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A CRITIQUE OF THE DRAFT TECHNOLOGY POLICY 1993

by

Dr. M.R. Gopalan*

INDIAN INSTITUTE OF MANAGEMENT
BANGALORE

**Professor, Indian Institute of Management, Bangalore*

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DR. M.R. GOPALAN

Indian Institute of Management, Bangalore (IIM-B)

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INTRODUCTION

The 'draft new technology policy 1993' has been widely discussed in the press as well as in journals and also in various forums. The contents of the policy has been widely subjected to criticism and some have also given constructive suggestions. The aim of this article is to look into all the dimensions of developing a technology policy and then to look critically into the 'draft technology policy 1993' already brought out in February, 1993.

AIM OF TECHNOLOGY POLICY STATEMENT:

A technology policy statement should aim at providing guidelines for formulating systems and procedures for subsequent implementation of the policy intents as such in different sectors of the economy to achieve the desired goals. In order to give proper directions for implementing the technology policy, it should focus on the following:

1. It should first of all review the earlier policy for their success and failures. In many of the policy statements the success and failure parameters are not clearly spelt out. As a result, on does not know what to evaluate and also how to go about. For example one of the policy statements could be :"Technology development should facilitate improving the standard of living of the rural population". The parameters which will measure standard of living should be specified and should be used in evaluation (at least in this case it is not difficult). Such evaluation should be carried out for each identified areas. For example, they could be:

   (a) Electronics
   (b) Telecommunication
   (c) Software development
   (d) Space Technology
   (e) Use of technology for competitiveness in various manufacturing and service industries, etc.

2. It should spell out broadly the specific objectives of the proposed currrent policy. The areas of coverage could include the following:

   (a) <u>TECHNOLOGY ADOPTION,ABSORPTION AND DEVELOPMENT</u>

   This means that the policy statement should highlight the specific areas wherein the technology adoption, absorption and development is desirable with a specific purpose as indicated in (b). The technology to be developed and adopted should not

only focus on indigenously developed ones but should also focus on technologies to be adopted imported from abroad and adopted.

As the reasources are limited, specific areas on priority basis should be identified. In many cases it could be related to adopting to a new technology to upgrade the unit.

(b) REASONS FOR TECHNOLOGY INTRODUCTION

The technology to be introduced should facilitate achieving the following in the industry and service sector:

- Increase in the value addition
- production of gooods and services which are expoortable
- Effective utilisation of the critical resources.
- make use of locally available resources
- competitive advantage
- Globalisation
- Environment friendly (less pollution).

In many situations the above could be achieved by simply adopting to the existing available better technology. The policy, in fact, should specifically mention the critical areas wherein the available new technology could be introduced as fast as possible so as to ahieve the above objectives. The example that can be cited here is the case of Software Exports. In order to increase the Software Exports, one may have to upgrade the existing telecommunication technology. If this has to be done, we should think of adopting to the state of the art of technology which most probably could be obtained from abroad (we will discuss abourt the funding later). If one starts developing the indigenous technology now for this, you may miss the bus with regard to Software Exports. Therefore, the technology policy should focus on the areas which require immmediate upgradation of technology so that our products and services become competitive in the short-run.

(c) BUILDING UP INFRASTRUCTURE

Competitivenss through technology could be achieved not by just installing a new technology into your business. Maximum results can be achieved only when proper infrastrcture support is available. This may involve:

- development of human skills through continuous training
- Develop more knowledge workers
- Standardisation of inputs and outputs to reduce variety and maintain quality
- Introduction of Quality Systems Certification through reputed agencies
- Installation of Testing facilities
- Introduction of fast communication systems
- Efficient transport system
- Uninterrupted power supply
- Basic needs of the people must be met on a priority basis (food, clothes, water, housing and health) this, in turn, could be achieved by technology introduction
- Existence of venture capital organisations for sponsoring new innovations.

It requires an enormous amount of resources to provide such infrastructure facilities. How do we generate such an enormous amount of resources to completely revamp our infrastructure? In the absence of such an infrastrucutre, introduction of new technology into our system will be something equivalent to building a house without any proper foundation .Therefore funds management assumes lot of importance.

(d) FUNDS MANAGEMENT

The technology policy statement should also address to the related problem of generating enough resources to buy latest technology wherever required and also to develop the infrastructure which will facilitate effective utilisation of the technology. The only way this can be done fast is to attract foreign companies to invest in Indian industry. Therefore, the changes in the Industrial and Trade Policy are required to attract Foreign Direct Investment (FDI). The recent liberalisation policies are aimed at this. What are the benefits?

(i) Investment in Indian industry by foreign companies increases (ii) Expected to bring in better technology than what exists in the country (iii) Production of Exportable goods and services (iv) Exports bring in more foreign exchange into the country (v) Surplus foreign exchange should be encouraged to be reinvested in developing better infrastructure facilities and also to upgrade the technology further.

This process should continue till such time that we are at least comparable to economies such as Malaysia, South Korea, Taiwan and Singapore. Meanwhile, we whould also be concentrating on our R&D activities by investing enough of resources to upgrade and develop technologies on our own wherever appropriate.

(e) R&D AND MANAGEMENT OF R&D

Another area where proper focus is required is with regard to investment in R&DE and also the management of R&DE. A comparison is always made with other developed countries with regard to the investment made in R&D. This percentage share of R&D in the GNP as far as India is concerned is very low and hence it is being felt that our investment in R&D should increase substantially. In many organisations the usual cost reduction activities that are undertaken are reported as R&D. The policy should, therefore, emphasise that the companies and other organisations should focus on research which will result in a new process or a new product which will ensure better quality at affordable price. It is also a wrong notion which many people are having that if investment in R&D is increased the country will be far better off in developing and using technology. It is not at all going to be true keeping in mind the past-Indian experience.

Incidentally we are the third largest in the world as far as the inventory of S&T personnel is concerned. But our output is very minimal. One would always prefer to measure the output of S&T personnel as achieving competence in the international market with regard to products manufactured and services provided. It could also be in the form of patents registered.

It is also expressed that if S&T manpower is increased sizably in relation to population, the development and use of technology is going to increase manyfold. In fact, on the contrary, a study conducted by IIM-Bangalore for the Department of Science & Technology, Goverment of India, shows that many of the existing S&T personnel all over the country are under-employed. Therefore, effective utilisation of the existing S&T personnel should be the key focus and not increasing the inventory of S&T personnel as such. Here comes the role of R&D Management. The policy should focus on

as to how to motivate our R&D staff as well as to reorient our research laboratories, so that the scientific community can identify themselves as partners of our manufacturing, service units and the industries rather than living in ivory towers. For this process to succeed the proportion of investment in R&D shoiuld be more from industry as compared to Govt. investment. What we normally expect over a period of time is that investment in R&D should be need-based.

(f) THRUST AREAS

It is important to identify certain thrust areas wherein India should participate and invest in technology development. It will not be possible for us to focus on each and every areas. The reason could be serious limitations of resources and expertise in the proposed field of study. In certain areas we will not be able to catch up with others. Since enough help will not be forthcoming with regard to certain technologies from countries who possess such technologies especially in the field of defence and space technology, one has to give priorities for indigenous development. For example, in order to provide drugs at cheaper price, India would be interested in developing its own processes for manufacture of common and essential drugs. If we manufacture these drugs under licence from foreign companies, the prices of these drugs are going to be exhorbitant due to royalty payments for product patents.

While arriving at this list of thrust areas one should investigate and estimate the amount of investment required (money, manpower, etc.) and should arrange them in the order of priority and take up only those which are possible within the budget. But areas like space technology and defence oriented projects cannot be dropped. Similarly, atomic research cannot be neglected.

Whereas in the draft proposal we find thirteen thrust areas. It is an impossible task to take up all these areas. The following areas may be important ones:

1) Space Technology for communication, remote sensing and for other purposes.

2) Missile Technology development.

3) Development of processes for drug manufacturing.
4) Atomic Power Generation.
5) Biotechnology.
6) Superconductivity.
7) Technologies that are needed to enhance software development and exports.

These are the technologies which are not going to be available easily and hence maximum priority to be given. However, these requirements should be matched with the funds availability.

(g) CREATING AN ENVIRONMENT FOR TECHNOLOGY DEVELOPMENT AND USE

Successful technology development and use is dependent upon several factors:

1) Creating an atmosphere for competitive-ness in all sectors of the economy. To certain extent this could be achieved by allowing large number of players in the market place. Simplifying procedures and relaxations of the various constraints could also facilitate organisations to perform the tasks faster and efficiently.

2) All consumers of various goods and services should organise themselves and exercise their rights to get better goods and services. Consumer education should play a critical role in creating awarness among consumers about their rights for demanding quality product and service with regard to various types of activities. This is the only way by which an impact could be made on the manufacturers or Indian goods to become competitive.

3) Certain basic technologies should, at any cost, be made available in every organisation. Today for faster communication FAX machine is a must in most of the organisations. Large number of PCs are getting installed in every type of organisation and hence the information processing is undergoing a drastic change.

4) A technology audit should be made mandatory for every organisation as it is done for financial audit. The audit should aim at establishing the gap that exists in adopting to minimum technology standard required.

5) All aspects of intellectual property acts should be critically looked into to foster innovation and commercialisation of the same. To take advantage of globalisation, the government should try to integrate the law with regard to the Indian Intellectual Property acts with the International Conventions. This may give us an advantageous position when the Indian Business goes global.

(h) POLICY IMPLEMENTATION

The following questions will arise with regard to implementation of the above policies:

(1) Who wil prepare the implementation plan?
(2) What are the things that are required to develop an implementation plan? It could be:
- various types of resources needed
- sources of funds
- amount of resources that could be mobilised
- time-frame within which the tasks are likely to be completed (depends upon the quantum of resources)
- Identification of various agencies who will be executing the tasks at different levels (central, state, district, taluk and panchayat). Responsibilities and authorities of these agencies should be clearly speltout.
- What are the various activities to be performed according to some priority order? (taking into account funds available)

(3) Implementation to be effective, what is the type of organisational set-up that is envisaged at all the levels as mentioned in (2)?

(4) How is the monitoring going to be carried out?

- What type of set-up is envisaged for monitoring?

- What are the parameters to be monitored and how often?

- What is the action going to be taken if there are deviations?

During implementation some of the activities may have to be taken up by the organisations themselves based on the policy directive. For example, investing in R&D to improve the competitiveness should be the task of the organization/industry.

To ensure whether the organisations are adopting the policy directive or not, government can think of introducing a technology audit and quality audit. These auditing tasks could be entrusted to organisations such as confederation of Indian Industry (CII) and Bureau of Indian Standards (BIS) and to any other approved agencies. But this is going to be a massive task and hence we have to create the infrastrucutre first before one ventures upon this approach.

3. CONCLUSIONS

A. It can easily be concluded from what has happened in the past that no systematic approach has been attempted at implementation, monitoring and control of the activities supposed to emanate from technology policy statements.

B. Preparation of the document itself was deficient in various aspects.

(a) It does not specify a time frame.
(b) It does not mention anything about the resources required to implement the contents of the technology policy.

(c) No discussion on the type of organisation required for implementation.

(d) A holistic approach is not attempted at, especially with regard to improving the basics in various sectors of activities.

C. No methodology has been specified for monitoring and control of programme activities.

D. In the light of the above remarks it may be mentioned that the new technology policy statement (1993) is not going to produce any substantial results as anticipated.

Therefore, finally it may be concluded that it is hightime that the team formulating the 'technology policy 1993' looks into the above aspects and incorporate the relevant ones which will result in easy of implementation.