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Generic manufacturing strategies and plant performance

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Abstract

This study examines the effects of the fit between generic manufacturing strategies (GMS) and manufacturing objectives upon strategically relevant plant level performance outcomes (e.g. cost-efficiency, quality, delivery, flexibility, and innovation). The proposition that plants with generic manufacturing strategies that are consistent (fit) with operational objectives will experience relatively higher levels of performance than others is tested using data from multiple countries and industries. A simultaneous estimation analysis revealed significant relationships between generic manufacturing strategies and plant performance, when accounting for operational objectives and while controlling for country, industry, and size effects.

Keywords: Operations strategy; Empirical research

1. Introduction

Generic business strategies at the organizational level have been studied extensively in the strategic management literature (Homburg et al., 1999; Lassar and Kerr, 1996; Marlin et al., 1994; McGee and Thomas, 1986; Miller and Dess, 1993). Generic business strategies are "common patterns of competition" that "generate competitive advantages across a variety of industries" (Kotha and Orne, 1989). More recently, generic strategies have also been examined at the product level (Nayyar, 1993). A number of scholars have suggested that the manufacturing function can be a source of competitive advantage to the firm (Hayes and Wheelwright, 1984; Hill, 1989; Miller and Rogers, 1956; Skinner, 1969, 1978). However, empirical validation studies of generic strategies that focus on the functional level of manufacturing are relatively rare, even though, "generic strategies ... remain useful" (Ward and Duray, 2000).

Some studies have examined the relationship between strategic operations intentions, deliberate strategy, and firm performance (e.g. Miller and Roth, 1994). Citing Mintzberg (1977), Kotha (1993), distinguishes between "intended strategy" (what the firm intended to do), "unrealized strategy" (intended actions that do not occur), "deliberate strategy" (actions the firm takes as a function of what it intended to do), "emergent strategy" (actions that were never intended at the outset, but nevertheless, get incorporated

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into the final outcome), and "realized strategies" (the pattern of actions observed by the researcher). However, few studies have reported analyses of generic manufacturing strategies (GMS) and plant-level performance outcomes (Bozarth and McDermott, 1998; Ward and Duray, 2000).

Miller and Roth (1994) observed that the definition of a manufacturing strategy includes two core elements. The first element is represented by the "task" of manufacturing. The manufacturing task identifies the purpose or mission of manufacturing and includes the objectives that must be accomplished by manufacturing (Skinner, 1978). The other key element in the definition of a manufacturing strategy is the "pattern of choices" that the manufacturing function makes over time (Miller and Roth, 1994). It is generally accepted in the manufacturing strategy literature that this "pattern of choices" should support or be consistent (fit) with the manufacturing "task". Miller and Roth (1994, p. 286) succinctly state this important presumption:

> The demand that manufacturing choices and manufacturing tasks be linked follows from the presumption that good designs (such as those specified by the manufacturing choices) meet appropriate design criteria (as defined by the manufacturing task).

However, as a general rule, theoretical and empirical studies in the manufacturing strategy literature tend to accept as given that the manufacturing task and the "pattern of choices" are consistent (mutually supportive), without explicitly empirically examining whether or not this is the case.

This study seeks to fill a gap in the literature, by empirically examining whether a fit between intended manufacturing strategy (as evidenced in existing manufacturing structures at the plant level) and realized manufacturing strategy (also at the plant level) is predictive of strategically relevant manufacturing performance outcomes at the plant level. In the following section, we discuss relevant literature on the topic of generic manufacturing strategies and justify the theoretical framework that is used. Next, we elaborate on the theoretical framework and state our research proposition. Then, we present the empirical methods applied, and the data analysis that was performed, including the results of our analyses. We conclude by discussing the results of our study and their implications for theory and practice.

2. Literature

Generic business strategies have been described as "common patterns of competition" that are identifiable because commonalties exist in the ways in which business units generate competitive advantages (Dess and Davis, 1984; Galbraith and Schendel, 1983; Hambrick, 1983; Meyer et al., 1993). Similarly, generic manufacturing strategies can be described as common patterns of organizing production which are identifiable because commonalties occur in the ways that manufacturers organize their plants in order to achieve manufacturing objectives (Bozarth and McDermott, 1998; Hill, 1994; Kotha and Orne, 1989). These commonalties, when observable, allow scholars to create relatively homogenous groupings (sometimes referred to as gestalts) of manufacturing facilities.

The determination of homogeneous groups based upon taxonomies and typologies has been an important research theme in the general strategic management and organization literature (Meyer et al., 1993; Miller and Roth, 1994; Bozarth and McDermott, 1998). A recent review of the manufacturing strategy literature identified five theoretical frameworks that determine homogeneous groups of manufacturers, based upon taxonomies and typologies—at the level of the plant or strategic business unit (SBUs) (Bozarth and McDermott, 1998). In general, each of the five frameworks was developed so as to be applicable across multiple industries. The five frameworks mentioned (in Bozarth and McDermott, 1998) might be viewed as different ways of describing generic manufacturing strategies. However, only the Kotha and Orne (1989) study specifically claims to represent a generic manufacturing strategy framework.

We employ the typology of generic manufacturing strategy framework proposed by Kotha and Orne (1989) for several reasons. First, the framework (and underlying frameworks, namely, the product-process matrix) has received some recent, yet incomplete, empirical validation (Devaraj et al., 2001; Safizadeh et al., 1996). Bozarth and McDermott (1998) "... suggest that a typology is not fully developed until it has been empirically validated". Second, unlike some of the other manufacturing strategy frameworks, the Kotha and Orne (1989) GMS typology theoretically develops and explicitly examines generic manufacturing strategies. Third it can be viewed as a generalization