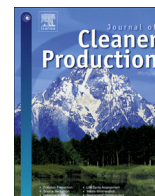




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Organizational context and the implementation of environmental and social practices: what are the linkages to manufacturing strategy?

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ABSTRACT

Previous studies have paid relatively little attention to how a plant's strategic objectives for sustainability are balanced against traditional manufacturing objectives. Based on a contingency approach to operations management, this research investigates the linkages between manufacturing strategy, with particular attention on the priority given to sustainability, the organizational context, and the implementation of environmental and social practices. Using data from a survey of Canadian manufacturing plants, contextual factors indicative of plant visibility were linked to a sustainability-oriented manufacturing strategy. Moreover, this strategy demonstrably affected the implementation of environmental practices, but not social practices. Furthermore, these results identified that sustainability tends to be associated with the competitive priorities of quality and delivery. Collectively, the adoption of a strategic viewpoint for sustainability opens up new theoretical insights into the operationalization of practices. First, while manufacturing strategy can provide positive support for sustainability, it is not yet a sufficient condition to implement sustainable practices. Second, a trade-off between environmental and social aspects may occur when they are simultaneously implemented. Thus, managers might see positive environmental practices implemented naturally as part of a broader manufacturing strategy, but must carefully emphasize social practices using other means.

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1. Introduction

Firms can gain both economic and operational benefits from engaging in environmental and social initiatives (Galeazzo et al., 2014a; Gimenez et al., 2012). The opportunities emerging from both the environmental and social issues, however, increase the complexity that managers need to deal with in terms of strategy formulation and operationalization. Specifically, firms are challenged to make decisions that consider the interrelationships among the environmental, social and economic dimensions and that are able to mitigate possible trade-offs (Wu and Pagell, 2011). Though plants are often the main target for firms' sustainable investments (Grant et al., 2002), little research has adopted a strategic viewpoint of sustainability in the field of operations management (OM) (Betts et al., 2015; Longoni et al., 2015).

In plants, managers need to make choices about scarce resources and time allocation in their manufacturing strategies. In essence, the priority given to environmental and social sustainability must be placed alongside, and balanced against, the traditional manufacturing objectives of cost, quality, delivery, flexibility, and innovation. From a contingency approach, this may be explained by the organizational context affecting the extent to which plants are exposed to stakeholder pressures. As plants are more likely to be exposed to both social and environmental pressures that governments, customers, suppliers, non-profit organizations (NGOs) and other stakeholders may exert, they are strongly motivated to gain social acceptance or legitimation, to protect their reputation and image and to mitigate the risk of social issues and environmental incidents (Colwell and Joshi, 2013; Schoenherr et al., 2014). The relevance of contextual factors in dealing with sustainability issues is therefore at the forefront of plant managers' decisions and actions.

On the other hand, the issue of balancing resources among several competitive priorities tells little about how these translate to a set of decisions and actions that would lead to sustainable

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practices. Extant literature informs that the relationship between formulation of strategy and operationalization of strategy is not trivial. Devaraj et al. (2004) highlight that what plants intend to attain and what they actually realize can diverge. This is particularly relevant, though scarcely investigated, when sustainability is at stake. The greater awareness of environmental and social issues in recent decades among stakeholder groups may have generated “bandwagon effects” (Abrahamson and Rosenkopf, 1993), wherein many plants purportedly undertake sustainable-oriented manufacturing strategies. This position is supported by some evidence that plants adopting the environmental standard ISO 14001 or implementing environmental disclosure aim at obtaining legitimacy benefits (Bansal and Roth, 2000; Hughes et al., 2001), sometimes with little focus on the environmental benefit (Darnall and Sides, 2008).

The present study intends to take a contingent perspective to provide a finer-grained understanding of what occurs to the formulation and operationalization of manufacturing strategy when sustainability is taken into consideration. For this reason, the relationship between organizational context, manufacturing strategy and implementation of practices at the plant level is tested by employing multinomial logit models and ordinary least squares (OLS) regressions. Contrary to most studies, this research does not focus on performance effects, preferring to analyze the linkages between organizational context, sustainable-oriented manufacturing strategy and practices implementation, which provides insights into the degree of consistency of strategic choices in the field of sustainability. Finally, this research investigates both environmental and social practices simultaneously, contributing to address an important gap in the existing literature, especially that relating to OM.

2. Theoretical background and hypotheses

This section first presents a literature review on manufacturing strategy and then develops the research hypotheses before concluding with the research model.

2.1. Manufacturing strategy

An increasing number of studies suggest that traditional priorities alone do not fully cover strategic opportunities that plant managers must consider (Miller and Roth, 1994), suggesting that new dimensions of competitive priorities should be explored. Given the complexity and systematic interactions among competitive priorities, many authors use a configurational approach that parsimoniously and holistically represent manufacturing strategies (e.g., Bozarth and McDermott, 1998). An extensive review of the literature on competitive priorities highlights that plants combine competitive priorities in similar configurations (Table 1).

Specifically, as Frohlich and Dixon (2001) contend in their longitudinal analysis, manufacturing strategy configurations resemble, to some degree, three generic business strategies set forth by Porter (1985): low price, differentiation and focus. Most studies identify a set of plants that emphasize cost in their manufacturing strategy – e.g., Miller and Roth (1994) “caretakers,” Christiansen et al. (2003) “low price” cluster and Kathuria (2000) “efficient conformers.” Moreover, it is common to find plants with strategies focusing on other specific competitive priorities that are valuable for customers – multiple forms of differentiation strategy, such as Zhao et al. (2006) “quality customizers,” Kathuria et al. (2010) “speedy conformers” and Sum et al. (2004) “efficient innovators.” Finally, a focus strategy is evident in configurations that emphasize a narrow target of competitive priorities such as innovation – e.g., Sweeney’s

(1991) “innovators” and Safizadeh et al. (2000) “innovators” – or quality, such as De Meyer (1990) “marketing oriented.”

It is worth mentioning that the studies by Martin-Peña and Diaz-Garrido (2008) and Longoni and Cagliano (2015) include sustainability as a competitive priority. Whereas the former only distinguishes between high and low sustainability performers, the configurational research by Longoni and Cagliano (2015) extends Frohlich and Dixon (2001) to identify a capability-oriented configuration (i.e., differentiation strategy termed new innovators), and two focus configurations (i.e., new designers, emphasizing innovation and quality; and new servers, emphasizing delivery and quality). Based on this earlier work, an emphasis on sustainability might be expected as an important, relatively new, competitive priority, which in turn might be coupled to either a differentiation or focus strategy, rather than a cost-oriented configuration. Thus, rather than providing yet another taxonomy of manufacturing strategies as the major contribution, the following sections explore how a manufacturing strategy that places greater emphasis on sustainability is linked to organizational context or sustainability practices, along with other operations capabilities.

2.2. Organizational context: linking plant visibility to manufacturing strategy

The organizational context is the set of characteristics and forces that may be influenced and manipulated in the long term, but are not subjected to the authority of managers in the short to medium term (Sousa and Voss, 2008). The present study focuses on the plant-related characteristics, i.e. plant size, international ownership and labor intensity, that are more likely associated with pressures on sustainability issues from salient stakeholders. These characteristics are grouped under the rubric of “plant visibility” because they are indicative of the extent to which plants are directly and indirectly exposed to stakeholder pressures.

2.2.1. Plant size

Larger plants deal with broader visibility to a wide range of stakeholder groups. These stakeholders, who embody different interests, are capable of directly and/or indirectly fostering the direction of environmental and social strategies (Schoenherr et al., 2014; Wagner, 2011). Darnall et al. (2010), for example, argue that bigger firms are more responsible to stakeholder pressures, thus triggering the adoption of proactive environmental strategies. In addition, similarly to larger firms that are more likely to have sustainability attitudes (Zhang and Luo, 2013), it is expected that larger plants have a central role in the community or in the industry in which they operate and that they are regarded as a benchmark against which competitors assess their own actions and plans according to pressures of mimetic isomorphism (DiMaggio and Powell, 1983). Finally, larger plants have greater availability of resources and competences that ease the development of sustainability practices (Jabbour et al., 2014). This suggests that they may be more willing to leverage on slack resources to search for a competitive advantage through sustainable OM.

H1. As a plant's size increases, management places a higher emphasis on sustainability as a competitive priority in the plant's manufacturing strategy.

2.2.2. International plant ownership

Similar to the case of size, plants with international owners are more likely associated with a greater exposure to institutional pressures compared to domestically owned plants (Shah, 2010). Moreover, multi-country experience with different environmental

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