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The problems of public sector enterprises in Management of Technology

Anand Prasad Sinha¹, Dr P.C.Jha²
^{1,2} Faulty, Department of Management
BIT Mesra, Ranchi

Abstract: *The problems of Indian public sector enterprises in management of technology is generally very complex in the Indian context due to several super imposed Governmental considerations and bureaucracy as the decision on choice of technology, selection of suppliers lay ultimately with respective ministries. The process of understanding technology involves design, process know-how, and parts fabrication assembly. When we bought technology in the past few decades, we concentrated on being very 'skilled assemblers' but not 'smart assimilators'. The challenge is the mastery over process know-how and design. Then only can we master technology. It is an iterative process, full of learning and creative experience*

I. Introduction

One of the most important problems remains to be scarcity of funds in case of large capital requirements for technology development particularly for those PSE's that have been making recurring losses for years. In India, it was only with the second five year plan that there was a clear enunciation of strategy of development by Indian Planners. (B.R.Virmani) who was the real architect of the second five year plan, was responsible for introducing a clear strategy of development based on the Russian experience. This strategy emphasized investment in heavy industries to achieve industrialization which was assumed to be the basic condition for rapid economic development.

India adopted a path of planned economic development for building a socialistic pattern of society and therefore the mixed economic model recognizes the co-existence of both public as well as private sector enterprises. Public sectors have gained importance not only due to the socio- economic policies of the government but also due to the fact that the economies of scale inhibited the private sector from investing in the core sector where large capital outlay was required. Inability of the private sector to invest in projects with long gestation period and absence of instant profits were also the main reasons for the establishment of public sectors. PSE's enjoy a monopolistic power in certain capital good industries and strategic sectors in India. Whereas in some sectors PSE's have a 100% share of the product, in the case of steel equipments, metallurgical industries, mining equipments electricity, oil, oil products etc.its share ranges from 78% to 99%. But they proved to be centers of complacency, inefficiency and low productivity, resulting in huge losses to the exchequer and the low level of technology also resulted in improper and ineffective use of resources.

The Government of India Statement on Industrial Policy (1991):- The government of India observed that public sector had so far been central to our philosophy of development and had played an important role in

1. Preventing concentration of economic power
2. Reducing regional disparities
3. Ensuring that planned development served common good

But, now serious problems are being observed in

1. Insufficient growth in productivity
2. Poor project management
3. Overstaffing
4. Lack of continuous technological upgradationn
5. Inadequate attention to R&D and human resources development
6. Very low rate of return on capital investment

This has inhibited their ability to regenerate themselves and adopt and develop new technology. Besides, the original concept of the public sector has also been considerably diluted by takeover of sick units and growth of public enterprises in the consumer goods and services sector.

A large number of Public Sector Enterprises have gone sick and closed. Efforts are on to revive or rehabilitate them. In the new Industrial policy greater thrust has been laid on the evaluation of the performance of the system. Organizational turnaround for such enterprises become inevitable when they experience sustained performance deterioration and is not able to arrest further decline but at the same time, capable to rejuvenate and

become healthy again with enhanced efforts. Efficiency increases are important for such organization and can be increased effectively with proper management of technology. (Thielst, 2007)

The need for compatible technology becomes a complex exercise due to lack of expertise and foresight resulting in improper integration of technological strategies. This results in over dependence on the suppliers of technology. Inadequate interaction and differences of opinion on technical decisions also pose to be a major problem.

When the altered production condition demanded change in the design of the equipments /accessories, which couldn't be made by the Indian countered parts, special arrangements had to be entered upon with the collaborator to permit sub-contracting of various spare parts and ancillary equipments. (Berman, E.M. 1992)

There is a relatively poor contribution of Indian R&D to industries. Effective R&D activities call for sophisticated equipments/facilities/ machineries from advanced countries, which require substantial allocation of funds. Maintaining high motivation level of R&D managers becomes a difficult task.

II. Technology change and acquisition

Technology change calls for acquisition, development, utilization and maintenance of adequate human resource. Enhancement of skill reserve of the organization in order to handle new technology is inevitable. Human resource management, therefore, becomes a challenging task. There can be problems in the acquisition of proper inputs required for implementing and functioning of the new technology. Developing the vendors for indigenizing or procuring the required inputs is a difficult exercise due to resource constraint of the vendors in order to rise up to the expectation of their customers.

The problem of management of international transfer of technology is generally a fairly challenging one. In Indian context it is even more complex due to the several super imposed governmental considerations. Technology transfer is not merely the supply of machinery or drawings. It is ultimately dependent on the human interactions between Indian technicians and their counterparts from the technology sellers. It requires a great deal of openness by the technology sellers. The technology sellers are unlikely to be open unless they are sufficiently remunerated for their efforts. The management of technological change corresponding roughly to the late seventies and early eighties, most of Indian PSE's have not only mastered themselves with respect to the technology imported but also built their own R&D centers.

In order to understand the state of technology management in PSE's, it will be worthwhile to mention the process of evolution of technology management in public sector enterprises of India.

Nature of Management of Technology	Remarks
Phase I Late fifties- Assimilation, technical/ Early sixties adjustment/modifications	Transfer of International Technologies.
Phase II Late seventies- Technological change arising Early eighties from in-house R&D	Incremental process/product Innovations and or diversification of product lines.
Phase III Late eighties- Modernization/technological Nineties upgradation	Introduction of new high-tech and capital replacement

The process of understanding technology involves design, process know-how, and parts fabrication assembly. When we bought technology in the past few decades, we concentrated on being very 'skilled assemblers' but not 'smart assimilators'. The challenge is the mastery over process know-how and design. Then only can we master technology. It is an iterative process, full of learning and creative experience. The entire chain of acquiring the know-how package, evaluating prevailing resources, formulating manufacturing methods, determining import content, accumulating engineering experience, commercializing the product, observing the product behavior, working out the design modification process and finally using that experience to create new products, forms that real chain of innovation which involves both learning and doing. Had we pursued this innovation path, which really is the essence of 'buying to make better', with vigor, Indian industry would have been in a different position today.

III. Conclusion

The public sector enterprises in technology management it is the most important problems remains to be scarcity of funds in case of large capital requirements for technology development particularly for those PSE's that have been making recurring losses for years.

Technology and its management are today matters of global primacy. Technology' is being developed, improved, combined, refined, bought, sold and traded around the world at unprecedented levels. As technology is crucial to the development of a country, the management of such an important resource, both at national and enterprise levels, is vital. The technology and its management cannot be left to the forces of chance. As an

important resource it has to be properly planned, cultivated and developed. It also refers to qualities such as 'robustness' or 'resilience' that enables an enterprise to endure when negatively affected by changes. Many enterprises are in the midst of fundamental changes in organizational design and management practices. In the modern scenario, technology is perhaps the most important resource to any nation. To maintain their competitive edge, companies are increasingly looking outside. They adopt and assimilate new technology, improve and refine existing technology and combine both in their quest for success in world markets (Betz 1987). Forces within the firm for technological solutions are harnessed, organized and encouraged and problems needing technological solutions are identified, alternative solutions are generated, analyzed and evaluated. When it came to technology, the Indian industry always considered the 'buy' or 'make' options, which unfortunately got converted into 'importing' and 'import substituting' in the closed economy that we had. Today, Indian industry will have to carefully consider not just the two options of 'buying' or 'making', but also 'buying to make better', 'making to buy better' and 'making it together'.

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