

# ADVANCED MANUFACTURING TECHNOLOGY AND PLANNED ORGANIZATIONAL CHANGE

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Developing countries like India, where technological change is the thrust in manufacturing industries, have introduced advanced manufacturing technology (AMT) to have competitive edge in the global market. Despite the claims that attractive benefits can accrue through the use of AMT in manufacturing firms, only modest benefits are reported. The superior performance of AMT firm in terms of maximum labor productivity, superior quality, and high customer satisfaction has not been achieved. Firms in which AMT has already been introduced have not progressed to higher levels of AMT to achieve manufacturing prosperity. The main reasons attributed to how performance are human factors in the implementation of AMT that have been overshadowed and organizational structure of AMT firm, which remains mechanistic in the changed environment. This paper presents a framework to illustrate low superior performance can be achieved by a planned change process. A set of propositions is offered suggesting that superior performance will result when there is a positive change in work attitudes as a result of elimination of psychological barriers to technological change and change in organizational structure compatible with new technology by a planned change process. © 2000 Elsevier Science Inc.

## INTRODUCTION

Manufacturing industries play a vital role in the growth of developing countries as they support a high standard of living. Indian manufacturing has been affected by

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the new environment that has replaced the old protective world. The firms that operate in developing countries face many uncertainties when they venture into global market. Exposure to global competition reveals that Indian Manufacturing can no longer be a simple conversion of raw material into goods, but a process of conversion constantly reinventing itself. Realizing the need to reduce manufacturing costs, improve quality, and respond to the changing needs of customers, many firms have introduced advanced manufacturing technology (AMT) in the existing resources. Despite the claims that attractive benefits can accrue through the use of AMT in manufacturing firms, only modest benefits are reported (Virmani, 1990). The superior performance of AMT firm, in terms of higher productivity, superior quality, and high customer satisfaction has not been achieved. Although AMT is known for the improvement of product quality, reliable production, and reduction of manufacturing cost, Indian manufacturing firms are not anywhere near any far-reaching effects of manufacturing prosperity. Many firms that have already introduced AMT have not progressed to its higher levels, which would lead to fast and on-time delivery, rapid product mix, developing new product, and consistent quality of products (Nemetz & Fry, 1988).

Analysis of the performance of AMT firms in the past has led to the following queries. Will the firms be able to survive and adjust to continuously changing environment? More specifically, can they meet the challenge of implementing AMT in a traditional environment in which the ability to adopt new technology has become the measure of success? Only a few studies has been done to investigate the organizational changes consequent to implementation of MT in the context of developing economy. This paper explores the issues related to the implementation of AMT and suggests approaches to achieve superior performance by planned change process.

First, a brief review of current literature in the area of technological changing environment and organizational change is presented. Then a framework is proposed for incorporating the influential role of AMT in the change of organizational structure and employees' attitude. Superior performance will result when the employees' attitude to work under AMT becomes more positive as a result of accepting AMT and change in structure. We then offer propositions on technology-structure—employees' relationship emanating from the framework that provides the basis for future research and for theory formations on technology management.

## LITERATURE REVIEW

As this article focuses on AMT and its influence on organizational structure and employees, the literature review has been limited to the areas of technological change, implementation issues, resistance to technological change, change in structure, change in work attitudes toward technological change, and performance of employees.

AMT has been viewed as a strategic weapon to gain competitive advantage, to improve productivity and performance, to improve flexibility of production, and to improve product and service (Boddy & Buchanan, 1986; Fallik, 1988; Preece, 1995). Several other studies also support the advantages of AMT over the traditional manufacturing technology.

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