

# Manufacturing strategy in context: environment, competitive strategy and manufacturing strategy

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## Abstract

Considering manufacturing strategy in its larger strategic context has been thematic in conceptual literature in operations but relatively neglected in empirical studies, thus leaving predominant conceptual models of manufacturing strategy largely untested. This research develops a conceptual model of manufacturing strategy from the literature and tests the model using data from a sample of manufacturers in three industries in the United States. This research contributes to manufacturing strategy literature in four ways. First, it supports empirically a model of manufacturing strategy that is predominant in the conceptual literature. Second, it demonstrates that the strategic linkages in manufacturing businesses are clearer among good performers than poor performers. Third, this research suggests that competitive strategy acts as a mediator between an organization's environment and its manufacturing strategy. Fourth, the findings suggest that the relationship between competitive strategy and performance is mediated by manufacturing strategy. These last two findings have important implications for approaching research in manufacturing strategy in the future. © 2000 Elsevier Science B.V. All rights reserved.

*Keywords:* Operations strategy; Empirical research

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## 1. Introduction

Research in operations management has been characterized in recent years by an increasing effort devoted to the study of manufacturing strategy using empirical methods. A review of the literature reveals that much of this empirical research effort has fo-

cused on the internal consistency of manufacturing strategy (e.g., priorities and programs) and assessing the performance consequences of such consistency. Surprisingly little empirical research has addressed the alignment among manufacturing strategy, business-level competitive strategy, and the competitive environment faced by the firm, although much of the conceptual literature in manufacturing strategy has focused on this issue of alignment (Swink and Way, 1995). Thus the predominant conceptual model of manufacturing strategy that considers manufacturing

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in the larger strategic context of the firm has remained largely unsubstantiated because it has not been adequately tested.

We approach this relatively neglected area by testing empirically an accepted conceptual model of manufacturing strategy in the context of a sample of firms' competitive strategies and environments. In essence, we address three issues. First, we ask whether data collected from a sample of manufacturers are consistent with the model supported by much of the conceptual literature. We describe that conceptual model in Section 2. Second, we address whether or not manufacturing strategy appears to matter in the larger context of the firm's environment and competitive strategy. In other words, we test whether there is a relationship between manufacturing strategy and business performance when the effects of environment and business-level competitive strategy are also considered. Third, we address the form of the relationship between competitive environment and manufacturing strategy. Specifically, we analyze the extent to which competitive strategy mediates the effects of environmental dynamism on manufacturing strategy.

Environmental dynamism refers to the degree of turbulence in products, technologies, and demand for products in a market (Miller and Friesen, 1983; Dess and Davis, 1984). By competitive strategy we refer to the broad dimensions that a business uses as a basis of advantage, e.g., price vs. differentiation (Porter, 1980). Manufacturing strategy may be thought of as the manufacturing-oriented dimensions that win orders (Hill, 1994). Although the possible mediating effects of competitive strategy on the relationship between environmental dynamism and manufacturing strategy have not been tested previously, the environment has long been identified as an important contingency in conceptual and empirical studies of both competitive and manufacturing strategy (e.g., Skinner, 1969; Hofer, 1975; Van Dierdonck and Miller, 1980).

To address these issues, we employ data from a sample 101 U.S. manufacturers across three industries to estimate a path model using covariance structure analysis. We contrast the behavior of high and low performers by splitting the sample on the basis of business performance. We utilize self-reported performance measures to achieve the performance

split and to analyze performance effects, although we acknowledge the shortcomings inherent in such data.

## 2. Manufacturing strategy model

A review of the literature in the area reveals that the conceptual model presented in Fig. 1 is a representative view of manufacturing strategy in its context. The model suggests that environmental dynamism affects both competitive strategy and manufacturing strategy. Competitive strategy is cast in a mediating relationship because it intervenes between environmental dynamism and manufacturing strategy (Venkatraman, 1989). The model also implies that competitive strategy directly influences manufacturing strategy. Further, the model suggests that the

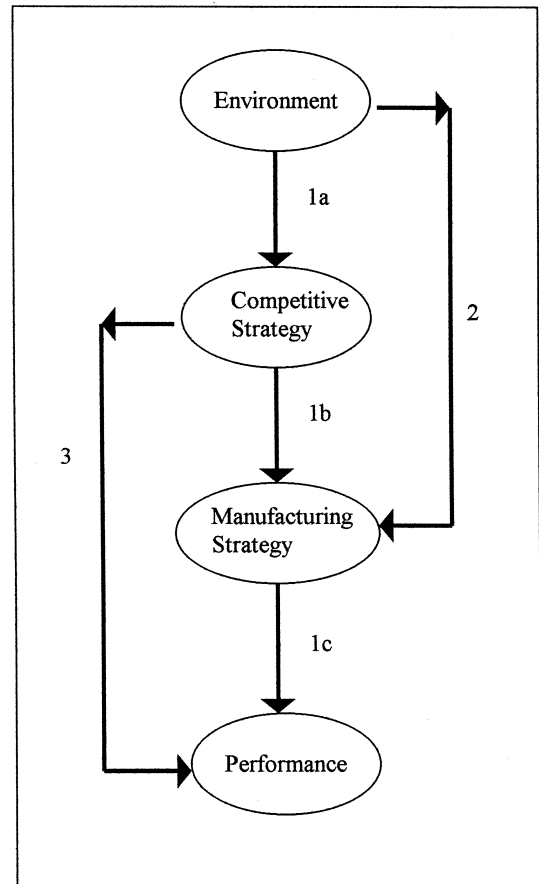


Fig. 1. Conceptual model of manufacturing strategy in its context.

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