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Top-down, bottom-up, or both? Toward an integrative perspective on operations strategy formation

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ABSTRACT

Operations strategy is formed via complex processes that transpire in multiple directions at multiple organizational levels. While most previous studies focus on the "macro-level" process of strategy formation from the dominant top-down perspective, this study investigates the "micro-level" process of strategy formation that governs interactions among competitive priorities, objectives, and action plans within operations. Using 111 (59 top-down and 52 bottom-up) action plans collected from six German manufacturing plants, we build on Kim and Arnold's (1996) framework and propose an integrated process model of operations strategy formation that encompasses both top-down planning and bottom-up learning. We also identify a contingency factor that affects their balance: centralized versus decentralized organizational structure. Finally, based on the analysis of their respective strategic content, we provide evidence concerning the complementary roles of top-down and bottom-up action plans in operations strategy.

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1. Introduction

How is operations strategy formed? The *process* of operations strategy is of considerable interest to many scholars but has received relatively less attention than has the *content* of operations strategy (Boyer et al., 2005; Swink and Way, 1995).[3] The process of operations strategy comprises the activities and dynamics of strategy formation and implementation (Boyer et al., 2005; Slack and Lewis, 2011; Swink and Way, 1995), whereas the content of operations strategy consists of the particular decisions regarding competitive priorities, objectives, and action plans that specify the operation's strategic direction.

Since Skinner (1969) first postulated that manufacturing tasks should support corporate objectives, operations strategy formation has been conceptualized as a top-down process of "formulation and implementation" within the guidelines of overall corporate strategy. Wheelwright's (1984) well-known framework represents this high-level view of manufacturing strategy within an organizational hierarchy. He argues that a company's preferred positioning in the market should determine the competitive priorities of operations. Given its role in supporting corporate strategy, an operations strategy is perceived to make decisions about developing the structure, infrastructure, and capabilities to support those competitive priorities.

This top-down perspective has been widely accepted and dominated empirical studies on the process of operations strategy (Marucheck et al., 1990; Menda and Dilts, 1997; Schroeder et al., 1986; Swamidass, 1986; Ward et al., 1996; Ward and Duray, 2000). However, a few case studies have documented an alternative process—of bottom-up operations strategy—that emerges in the absence, or lack, of a corporate (or strategic business unit) strategy (Barnes, 2002; Slack and Lewis, 2011; Swamidass et al., 2001). These scholars argue that, in practice, operations strategy is formed in a more complex process than the top-down "formulation and implementation", and they identify the need to document more real-world processes. This is the starting point of our study.

Especially, most of previous studies have examined the process of operations strategy at the "macro-level" by focusing on hierarchical relationships and the external consistency between operations strategy and corporate and/or other functional strategies (Barnes, 2002; Marucheck et al., 1990; Menda and Dilts, 1997; Schroeder

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[3] Boyer et al. (2005) report that, of the 31 operations strategy articles published in the *Production and Operations Management Society* journal since its founding, only 8 are process related.

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et al., 1986; Slack and Lewis, 2011; Swamidass, 1986; Swamidass et al., 2001; Ward et al., 1996; Ward and Duray, 2000). In contrast, Kim and Arnold (1996) ground the process of operations strategy at the "micro-level" by investigating the internal consistency among manufacturing's competitive priorities, objectives, and action plans based on the top-down assumption. Yet because their study relied on survey data, the authors were unable to investigate the actual process by which competitive priorities are translated into action plans, and vice versa.

Hence, our study aims to fill this gap in the literature by exploring the internal process of operations strategy as actually practiced. Using information on six German manufacturing plants and their 111 strategic action plans, we build on Kim and Arnold's (1996) top-down framework and propose an integrated process model of operations strategy formation that incorporates both top-down and bottom-up perspectives. We also explore organizational factors—such as competitive priorities, organizational structure, and size—that influence the extent to which action plans are stipulated top-down or emerge bottom-up. Furthermore, we delve into the strategic content of both types of action plans to explain their respective roles in operations strategy.

In this study, we posit that operations strategy is formed through an iterative process of integrating competitive priorities, objectives, and action plans that are partly induced by top-down planning and partly emerge from bottom-up learning. Top-down action plans tend to reflect top management's strategic intentions with regard to the organization's specified priorities while bottom-up action plans tend to arise in the areas of operational practices and processes—the domain of lower-level managers' expertise. Thus, our findings suggest that top-down and bottom-up action plans serve complementary roles in the formation of operations strategy. Additionally, our results show that decentralized organizations adopt relatively more bottom-up actions than centralized organizations do.

Our study makes several contributions to the operations strategy literature. First, it fills a void in the literature of operations strategy by investigating the internal processes governing the interactions among competitive priorities, objectives, and action plans. Second, this study contributes to a mid-range extension of the theory on the operations strategy process by documenting the existence of bottom-up action plans with reference to Kim and Arnold's (1996) top-down framework; we believe that our paper is the first attempt to integrate the top-down and bottom-up perspectives on the formation of operations strategy from competitive priorities to action plans. Third, this research enhances our understanding of top-down and bottom-up integration by identifying a contingency factor—namely, centralized versus decentralized organizational structure—that affects the balance between top-down planning and bottom-up learning. Finally, our study substantiates the roles of top-down and bottom-up action plans in operations strategy by examining the strategic content of those plans.

The rest of this paper is organized as follows. The literature is reviewed in Section 2, and the methodology is explained in Section 3. Within-case and cross-case analyses are presented in Sections 4 and 5, respectively. We discuss our findings and propositions in Section 6, and the paper's limitations and contributions are summarized in Section 7.

2. Literature review

2.1. Process of operations strategy

Although there is no generally accepted definition of operations strategy, it is expected to specify competitive priorities and objectives for the operations function in alignment with the firm's overall business strategy, and to pursue them through consistent patterns of actions (Skinner, 1969; Slack and Lewis, 2011; Wheelwright, 1984). Following the dominant top-down perspective, Kim and Arnold (1996) develop a hierarchical process model that delineates competitive priorities, manufacturing objectives, and action plans in the choice of improvement programs (see Fig. 1). In line with Wheelwright (1984), Kim and Arnold (1996) suggest that competitive priorities describe a company's preferred dimensions of competitive advantage and largely determine the relative emphasis that the operations function places on such capabilities as cost, quality, dependability, and/or flexibility. Based on the firm's competitive priorities, they argue that operations managers should articulate measureable performance objectives and generate action plans to implement. Since each action plan requires the allocation of scarce resources, managers should assess, prior to adopting one, its expected effect on specific performance objectives. Thus, Kim and Arnold's model postulates top-down action plans that are carefully "formulated and implemented" in alignment with competitive priorities and objectives.

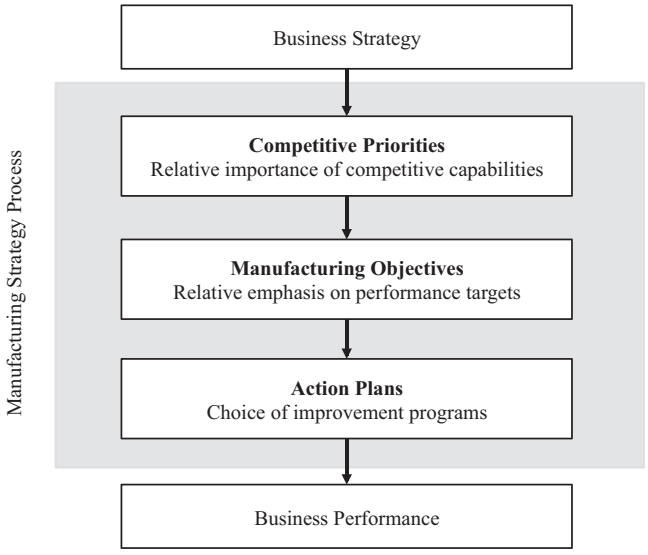

Fig. 1. A process model of manufacturing strategy
Adopted from Kim and Arnold (1996).

However, proponents of continuous improvement argue for bottom-up action plans that emerge from lower-level organizational members working in day-to-day operations. For instance, operations-based managerial innovations, such as Just-In-Time (JIT)/lean manufacturing and Six Sigma/Total Quality Management, emphasize bottom-up organizational learning for continuous improvement through employee involvement, cross-functional communication, and feedback across all organizational layers (Deming, 1992; Womack et al., 1990). Although such improvement programs are often adopted and implemented by top management, the proponents of JIT and TQM emphasize linking top management's strategic goals with the daily management of operations at lower levels via employee participation in devising action plans (e.g., *hoshin kanri*; Witcher and Butterworth, 2001). The essence of these initiatives is to create communication channels for new ideas and to involve lower-level organizational members in collaborative decision making and problem solving (Witcher and Butterworth, 2001).

Generally speaking, it is top management's responsibility to establish the overall goals and objectives for an organization and to allocate resources, whereas the actions required to achieve those objectives are usually carried out by lower-level organizational members (Bower, 1974; Burgelman, 1983; Burgelman and Grove,

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