EVALUATION OF INDIAN R&D IN RELATION TO IMPORT SUBSTITUTION STRATEGY AND RELATED FACTORS

THESIS SUBMITTED IN FULFILEMENT OF
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BY

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CERTIFICATE

This is to certify that the thesis entitled "Evaluation of Indian R&D in relation to the Import Substitution Strategy & related Factors" being submitted by Ms Sandhya Gautam to the Indian Institute of Technology, New Delhi; for the award of degree of Doctor of Philosophy, is a record of bonafide research work carried out by her.

Ms Sandhya Gautam has worked under our guidance and supervision and has fulfilled the requirements for the submission of the thesis, which to our knowledge has reached the requisite standard.

The results contained in the thesis have not been submitted in part or in full, to any other University/Institute for the award of any degree or diploma.

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ABSTRACT

The CSIR was set up as a society in 1942, with most of its laboratories coming into being from 50's only. The periodical reviews and evaluations of its R&D started from almost that period itself. These evaluations mostly highlighted a weakness in the R&D system, despite the fact, that the directions for the orientation of the R&D programmes at the Organizational and Institutional level, came from top level. An important point that should be noted is that though the CSIR was set up as an autonomous body but its rules and bye-laws contain provisions which ensure government's control over its affairs. The Planning Commission lays down priorities and broadly identifies the areas which qualify for R&D support and recommends budgetory allocations. A strategic priority which was identified by the planning commission to determine the course of research during mid 60's was the Policy of Import substitution. This policy determined the choice of applied research projects during this period. The thesis deals with, the historical relationship between India's science planning policies and the S&T system at a macro level and a micro analysis of the relationship of one of the planning policies i.e. the import substitution policy and the actual performance of R&D in CSIR.

A set of hypotheses were organised around two questions: (1) What policy directions were given for the industrial research to the CSIR by the Planning Commission at national level and how these directions were manifested in the organizational and institutional plans? (2) what was the influence of one of the policy directives, i.e. the import substitution directive on R&D in the CSIR?

The first hypothesis proved was that inadequate attention was paid to the consolidation of sustained scientific and technological capability building in CSIR due to alignment of its plans with the national plans. It was found that national plan guidelines changed accordding to political priorities and had little reference to scientific development needs. The lack of objectivity within the plant and inconsistency between national plans percolated to the

organizations and institutions. The case of National Chemical Laboratory was chosen for the institutional level analysis.

The second hypothesis put to test was that the adoption of import substitution reflected lack of planning for the generation of long term scientific and technological capability. This in turn was instrumental in bringing about a dip in Basic research and Applied research of high order. This hypothesis was tested by taking the case of NCL only. It was found that the import substitution directive, undoubtedly gave the laboratory a sense of purpose and well defined time targeted tasks, building up of linkages with industry and design engineering firms, creation of design cells in the laboratories which led to the enrichment of working culture of the laboratories but most of these programmes were not rich enough in their R&D component. The policy was successful in terms of providing a high rate of commercializable technologies when a package of supportive policy measures was provided. Though it had its value as learning process, it had implications for the long term scientific and technological capability. This was evident from the data on papers and patents, which showed a quantitative and qualitative dip during the import substitution period. The results were found to be statistically significant. There was an adhocism in the selection of the research projects since the concept of import substitution was never defined meaningfully. As a result projects were chosen indiscriminately on the basis of foreign exchange conservation and without reference to the capability building. The implications of the adoption of import substitution followed in the form of adoption of a defensive policy which failed to generate areawise sustained scientific skill or develop into schools of excellence.

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