



What drives financial performance–resource efficiency or resource slack? Evidence from U.S. Based Manufacturing Firms from 1991 to 2006

Sachin B. Modi^{a,*}, Saurabh Mishra^{b,1}

^a College of Business and Innovation, University of Toledo, 2801 West Bancroft St, Toledo, OH 43606, United States

^b Desautels Faculty of Management, McGill University, 1001 Sherbrooke Street West, Montreal, QC H3A 1G5, Canada

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ABSTRACT

Extant research in operations management has revealed divergent insights into the value potential of resource efficiency. While one view relates efficiency with good operations management and asserts that slack resources are a form of waste that should be minimized, the other view suggests that limited resource slack can impose heavy costs on firms by making them brittle. In this research, the authors build on these views to investigate the relationship of inventory, production, and marketing resource efficiency of firms with three metrics of financial performance (i.e., Stock>Returns, Tobin's Q, and Returns-on-Assets). The authors evaluate the theoretical framework using secondary information on all U.S. based publicly-owned manufacturing firms across the 16-year time period of 1991–2006. Analysis utilizing a mixed-model approach reveals that a focus on resource efficiency is positively associated with firm financial performance. However, findings also support the arguments favoring slack, indicating that the financial gains from resource efficiency exhibit diminishing returns.

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1. Introduction

The relationship between resource efficiency and firm performance has been debated by operations management researchers for decades (Adler et al., 2009). One view has equated efficiency with “good” operations management (Hall, 1983; Zipkin, 1991), and has asserted that excess resources are a form of waste that should be minimized (Womack et al., 1990). Researchers taking this view further argue that a focus on resource efficiency allows firms to make their operations more stable and predictable and affords them lower overall costs (Deming, 1986; Taylor, 1911). In line with this perspective, some studies have reported a positive effect of inventory (e.g., Chen et al., 2005; Gaur et al., 2005), production (e.g., Browning and Heath, 2009; Shah and Ward, 2003), and marketing (e.g., Dutta et al., 1999; Krasnikov and Jayachandran, 2008) resource efficiency on firm performance.

In contrast, other researchers have questioned the value potential of efficiency, instead suggesting that efficiency can impose heavy costs on firms by making them “brittle” (Abernathy, 1978; Cyert and March, 1963). This view argues that resource slack allows firms to experiment with new ideas (Nelson and Winter,

1982; Nohria and Gulati, 1996), and better cater to multiple competitive priorities simultaneously without sacrificing performance (e.g., Rosenzweig and Easton, 2010; Schmenner and Swink, 1998; Skinner, 1969). Further, operational slack has been posited to lower the risks of supply chain disruptions for firms (Chopra and Sodhi, 2004; Ferrer et al., 2007; Stauffer, 2003), crucial for effective supply chain management (Narasimhan and Talluri, 2009). Along these lines, evidence indicates that resource slack attenuates financial markets' negative reactions to announcements of supply chain disruptions by firms (Hendricks et al., 2009). These two divergent views – one emphasizing resource efficiency and the other underscoring the value of resource slack – are also mirrored in the business press, with columnists blaming inefficient resource management for lower financial performance of Sony Corp. in one case (Simms, 2009), while chastising Verizon Corp. for maintaining low levels of slack in key resources in another (Flitter, 2008).

Together, this debate has led to inconsistent guidelines for operations managers, with limited insight on how efficiency (vs. slack) relate to financial performance for firms. As such, there is a need to formulate an integrated framework that helps answer the following question – What are the financial benefits to firms from following either of the two resource strategies, i.e., developing resource efficiency or maintaining resource slack? In this research we attempt to answer this question by investigating the relationships of inventory, production, and marketing resource efficiency of firms with three metrics of financial performance. Specifically, we build on

* Corresponding author. Tel.: +1 419 530 2258; fax: +1 419 530 2290.

E-mail addresses: sachin.modi@utoledo.edu (S.B. Modi),

saurabh.mishra@mcgill.ca (S. Mishra).

¹ Tel.: +1 514 398 3487; fax: +1 514 398 3876.

prior research that defines slack as excess inputs for the same level of output, i.e., lower efficiency (Bourgeois, 1981; Hendricks et al., 2009), to evaluate if increasing levels of resource efficiency lead to diminishing financial returns for firms.

To empirically validate our framework, we focus on all publicly-owned firms operating in manufacturing industries in the United States for whom key information from secondary data sources was available over a 16-year time-period (i.e., 1991–2006). Results reveal that a focus on resource efficiency is positively related with Stock>Returns, Tobin's Q, and Returns-on-Assets (ROA) of firms over time. However, analysis also supports arguments favoring slack, indicating that the financial gains from efficiency exhibit diminishing returns for inventory and production resources. Diminishing returns are also observed for marketing resource efficiency, but only in relation to Stock>Returns and ROA. Overall, the results thus reveal that a focus on resource efficiency, albeit with a moderate level of slack, affords higher financial value to firms—an important implication which would not be understood if a singular emphasis on either efficiency or slack is used.

In examining our central question, we offer multiple contributions to both theory and practice in operations management. First, one of the primary reasons for the mixed evidence for the link between efficiency and performance has been that researchers have singularly focused either on examining the effect of resource efficiency on financial performance (Chen et al., 2005), or on investigating the effect of operational slack in attenuating negative effects of supply chain disruptions (e.g., Hendricks et al., 2009). As such, our attempt to integrate these insights in making our predictions and empirically validating them with a large sample of firms over a relatively long period of time helps offer a holistic perspective on the resource efficiency–financial performance relationship.

Second, our key finding that resource efficiency, albeit with a moderate level of slack, results in better financial performance for firms are consistent with the prescriptions offered by operations management researchers discussing the “productivity dilemma” facing firms (Abernathy, 1978; Adler et al., 2009). Specifically, our results are in line with Skinner's (1969) and Wheelwright's (1978) argument that a focus on cost efficiency is typically not sufficient for competitive advantage, and thus should further motivate operations managers to look beyond efficiency gains in making their strategic decisions.

Third, although several studies have investigated the relationship of inventory, production, and marketing resources with financial performance, research has not considered all three within a single framework. For instance, some studies have focused on inventory (e.g., Chen et al., 2005; Gaur et al., 2005), while others have centered on production resources (e.g., Vickery et al., 1993) as determinants of firm performance. In contrast, research in marketing has instead focused on marketing resources (cf., Srinivasan and Hanssens, 2009). By considering these three resources in a common framework, we provide a more generalizable set of findings with our research.

Finally, we recognize that financial performance of firms is multidimensional in nature. For instance, taking the perspective of investors finance theorists typically focus on stock market-based measures of financial performance (e.g., Fama and French, 1993), whereas accounting researchers prefer accounting-based measures (e.g., Fairfield et al., 1996). In line with these differing emphases, much of the extant research in operations management has concentrated on one or the other set of financial performance indicators in its investigations. In contrast, we consider both stock market-based and accounting-based metrics in our analysis. First, we use stock-response modeling (e.g., Brennan, 1991; Carhart, 1997; Lev, 1989) to not only provide evidence related to stock returns as a measure of financial value, but also introduce a new methodology from the finance literature in operations management research.

Second, we focus on Tobin's Q, the ratio of market value of a firm to the replacement cost of its assets, as a forward-looking measure that summarizes a firm's intangible value (Lindenberg and Ross, 1981). Finally, we include Return-on-Assets (ROA) as a measure of financial performance, since it provides information about the profitability of a firm to investors (e.g., Ou and Penman, 1989). Evidence that firms benefit through higher Stock>Returns, Tobin's Q, and ROA allows us to more comprehensively understand the financial value of resource efficiency (vs. slack).

In the following section, we begin by developing our conceptual framework. In Section 3, we present our research methodology. In Section 4, we discuss our analysis and results. We close with research and managerial implications of our findings, limitations of our research, and directions for future research in Section 5.

2. Conceptual framework

As discussed earlier, extant research in operations management has extensively debated the value of efficiency and slack in generating performance advantage for firms (e.g., Adler et al., 2009). One stream of literature has built on insights from the economics literature (e.g., Leibenstein, 1966) to argue that slack resources suggest sub-optimal resource utilization by a firm and thus exhibit waste (Chase et al., 2006; Womack et al., 1990). For instance, research on lean manufacturing has posited operations related slack as non-value adding (Womack and Jones, 2003). In addition, scholars have asserted that slack may reduce information visibility of managers (Thompson, 1967), lowering their ability to recognize problems in their operations. For example, high levels of slack in inventory may hide the underlying causes behind potential quality issues and undue variations in the production process (e.g., Chase et al., 2006). Further, researchers have argued that resource efficiency is often representative of valuable and rare firm capabilities formed as a result of complex path dependencies (Peng et al., 2008; Winter, 1994), and thus enable competitive advantage for firms (Teece et al., 1997). In line with these arguments, operations management researchers have provided rich guidelines to managers on how to improve their organization's resource efficiency (Chase et al., 2006; Schmenner and Swink, 1998; Womack and Jones, 2003).

In contrast to the literature focused on efficiency, other researchers have instead centered on environmental challenges facing firms, and in this context have examined the moderating role of resource slack in helping firms better adapt to unexpected environmental shifts (Cheng and Kesner, 1997; Yasai-Ardekani, 1986). For instance, researchers have posited that organizations with lower resource slack, and thus higher resource efficiency, are at a greater risk of facing supply chain disruptions (Chopra and Sodhi, 2004; Ferrer et al., 2007), and are less likely to adapt to competitive and environmental challenges (Abernathy, 1978). Specifically, according to this view slack represents a buffer of internal resources which allows firms to avoid the tradeoff they may face when handling multiple competitive objectives (e.g., Clark, 1996; Rosenzweig and Roth, 2004; Roth, 1996; Schmenner and Swink, 1998; Skinner, 1969). Indeed, slack provides greater discretionary resources to managers, especially in face of uncertainty (Cyert and March, 1963). Further, slack is posited to increase experimentation (Moses, 1992), one of the pre-requisites for organizations to become more flexible (Adler et al., 2009) and innovative (Levinthal and March, 1981; Nohria and Gulati, 1996).

The above discussion highlights the different perspectives that have emerged from extant research on resource efficiency, which may be a result of an overarching focus on efficiency or on slack in research investigations. For instance, while the research underscoring efficiency has correctly pointed out the sub-optimality for firms from having excess resources, this body of work has not explicitly considered the boundary conditions of efficiency–performance

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