

**THE STUDY OF  
RELATIONSHIPS BETWEEN CHANGING TECHNOLOGY AND  
MANAGEMENT IN A TELECOMMUNICATIONS  
ORGANISATION**

*By*  
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*THESIS SUBMITTED IN FULFILMENT OF  
THE REQUIREMENTS FOR THE AWARD OF  
THE DEGREE OF  
DOCTOR OF PHILOSOPHY*



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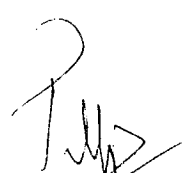
## Dedication

This research work is dedicated to the Telecommunications Engineers who are striving to keep management of telecommunications organisations consonant with changing technology to serve the humanity effectively

## CERTIFICATE

This is to certify that the thesis entitled, "The Study of Relationships between Changing Technology and Management in a Telecommunications Organisation" being submitted by Mr. Vijay Kumar for the award of the degree of Doctor of Philosophy, is a record of bonafide research work carried out by him under my guidance and supervision. The research work is in conformity with the rules and regulations of the Indian Institute of Technology Delhi, and has reached the requisite standard.

The research report and results presented in this thesis have not been submitted in part or full, to any other University or Institution for award of any degree or diploma.

  
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I owe my gratitude to the members of my family and my parents for their patience, co-operation and constant inspiration without which this study could not have been completed.

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Dated at New Delhi, the 22nd December, 1989.



(VIJAY KUMAR)

## ABSTRACT

This study is concerned with an attempt to understand the implications of changing technologies on the management of organisations. Earlier studies have considered technology in a static fashion as having 'impacts' or 'imposing itself' on organisational behaviour. Such an approach neglects the processes through which new technologies are implemented and operated, and outcomes of change established and modified.

The present study attempts to treat technology as a process. The management of an organisation is seen in this context in this study. The technology chosen is telecommunications technology and the organisation in which the study has been carried out is the Department of Telecommunications in India.

A review of telecom. technologies indicates that the telecom. organisations have no escape from these changes. In addition, these organisations are under pressures of changes in Government regulatory policies such as de-regulation, privatisation and introduction of competition. The organisations therefore, have to learn to live with these changes.

An attempt is then made to trace the problems faced by the Department of Telecommunications and the regulatory changes to the changing technologies.

The study then proposes that the telecom. administrations should organise themselves as per the life stages of technologies to cope with these changes. Ten such stages have been identified. They are Forecasting, Strategy Formulation and Action, Evaluation, Decision-making, Implementation Planning, Resource Generation, Introduction of new technology, Operation, Maintenance and Phasing out. It is seen that a number of technologies have to be in their different life stages in the organisation concurrently.

It is hypothesized that the various units of the organisation dealing with different stages of technology will need significantly different organisational parameters. Further, the type of personnel needed for different stages of technology will also be significantly different.

The study proceeds with identification of critical parameters of the organisation and the personnel which might bring out the variances in the different units of the same organisation.

Nine parameters chosen for the Organisation are :

Autonomy, Flexibility, Discretionary powers, Answerability to audit, Commitment required from top, Rules, Use of bureaucratic approach, Role of hunches, Workers' participation in day-to-day changes in policies.

Nineteen parameters chosen on Personnel are:

Leader's background, Knowledge of technical specifications, Knowledge of circuitry, Organising skill as a leader of the unit, Inventiveness, Planning skill, Tendency for adherence to rules and procedures, Skill to work as a team, Skill to deal effectively with other ministries and wings of the organisation, Skill to handle

crisis, Breadth of vision, Depth of vision, Skill to keep the show going, Skill to take unions along, Skill to foresee the changing environment, Ability to keep pace with technology, Ability to act in the face of uncertainties, Skill to introduce change in the organisation, Skill to deal with public.

For each of the parameter, detailed hypotheses were developed suggesting the comparative extent to which each was needed for the ten stages of technology.

The study is based on the perceptions of senior managers of DOT. The questionnaire was administered to 153 senior managers and the response was received from 73.

Statistical results are reported and discussed.

Implications of the results are discussed. Limitations of the study alongwith suggestions for future work are given. A list of references is included. Lastly Appendices are given.

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