.

### Table 2: State all assumptions

The hypothesis of a significant level for the relationship between the standard value

The hypothesis	The direction of the relationship Direct	Standard value	A significant level	The value of t	Results
The first hypothesis: Between structural obstacles and lack of entrepreneurship in nanotechnology, there is a significant relation	×	0.71	P<0.05	4.72	Verify
The second hypothesis: Between behavioral barriers and lack of entrepreneurship in nanotechnology, meaning there is a significant relationship.	×	0.64	P<0.05	4.49	Verify
The third hypothesis: Between environmental obstacles and lack of entrepreneurship in nanotechnology, meaning there is a significant relationship.	×	0.49	P<0.05	2.82	Verify

Table 3-average rating in the Friedman test

Row	The variable	Rating
1	The lack of a proper educational system in the company	3.70
2	Lack of proper information system company	3.54
3	Lack of appropriate research and development system of in the company	3.40
4	Lack of proper planning and attention to short-term projects in company	2.98
5	The lack of a proper administrative system in the company	2.88
6	The lack of a proper financial system company	2.67

Due to the lack of a barrier between structural obstacles to Friedman's test system for proper training the most impact on the lack of entrepreneurs has shown a lack of appropriate financial systems and prevent the lowest impact and the barriers between behavioral and alternatives of environmental alternatives the difference between tangible obstacles.

Table 4-the values of the test statistic

Number	110
X <sup>2</sup>	162.970
degrees of freedom	7
A significant level	0.124

### The results-based research themes and suggestions:

Given the amount of structural barriers influence the more the lack of entrepreneurs in the field of nanotechnology and with the help of the people who participated in the research, the following suggestions are offered.

1. The establishment of the scientific staff with the need for appropriate training
2. The establishment of appropriate administrative systems due to successful companies
3. Reform of the financial system to its people by company
4. The establishment of a proper system for research and development according to the needs of future market.

### For behavioral and environmental obstacles the following is suggested:

1. Strengthen the information about nanotechnology.
- 2- Bed for new designs and marketing and global communications business
- 3-Increase the trust and risk disclosure by institutions to participate in the activities of the nanotechnology.
4. The establishment of an appropriate legal context for the record and put circuit activities

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