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Strategic fit in the general freight motor carrier industry

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ABSTRACT

This study investigates the impact of choosing a particular strategic focus or foci on operational productivity by means of the Malmquist Productivity Index as applied to a consistent sample (for the period 1999–2003) of 69 general freight motor carriers. The results show that general freight motor carriers, regardless of the strategic focus or foci pursued, did not link these strategic positions to an operational posture that reflected both operating efficiency and technological change. An interesting bifurcation is found with regard to the strategic foci of the LTL market niche and firm size growth, with the former of these two strategic foci having a positive impact on operating efficiency and the latter having a positive impact on technological change.

1. Motivation of the study

1.1. Introduction

In an article detailing the nature of business strategy, Michael Porter (1996) provides a discussion of the relationship between strategic positioning and operational effectiveness. He notes that operational effectiveness focuses on performing similar activities better than one's rivals. Specifically, it involves, in a relatively "better" manner, the utilization of a firm's inputs to achieve a set of desired outputs. Strategic positioning, on the other hand, involves performing different activities from one's rivals or performing similar activities in different ways. Porter argues that the connection between operational effectiveness and strategic positioning is defined by the concept of *fit*. Fit involves the ability of a firm to link its operational activities in an manner that most effectively supports its strategic position. Conversely, a firm, having defined a strategic position, should seek to perform the supporting operational activities as effectively and efficiently as possible. Furthermore, Porter notes that because *fit* focuses on the manner in which operational activities complement each other in ways that create real economic value, it creates competitive advantage and *superior profitability*.

The concept of operational efficiency has been explored, to some extent, in the transportation literature. Specifically, there is a body of empirical literature, utilizing data envelopment analysis that has examined the relationship between strategic activity choices and operational efficiency in the airline industry. Banker and Johnston (1994) utilized panel data to examine the relationships between operating strategies, environmental events and efficiency and then related these variables to the competitive position of domestic airlines over the period 1981–1985. In particular, operating efficiency was examined as a function of the percentages of flights through competitive and dominated hubs, the average load factor, aircraft utilization rates, wide-bodied and full-efficient aircraft utilization rates, and a proxy measure for service quality.

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Chan and Sueyoshi (1991) investigated the association between operating efficiency and firm structure and strategy for domestic airlines, before and after deregulation, by means of year-by-year comparisons of efficient and inefficient firms. Firm structure was captured by the simple variable of firm size while the strategy variables included capital utilization, promotion and sales expenditures, labor cost, capital intensity, and debt. A study by Schefczyk (1993) examined the operational efficiency of fifteen large international airlines for the year 1990. He then investigated the relationship between structural and executional drivers and operational efficiency. Specifically, the former set of variables included return on equity, gross margin, passenger load factor, passenger revenues as a percentage of total operating revenues, non-flight assets per available ton-kilometer, revenue growth, and international passenger-kilometers as a percentage of total passenger-kilometers. Two studies by Scheraga (2004a,b) utilized a dataset of 38 large domestic and international airlines for the year 2000 to examine the relationship between airline operational efficiency and financial mobility, as well as, the relationship between operational efficiency and customer service.

While the question of *fit* between firm strategic positioning and operational efficiency is also of interest in the motor carrier industry, except for the work of McMullen (2004), referred to below, there is a dearth of empirical research in this area even though interstate deregulation in 1980 and intrastate deregulation in 1995 certainly provided an incentive for trucking firms to improve their operating efficiency. It is the purpose of this paper to extend this work with regard to the issue of strategic fit in the general freight segment of the motor carrier industry utilizing a comprehensive set of strategic foci previously identified in the existing literature.

1.2. Production competence and strategic fit

The related literature on manufacturing strategy provides a means of building a framework for testing the hypotheses put forth below with regard to strategic fit in the general freight segment of the motor carrier industry. Choe et al. (1997), building on the work of Cleveland et al. (1989) and Vickery et al. (1993), utilize the notion of production competence to explore the link between business strategy and manufacturing strategy. Specifically, production competence is the degree to which manufacturing structural decisions are consistent with business strategy. Thus they note:

> Once the manufacturing priorities based on business strategy are identified, a manufacturing manager must translate the manufacturing priorities into an appropriate choice of production processes, product design, technologies, and facilities to mesh with business strategy (Choe et al., 1997, p. 409).

The generic categories of strategy utilized by Choe et al. (1997) are those found in Porter (1985): cost leadership, innovation differentiation, and integration. Cost leadership is the strategy by which a firm strives to sustain a cost and/or efficiency advantage in the production of its products. Innovative differentiation reflects a strategy by which a firm strives to differentiate its image through product innovations that provide unique value to its customers. Finally, an integration strategy combines a degree of differentiation through product innovation with the maintenance of a low cost position.

In order to link these three generic business strategies to manufacturing structure, Choe et al. (1997), utilize the concepts of process and product complexity. Production or process complexity reflects the levels of automation in the production technologies utilized and the degree of integration between various production operations. Product complexity is characterized by end-product complexity, product standardization, breadth of product line, the volume of production of the end product, and the life-cycle maturity of the end product.

Choe et al. (1997) "ideally" link business strategy and manufacturing structure in the following manner:

1. A cost leadership strategy should be linked to a process innovative manufacturing structure.
2. An innovative differentiation strategy should be linked to a product innovative manufacturing structure.
3. An integration strategy should be linked to an integration structure that reflects both (1) and (2) above.

1.3. Extending the notion of production competence to motor carriers

Feitler et al. (1997) suggest an expanded set of seven dimensions to capture the strategic orientation of motor carriers that are adopted in this study for the general freight segment. These dimensions reflect a comprehensive consideration of the manifestations of strategic positioning that have been considered in the motor carrier literature. Four of these dimensions directly draw their inspiration from the Porter framework. Smith et al. (1992) captured a carrier's focus on cost by measuring total operating expenses per mile. Corsi and Grimm (1989) investigated the related dimension of efficiency by examining annual miles per truck. More specifically, this reflects a motor carrier's intensity of usage of its capital input, or in a general sense, capacity utilization. This variable is akin to a variable utilized by McMullen and Lee (1999) in their investigation of sources of cost efficiency in the US motor carrier industry before and after deregulation. In that study they construct a variable, which is the ratio of standby equipment to operating equipment. They argue that this variable represents how fully a firm is using its equipment. The larger the value of this ratio, the more inputs lie idle and thus the greater the cost inefficiency. A carrier's ability to charge a premium price for trucking services is reflected in the dimension Corsi et al. (1991) measured by total (TL plus LTL) revenues per ton. Scheraga et al. (1994) measure a carrier's LTL niche focus by the percentage of LTL revenue as a percentage of total revenue.