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Developmental organizations and their role in the development of science and technology

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ABSTRACT

The experience of industrialization in developed countries shows that the governments have had much more effective role in economical developments of countries. However, these eases also determine the restriction, type, approach and instruments for the interference of governments in the economics and industries of the countries. If we consider the basic role of the governments to prepare the economical centers and equip them and make them able to increase their abilities, then their crucial role will be to generate, train and create new activities which are necessary for the countries. In such cases, the private section for various reasons is not able to participate in these activities. Some of the reasons are: less monetary sources, high risk, late outcomes, and this process is to establish public developmental organizations or public – private organizations and to make policies in accordance with science and technology to save market failure.

Key words: developmental organizations, science and technology, policies, market failure, interference in market.

INTRODUCTION

In the literature of the industrial development, governments have four basic roles in the development, reaching the programs and total national goals of the country. These roles are: policies, regulation, easiness, and the presentation of services. The most important problem in developing countries is the movement of the development cycles by government, in other words, the determination of borders and limitations of interferences. On the other hand, because continuous development is only possible with advanced science and technology and it is vein forced through them [5]. Therefore, policies should be considered effectively in order to develop science and technology.

One of the old challenges in policies of industrial development and technology has been the following problem. Should the government interfere in different problems, or a free economical system should be active? In other words, whether policies are of different types, even in the science and technological area, or Adam Smith's unexposed hands will do his own work and it is better to put such decisions to the market it self and the central part of theoretical approaches in industrial development in developing countries is the type and amount of the government's interferences in industrial development's science and technology [2].

The experience of industrialization in developed countries shows that the governments with appropriate policies in industry, science and technology of countries. Such cases also determine the limitation, type, approach and instruments for the interference of government in the economics and industries of the countries [6]. if we consider the basic role of the governments to equip the economical centers and make them able to increase their abilities, the

crucial role will be to generate, train and create new activities which are necessary for the countries, in such cases. The private sector for various reasons such as less monetary resources, high risk, late outcomes, and some other reasons, is not able to participate in these activities. One of the useful tools in the process is to establish institutions – public developmental organizations or public-private organizations and to make policies in accordance with science and technology to save market failure. Developmental organizations are institutions which work according to the conditions and characters of economics and industry and their needs, strategic approaches of economics, industry and increase social properties, upgrading standards of living, increasing jobs, and giving services to the citizens according to the industrial development [5].

The clarification of the government's role in the process of development of industry, science and technology. In the past century the governments' role has tolerated many changes the high speed of technological revolution and its impact on the countries, economical development is a factor which governments should prepare reactions, and appropriate answers to them. In the investigation of historical events of the governments and according to their experimental performances and policies, the governmental organizations have expressed that the development of science and technology in many countries without an effective government is an impossible task. One of the questions in the industrial, science and technological policies is that to what extent the government should interfere in economics and basically, is it necessary, the government should have executive performance in this area or not? Generally, economists believe that the government should have fewer roles in economics industry and technology and should provide the basis for them. (It should be basis bound instead of activity bound) and should guarantee the security of employers, private sections. They also believe that markets, fees will calm the market and fulfill people's benefit in the society. Adam Smith has expressed an unexposed hand that handles the society and optimizes all people's benefits in a balanced level. This kind of thinking has evidence in the social and political structure of Europe in eighteenth and nineteenth century. In these times merchants and industry workers who have been freed from church's mastery and cruel governments wanted not to lose such fortunes.

Today it is increasingly acceptable that to fulfill the economical social goals for development, an effective and efficient government is basically important, but what should the government do to develop technology in a country? [8].

Industry development

Industry development and industrialization is a process which creates competition in industrial centers, generates economical value for the country in industry section according to the technology and changes the country accordingly. The principle for accepting competition in companies, institutions and organizations is their internal capabilities which depends on an external local communications, an institution can not provide all its materials for final production of goods and services alone, it depends on a large system so that they can help the institution produce and present services the production of goods and the presentation of services consist of supporting services for business and occupation, technology, human resources and information and they may be the occupations and businesses of other companies which are active free economical system. However, all investigations show that market is incomplete and there is the probability of market failure. In the words, while it is inferred that competition in institution depends on the variability and utility of services and resources from out of company, there is the probability of shortages in supply and demand emphatically. The necessity of governments, interference and its presence in this area, justifies the correction and improvement of the market failure. According to executive policies in the principle 44 of constitutional law, the interference of government in economics with limitations and in special areas provide the situation for the presence of private and cooperative section. [3].

The necessity of developmental organizations

The competition capability of organizations companies is influenced and dependent on the internal and external powers of the company. These powers are technological, human, financial, marketing, so the company is dependent on a large network of supply and demand system out of the company. In order to fulfill an appropriate level of capability, the company needs a system to support the supply and demand system, to support the business and to expand its grid, technology, human resources and information and this supply and demand system should reply the needs of competitive organizations.

This mechanism (supply and demand system) usually is not shaped which is called "market interruption and deficiency" [4].

Market interruption is a situation in which an institution wants to promote its powers such as raw materials and improvement processes and provide them through an external local company but this system is unable to present these services. This is the time the government should interfere. But governments in such cases do not interfere and choose an agency for these cases because there are some limitations in constitutional law and advantages for non

governmental organizations. As a matter of fact, the limitation of the governments' interference is inferred from the principle 44 of constitutional law which expresses that the conditions for private and cooperative sections should be available. There fore, the executive factor for industrial development in Iran is to fulfill the conditions of developmental organizations, some of the industrial development organizations are;

Malaysian Industrial development agency (MIDA)

Malaysian technology development company (MTDC)

Singaporean science, technology and research agency (A-Star), the Institution of study industrial development (ISID), the Institution of science and technology policies in Korea (SIEPI) Korean Institution of science technology (KIST) and the largest developmental organization in the Middle East in Iran is Iranian developmental and renovation organization (IDRO).

Market failure as an entrance for the presence of developmental organizations in science and technological policies The acceleration of evolution and technological development in industry and other sections and the removal of market failure are processes which can justify governments' conscious presence and cooperation in industrial, science and technology development. According to the difficulties resulting from market failure in several fields, the conscious presence of government is generally emphasized, especially when there is an imbalance in supply and demand in industrial development services and these are harmful for the applicants of such services in organizations and companies. In fact, developmental services (technological, skillfulness, capitalization, education) which are necessary for institutions and small industrial units and also large units may not economically beneficial this is the proof for market failure and causes the government is present and interfere in affairs.

Hyuse has stated the following reasons for market failure:

- a) Some services or goods have general nature.
- b) Trade costs may hinder exchanges.
- c) For in sufficient or mismatching in formation or inability in contract excision, some markets may not exist at all.
- d) The market power of some buyers or sellers can make worse the conditions of appropriate pricing.
- e) Exchanging information maybe less or in complete.

Some factors affecting market failure can be stated briefly as followings:

- a) Failure in the presentation of public goals.
- b) The existence of external complications.
- c) the existence of natural monopolizations
- d) Incomplete information.

MATERIALS AND METHODS

Developmental organizations

market failures and is incomplete performances are the fundamental reasons for governments' design to establish and create developmental organizations to overcome market failure of course these countries should perform effective strategies to appropriate the business space in different sections such as : industry , farming , services , they execute their enormous developmental programs.

It has been stated emphatically that developmental programs are as complementary cases for markets not replacement for them [9]. In fact, developmental organizations as approved approaches in economical development process can have distinguished role in the creation of evolution and promotion industrial efficiency. These organizations have heavy functions for the fulfillment of their duty, goals and programs such as preparation for the growth of private section, investment absorption, and correction of in appropriate sub structure, improvement of environmental factors, and exploitation of new technology [6].

It seems that industrial development has three basic columns. They are government, industry (Supply) and market (demand) and the developmental organizations are interring mediator rings among these three columns to facilitate communications and to accelerate operations and value oriented process.

The governments' interference in economics and its subsections is accomplished through policy compilation and its execution in current cases. In industry, these interferences are determined according to the special circumstances of countries. Carrying out the policies is also performed through an organizational frame. The creation and development of this frame maybe one diction of these policies (It is the necessity for the creation of developmental organization in Iran like Iranian developmental and renovation of Industrial organization).

According to this approach, there are justifiable back grounds for governments' interferences in the improvement of industrial development in science and technological areas market failure can have three states: internal, middle and factors market (following table). These failures are dependent to each other. To overcome these failures needs some per formative and selective interferences. In the first case, the government should support the institution through learning and information. The failures in the second group can be solved through investment coordination, geographical divisions and improvement of organizational communication. And finally, the failures in the factors market can be solved through direct interference in resources. It should be noted that the supporting instrument for the first case only removes some of the needs. And using it without purpose can be detrimental for technology development because it can be preparation for the failures that were unrevealed. We can summarize these subjects as followings: [5].

- Interference in the factors market and production market should be compatible and convergent because one of them with the other one can be ineffective and even harmful. The policies relating to factors market alone do not provide the possibility for swift industrial development on the basis of science and technology for inner organizations, because they ignore learning costs and market failure.
- Interference disorders should be deleted in a way that supporting the industries should be accompanied with pressure to enter into universal markets.
- As the required resources for interference are limited, in every period of time only some of the activities should be advocated. Interfering in many unrelated activities can be harmful and cause failure.
- Since learning is a continuous and progressible process, interferences and supporting should include those activities which are dependent to skill and knowledge. The movement to war as new technology should take place moderately and it should be on the basis of real evaluation in accordance with logical period which can be obtained.
- Separating selective interferences and compatible with market is almost impossible. In every market it should be combined with each other.

RESULTS

Table of limitations relating to the development of institutes

Failure instances	Entity	Results
Inside the institute	Uncertain educational processes unexpected dangers and costs shortage of experience and information education for education	Less investment long term education, insufficient application from new technology, non efficient educational efforts
Among the institute	Lack of information relating to capacities and planning to waste information and skills undeveloped communication capacities among institutions	Disharmonious investment insufficient investment in skills and technical information lack of exploitation from external out comes and clusters
Factors market	Investment market failure un efficient substructure lack of protection and technical progresses, inappropriate creation of skills, lack of insurance and division of risks	Less investment in difficult technologies low standard quality lack of progress inappropriate and insufficient skills

Strategies and government interferences the study of East Asia and different considerations led to the tools that all divided them into selective and operational ones [1].

The studies on the basis of governments, interference in market to solve market failure problems the following cases can be expressed:

- Government's strategies and interference is investment market (by reinforcing financial institutions , indirect investment subsidy , direct invest subsidy , increasing investment mobility)
- Government strategies and interferences in work force market (through flexible promotion of skills , a ding to the efficient performance and improving work market, ronstruetins industry for work forces strategies and interferences of governments in technology market (by supporting basic operational , educational , professional , technological researches) .
- Government's strategies and interferences in the development sub structures (by creating physical institutional substructures and marking control system and adjustable).

Approaches in the science and technology development

The role of science and technology is in development basic and essential appropriated and well balanced science and technology is a prerequisite for development which should be accompanied with true and tremendous ones and should have planning to reach them. These are government's fundamental functions in a society when we survey

technological development policies, we can categorize three distinct approaches (functions, influence, compound) in enormous policies for the development of science and technology by governments [10].

- ✓ Functions or Commissions approach
- ✓ Influence approach
- ✓ Compound approach

List of government interferences

Interference in markets	Selective / elective	operational
Production market	- supporting the imports - protective subsidy -market reinforcement -detective tax incentives -purposeful exports	Total subsidy support to industry Non elective export motives
Physical Institutional substructures	-promotion geographical clusters -harmonious technological investments - promotion strategic industries -promotion internal communications in elective activities -promotion designing and engineering capacities	- promotion SME - contracts - engineering services institutions -industrial substructures - incentives for technology distribution
Investment market	-Oriented credits -creation specific financial institutions -specific valid planning for elective industries -promotion large elective institutions	-reinforcing financial institutions and investment markets - freeing financial market
Technology market	-reinforcing technology imports -upgrading selective technologies -purposeful institution for institutes dependent on advanced technology -national R&D plans -guarantee for the execution of R&D by organizations -creating rand D centers -creating international cooperation's relating to technology.	-technology imports -SME's wide services - basic R and D investigations - technology distribution incentives
Skill market	-special skills at schools and high schools -educational Institutions which are specific for industry -foreign education in special skills -Incentive for elective education	- Public education and training - educational incentive inside the institution
Direct foreign capitalization	-selective FDI imports -limitations on the FDI imports in special activities -creating motivational conditions on FDI attraction	- improving an facilitating investors conditions - in stamens for measuring non elective performances - guarantees and evaluation

Commissions or factionist approach

Concentration is on national projects like offensive industries, national security and special projects which have priority. The main purpose of this policy is to attain basic innovations for the fortification of military forces and international strategic leadership. In this case the development of technological capacities in technical affairs which are the most important are nationally emphasized. The other characteristics of these countries (such as United States of America, England and France) have high centralization policy in main decision making, execution and evaluation of research and development project switch mostly is done through offensive section.

Influence or fluencies approach

The countries such as (Germany, Swede and Swiss) with influential approach put less emphasis on the technological development which are completely new and in the border of knowledge. Instead of this subject they encourage distribution of technological capacities throughout industries. These countries focus their, force to the supply of goods which are necessary for public and should be presented in inner and outer market; they want to dominate commercial markets. Decision making, execution, and the evaluation of projects in this approach are decentralized and governmental organizations have limited role in decision mating and execution.

Compound approach

In Japan , in one hand like functional countries, the priority is on the systematic increase of technological skills and first hand capabilities , in other hand, the fundamental purposes are to be sure that these skills penetrate to industry and specialty to pioneer companies , policy making and execution in this approach is fairly decentralized [7].

DISCUSSION

Industrial development means increasing the share and place of industry in national production. (I.e. increasing the weight of industry through science technology route in national economy, so industrial development takes place when organization are competitive competition in institutions depends on a sere of local communications out of

organization, here is the place where industry, university and government meet each other. There fore, according to the executive context of the principle 44 in constitutional law, the government should not interfere in all economical affairs. It should provide the conditions that cooperative private sections can be present at the scene. Consequently, developmental organizations like Iranian distribution and renovation of industries organization (IDRO) are the main players that can use functional, influential and compound approaches accompanied with science and technology to interfere in markets such as production, workforce, investment and technology markets to save market failure.

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