MANAGING FOREIGN COLLABORATION IN ELECTRONICS AND TELECOM SECTOR-A STUDY OF PROCESS AND IMPACT IN ENTREPRENEURIAL ENTERPRISES

by
DEEPAK DOGRA

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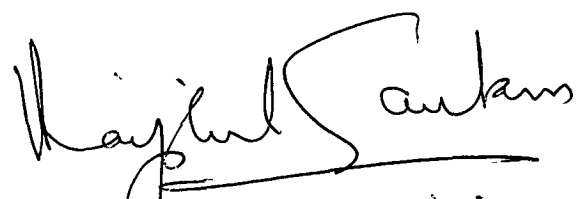
CERTIFICATE

This is to certify that the thesis entitled **Managing Foreign Collaboration in Electronics and Telecom Sector - A Study of Process and Impact in Entrepreneurial Enterprises** being submitted by **Deepak Dogra** to the Indian Institute of Technology, Delhi, India for the award of the degree of **Doctor of Philosophy**, is a record of bonafide research work carried out by him under my supervision and guidance. The results obtained in this thesis has not been submitted, in part or in full, to any other university or institute for award of any degree or diploma.



Professor Vinayshil Gautam
Department of Management Studies,
Indian Institute of Technology, Delhi,
New Delhi-110 016

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ABSTRACT

Since the liberalisation policy announcements of 1991 there has been an understandable spurt in foreign collaborations in matters related to technology. Such collaborations need to be modulated with reference to the process and impact of technology transfer. This study focuses on these issues with reference to experiences of entrepreneurial enterprises in the electronics and telecom sector. The prevalent tendency has been to associate entrepreneurship with small business start-up and management. In this study however, an entrepreneurial electronic and telecom enterprise is defined as that enterprise which proactively supports four criteria i.e. introduction of new goods, introduction of new methods of productions, opening up of new markets and as an industrial organization.

The data for study were derived from a sample of 80 entrepreneurial electronic and telecom enterprises. Information was gathered with two structured questionnaires, one pertaining to technology transfer and the other to see the impact of transferred technology on organisational structural variables. The study has been carried out with focus on the organisational set up. The study attempts to estimate and analyze trends for manufacture of electronic equipments and components in India under Restructuring policy phase (before 1980). Partial liberalized policy phase (1981 to 1990) and Liberalized policy phase (1991 to 1994). Similarly for telecom equipments and components Partial liberalized policy phase was from the period 1984 to 1990 and Liberalized policy phase from 1991 to 1994 i.e. in case of the telecom sector, the

duration identified for partial liberalized policy phase was 1984 onwards to 1990 and for liberalized policy phase 1991 to 1994.

Given the nature of data which were not customised for the analysis of the foreign collaborations in electronic and telecom sector alone, an attempt was made to look at general trend of collaboration during three phases i.e., Restructuring policy phase, Partial liberalized policy phase and Full liberalized policy phase. It was identified that procedure of permission for foreign technology agreements which were complicated before the year 1991 now stand simplified and involve only seven steps. With the help of questionnaires, responses were also gathered on 12 issues considered important by Indian electronic and telecom entrepreneurial enterprises while negotiating for overseas technology. In order to see the impact of this overseas technology on organizational variables, for variable like Control information system and Delegation of Authority, ratings were obtained from the senior executives on the use of 24 controls in their firms. These 24 variables were subjected to factor analysis which resulted into six factors. It was found that all the six factors explained total variations of 70 percent.

Because electronic and telecom entrepreneurial enterprises do not operate only one technology, Khandwalla's technology classification of extent of mass production was applied in order to operationalize those technologies. Accordingly five technologies were identified as Custom, Small batch, Large batch, Mass Production and Continuous process technologies. This resulted into operation technology as one of the variable. These factored variables were then regressed in order to determine their influence on the dependent variable i.e., Operation technology. Influence of

factored variables was also seen on organisation size. Because influence of factored variables on operation technology was explained only upto 13 percent, regression analysis was also carried out with addition of more variables like, Changes Undergone in Operation Technology, Formal Competency of Supervisors, Computer Automation Support, Formalisation, Extent of Automation in Operation Technology, Interdependent Specialization, Extent of Backward Integration, Extent of Forward Integration.

This study, based exclusively on data collected in the Indian environment, is an initial attempt in making an original contribution to growing international literature on issues of foreign collaboration and technology structure relationship. It is hoped will prove useful to management experts and policy decision makers.

CONTENTS

Chapter IV

INDIAN ELECTRONIC AND TELECOM SECTOR - EVOLUTIONARY TREND ANALYSIS

Chapter V

TECHNOLOGY COLLABORATION AGREEMENT - PROCESS AND FLOWS

Chapter VI

TECHNOLOGY TRANSFER AND ORGANISATION STRUCTURE - IMPACT AND IMPLICATIONS