STRATEGIC TECHNOLOGY MANAGEMENT IN AUTO COMPONENT INDUSTRY IN INDIA

by

TAPAN SAHOO
Department of Management Studies

Submitted
In fulfillment of the requirements of the degree of
DOCTOR OF PHILOSOPHY

to the

INDIAN INSTITUTE OF TECHNOLOGY, DELHI
July, 2010

Automobile industry; strategic management.

CERTIFICATE

This is to certify that the thesis entitled **"Strategic Technology Management in Auto Component Industry in India"**, being submitted by **Mr. Tapan Sahoo** to the Indian Institute of Technology, Delhi, for the award of the degree of **Doctor of Philosophy (Ph.D.)**, is a bonafide record of original research work carried out by him. He has worked under our guidance and supervision, and has fulfilled the requirements for the submission of the thesis which has attained the standard required for a Ph.D. degree of this institute. The results presented in the thesis have not been submitted, in part or full, to any other University or Institute for award of any degree or diploma.

(Dr. K. Momaya)
Department of Management Studies
Indian Institute of Technology, Delhi
Hauz Khas, New Delhi – 110016
India

(Prof. D.K. Banwet)
Department of Management Studies
Indian Institute of Technology, Delhi
Hauz Khas, New Delhi - 110016
India

(Currently working as Professor at
S. J. Mehta School of Management
Indian Institute of Technology, Bombay
Powai, Mumbai - 400076, India)

Date: July 2010

ACKNOWLEDGEMENT

I express my deep sense of respect and gratitude to Prof. D.K. Banwet and Dr. K. Momaya, for their invaluable and continuous guidance throughout the course of my research work. They have been an immense source of inspiration for me. Their words of encouragement, immeasurable wisdom and constructive support have always been a source of strength to go forward. Their able guidance at each step helped steer the research in the right direction. I am thankful for the valuable time that they spent with me and allowing me to have continuous access to their profound knowledge. This thesis could not have reached its present form without their keen interest in my development, valuable direction and constant guidance. Words are inadequate in expressing my heartfelt gratitude to them.

I am thankful to Prof. R.K. Baisya, Chairman of my student research committee (SRC), for his support and insightful comments during the course of this research. I am also thankful to Prof. S.S. Yadav, HOD, Department of Management studies and Prof. S.G. Deshmukh, current Director, ABV-IIITM, Gwalior (earlier Professor, Mechanical Engineering Department, I.I.T., Delhi), members of my SRC, for their constructive feedback, help and support throughout the course of my research work.

I am thankful to Prof. Sushil & Prof. Ravi Shankar for their support and guidance during the course of this research. I would also like to thank Prof. S.K. Jain, Prof. Vinayshil Gautam, Prof. P.K. Jain, Prof. Kanika. T. Bhal, and Prof. M.P. Gupta for their support and encouragement.

I wish to thank Dr. B.S. Nagi, former Director of Research, Council for Social Development for all his kind support and valuable time. Dr. Nagi's profound knowledge and logical thinking has been of great value to my research work.

I am deeply grateful to Mr. I.V. Rao, Managing Executive Officer (Engineering), Maruti Suzuki India Limited, for his encouragement and support. I am thankful to my colleagues Mr. Arvind Arora, Mr. Manoj Agrawal, Mr. P. Panda. Mr. Sandeep Raina, Mr. Deepak Kumar, Mr. C.N. Patro, Mr. P. Khan, Mr. B.R. Kumar and Mr. S. Goyal for their support. My special thanks to Mr. Prashant Tuli and Mr. Ritesh Khandelwal for their untiring contribution during the course of the research.

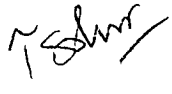
I express my sincere thanks to the auto component industry leaders Mr. N.K. Minda, Mr. Deepak Jain, Mr. Pankaj Mittal, Mr. D.M. Reddy, Mr. A.G. Satvinder Singh and Mr. Sanjay Khatri for their valuable support and inputs in carrying out the case studies. I am also thankful to all the respondents from industry, who had responded to my questionnaire as a part of my survey work.

I sincerely thank the staff of the Department of Management Studies, IIT Delhi for their kind help in my official work.

I am thankful to all Ph.D. research scholars, especially Dr. G.P. Sahu, Mr. Rohit Joshi Mr. A. Ramesh, Dr. Ashish Agarwal and Mr. V.R. Pramod for their valuable support during the course of this research.

I humble myself in expressing my eternal gratefulness to God, the almighty, for all the blessings he has showered upon me and my family. But for the divine blessings, this research would not have been completed.

Last but not the least, I am ever grateful to my family - parents, siblings, wife and son, who are a great source of strength and inspiration for all that I do and achieve. My wife Leena is my eternal source of strength, hope and inspiration. This research thesis is a reflection of my family's inspiration, support and encouragement.



Tapan Sahoo

ABSTRACT

The study aims to assess the Strategic Technology Management (STM) practices of auto component manufacturers in India and develop a framework for STM. Automobile industry along with the auto component industry represents one of the most important pillars of economic and technological development in the country. In this era of global competition, strategic technology management is seen as an enabler to increase competitiveness of the auto component industry.

The study helps gain insight into the STM practices followed by medium and large auto component manufacturers in India for formulation of technology strategy, technology planning, technology acquisition and absorption for developing technology capability and improving technology performance.

Based on literature review and expert opinion, a conceptual model for STM in auto component industry context in India has been developed using Interpretive Structural Modeling (ISM) methodology. Further, MICMAC analysis has been carried out to derive the driving power and dependence of the factors considered in the conceptual model. The research hypotheses have been formulated based on literature review and the conceptual model.

Case studies have been conducted on six auto component manufacturers and a leading automobile manufacturer to get a deeper understanding of STM in the automotive context in India. Case analysis of four auto component manufacturing firms was done using the flexible systems methodology, SAP-LAP (Situation-Actor-Process – Learning-Action-Performance). Two case organizations were taken up to study the impact of STM practices using Dynamic SAP-LAP methodology. In these six case organizations, the STM capability mapping has been done using primary data on the framework developed for analyzing STM capability. The case study at a leading automobile manufacturer has

been conducted using the recently developed SAP-LAP Hills methodology to bring out key learning and interaction between automobile manufacturers and auto component manufacturers.

A questionnaire has been developed to assess the STM practices and validate the conceptual framework developed using ISM. Based on the survey response and statistical analysis, research hypotheses have been tested. From the survey analysis, 'Strategic business objectives' has been found to be positively related to 'Technology Strategy' formulation. 'In-house Technology Development' has been found to be significant contributor of 'Technology Capability'. 'Technology Performance' and 'Technology Strategy' are found to be significant contributors for the 'Business Performance' of the organization. Based on the questionnaire survey and statistical analysis, the conceptual model developed for STM in Indian context has been validated.

The learning from the case studies and questionnaire survey has been synthesized. Major research implications and significant contributions of the research are presented. The limitations of this research and scope for future work have been discussed. This study is likely to be useful for top management of the auto component manufacturing firms in India, policy makers and academicians.

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