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Technology and quality improvements in Mexican companies: some international comparisons

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Abstract

This paper focuses on selected initiatives oriented towards technological improvements of performance in Mexican companies and betterment of the quality of Mexican products. These aspects are examined quantitatively and qualitatively. Data on research and development (R&D) and education expenditures, indicators of infrastructure development, technology adoption rates, and level of skills, and features of corporate and national cultures are used in analyses. Two restructuring approaches—Business Process Reengineering (BPR) and Total Quality Management (TQM)—are explored from the perspective of their applicability to Mexican conditions. It is observed that substantial problems can be expected when implementing them in Mexico when trying to improve quality and technological indicators of performance. Some suggestions regarding restructuring procedures are outlined. © 2000 Elsevier Science Inc. All rights reserved.

Keywords: Mexico; Technology; Quality; Restructuring; Business Process Reengineering; Total Quality Management

1. Introduction

Although, empirical tests have not been conclusive regarding specific means through which technological change impacts on economic performance, technology is regarded as a driving force behind gains in quality and competitive position, both at the macro- and micro-economic level. Technological change is fostering competitive advantage (for example, flexibility in response to marketplace challenges) while undermining the impor-

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tance of traditional resources, such as low-cost labour and availability of raw materials, which frequently helped economies sustain growth in the past. Currently, ISO/QS certification is often required to establish or keep cooperation links. Yet, quality and technology should be viewed in a broad perspective that encompasses social acceptance and understanding, infrastructure and economic conditions surrounding business operations, as well as legal and competitive pressures, which force companies to excel and be innovative. Cost (price) may be, according to d'Aveni and Gunther (1994), irrelevant if quality requirements are not satisfied. Furthermore, there are currently “pervasive long-term trends that will have broad implications for the future productive performance” (Berger et al., 1989, pp. 45–46), i.e., an increase in international industrial cooperation and the resulting increases in the mobility of technologies, technological change and increased sophistication of consumers. These patterns are likely to continue to impact on the competitive position of those who develop technology and those who can absorb it efficiently. Those unable to perform either of these tasks are left behind in terms of economic progress. Not surprisingly, therefore, questions of technology development and acquisition, along with its adoption and diffusion, are of immediate interest to scientists, managers, and politicians. A critical link between technology and the economy exists: the only real choice is whether one wants to see it. Inheritance is of lesser importance than the ability to create factors of competitiveness (Porter, 1990), and irrespective of whether or not one accepts similarities between company type and national type competitiveness (Krugman, 1994).

The objective of this paper is to explore the ability of Mexican companies to absorb modern approaches related to technology and quality improvements. Possible implementation problems and means for betterment are presented. Selected aspects pertinent to technological restructuring of Mexican companies are discussed. Based on the examination of:

- quantitative conditions for technology improvement initiatives (e.g., items related to National Innovation Systems (NIS)),
- qualitative conditions for technology improvement initiatives (e.g., the level of infrastructure development, industrial practices, and the rate of technology adoption), and
- cultural conditions,

the competitiveness of the Mexican economy is explored in detail through a comparison of its respective indicators to those in other countries. The first two sets of indicators are evaluated through the analysis of statistical data and ranking of Mexico according to the World Competitiveness Report (1995, 1997). The possibility of using new technologies, in particular, person-embodied technologies (Kedia & Bhagat, 1988), is examined with the use of culture characteristics as presented by Hofstede's (1991) indices.

Radical, dramatic, fundamental, and comprehensive technological changes are frequently needed in Mexican companies. Thus, two restructuring approaches are explored in more details: Total Quality Management (TQM) and Business Process Reengineering (BPR). Their principles are outlined highlighting major assumptions, implementation procedures, and the congruency of their underpinnings to the Mexican context.

Restructuring of Mexican companies is not unusual, yet, most often, it takes place in these companies, which either cooperate with foreign companies or which operate internationally.

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