

**COMPETITIVENESS THROUGH
TECHNOLOGICAL EXCELLENCE:
CASE OF INDIAN SOFTWARE INDUSTRY**

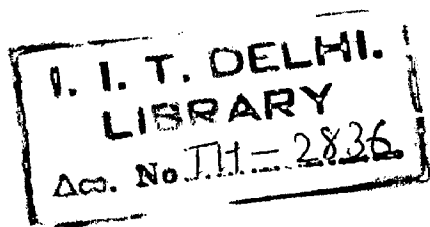
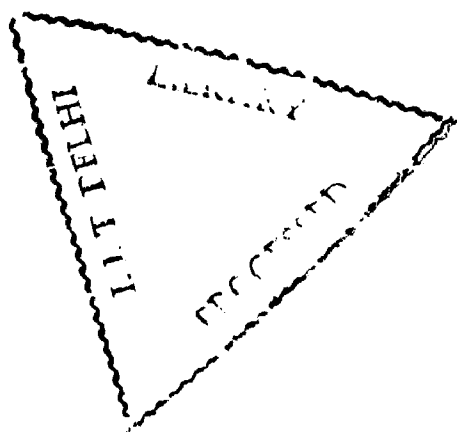
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Submitted
in fulfillment of the requirements of the degree of
Doctor of Philosophy
to the



INDIAN INSTITUTE OF TECHNOLOGY DELHI
HAUZ KHAS, NEW DELHI

December 2001



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658.821:681.3(540)
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competition - industry -
Software - India
software industry - India

CERTIFICATE

The thesis entitled '**Competitiveness Through Technological Excellence: Case of Indian Software Industry**' being submitted by **Mr. Himanshu Kumar Shee** to the Indian Institute of Technology Delhi for the award of the degree of **Doctor of Philosophy (Ph.D.)**, is a record of *bona fide* research work carried out by him. He has worked under our super-vision, and has fulfilled the requirements for the submission of this thesis, which has attained the standard required for a Ph.D. degree of the institute. The results presented in this thesis have not been submitted elsewhere for the award of any degree or diploma.



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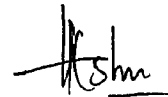
Date 14/5/2002

Acknowledgements

I express my sincere thanks and gratitude to Prof. D.K. Banwet and Dr. Kirankumar Momaya for providing a stimulating research environment. I could not have pursued this complex and multidimensional topic of research without Dr. Momaya's consistent help in clarifying the fundamentals of the research background, open-minded attitude and patience. I am grateful to Prof. Banwet for his generous guidance in shaping the research to the final stage. Help from other faculty members is also appreciated.

Numerous IT professionals in New Delhi, Gurgaon, NOIDA and other parts of the country provided feedback through questionnaire surveys and telephonic interviews for this research. I would like to extend my thanks to them. The research efforts are ably facilitated by the study leave from IGNOU. I am grateful to the Vice-chancellor, Director Academic Coordination, Director SOMS, faculty and staff members of the School of Management Studies for extending help directly or indirectly in my research work.

I am indebted to my family and in-laws for encouraging my long-standing research work. I am grateful to my father and brothers for their lifetime support for higher study. I extend my thanks to my wife Rajalaxmi, daughter Riha and sister Jayalaxmi for their fulltime support in the research.



COMPETITIVENESS THROUGH TECHNOLOGICAL EXCELLENCE:

CASE OF INDIAN SOFTWARE INDUSTRY

ABSTARCT

Indian software industry is one of the leading industries and a key contributor to the national economy. It has been consistently enjoying high growth rate of more than 50 percent both inside domestic and export market. Despite its remarkable growth and achievements, it has not been as successful internationally as its counterparts in the U.S.A. The total global share of Indian IT industry is less than two percent, which may not be considered satisfactory in view of India's resources, capabilities, potentials and aspirations to be among the top few in the world. However, the performance of the software industry has linkages with the dynamics of its factors of competitiveness i.e. the understanding of the relationship among the factors of competitiveness, specifically the role of technology in enhancing the competitiveness.

Understanding the dynamics of competitiveness is a prerequisite for enhancing the competitiveness at all levels: country, industry and firm. The above-discussed problem of competitiveness at the industry level can be ultimately traced out to the competitiveness at firm level. Hence, the software firms have been considered as the unit of analysis of this study. Identification of factors of competitiveness at the firm level and establishing correlations, if exist, among them has been an attempt in this research. Technology is an important driver of

competitiveness in software industry. Therefore, the study has been focused on the competitiveness of software industry through technological excellence.

Relationship among different factors of competitiveness can be empirically established through systematic survey and analysis of data. Data collected from 100 plus firms in software industry have been analysed in Asset-Process-Performance (APP) framework through factor analysis. The framework hierarchically organizes 72 criteria into 15 factors, and factors into three facets of competitiveness: assets, processes and performance. Numbers of hypotheses have been tested pertaining to factors of competitiveness in general and technological factors in specific. A comprehensive framework of competitiveness has been proposed for the purpose.

The findings of the research need to be verified through detail case study of few select firms. Three Indian software firms have been studied to examine the applicability of the findings. Two global software firms, as learning case, have been undertaken and the findings thereof are referred as suggestive measures for Indian software firms to enhance their global competitiveness. Technology being the domain of study, both categories of case studies has been cross-examined for their competitiveness through technology and its management.

The findings from the questionnaire survey and hypotheses testing suggest that a positive correlation exist among three facets of competitiveness: assets, processes

and performance. The performance factors, in an APP framework, are positively correlated with asset and process factors. Management of intangibles, change management, and synergies in operations are significantly observed in competitive firms. Further, the quality standards and high productivity have been observed with competitive software firms. Findings pertaining to technology reveal that technological processes are better contributor than technological assets. Above all, technological factors contribute significantly more to the performance factors.

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