



Competitive priorities in operations: Development of an indicator of strategic position

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ABSTRACT

The aim of this paper is to propose an indicator for positioning firms with regard to competitive priorities (cost, quality, delivery, flexibility, service and environment), as well as to identify any relationship with business performance that may exist. On the basis of the production competence approach, we developed an indicator of Strategic Position in Operations Priorities (SPOP). For the empirical test, we use a sample of 353 industrial firms that belong to various sectors of activity in Spain. The proposed indicator reveals the current situation of industrial firms with regard to the development of operations capabilities that allow these firms to achieve sustainable competitive advantages. The implementation of the SPOP indicator could be considered a valuable tool in performance management research.

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1. Introduction

Research in operations strategy during the past three decades has been guided by ideas developed earlier in the work of Skinner [1]. He took the first step in assigning the manufacturing function a strategic rather than a merely tactical role. His aim was to end the separation of this function from the rest of the functions as well as from a firm's competitive strategy. Other authors, such as Hayes and Schmenner [2], Buffa [3], Hayes and Wheelwright [4], Anderson et al. [5], Leong et al. [6] and Hill [7], have supported this approach and have clarified Skinner's initial contributions. All of these authors consider that the manufacturing function can contribute to a firm's success as long as it reinforces the implementation of the competitive strategy. To do this, the firm needs to formulate explicitly some operations objectives or competitive priorities and implement the policies or decisions required to accomplish these objectives [8].

Over time, different approaches have been offered to explain how firms compete taking the following priorities into account: the *trade-off* model, or *incompatibilities between objectives* [1]; the *pyramid* model [9]; the *cumulative* model [10]; and the *production competence* approach [11].

Many theoretical contributions have aimed to clarify these concepts. Actually the companies are faced with the need to

coordinate operations capabilities with market requirements. Therefore empirical analyses need to be carried out in order to reveal the current situation of industrial firms with regard to those developments in capabilities in operations that allow these firms to achieve sustainable competitive advantages.

The objective of this paper is to propose a new indicator for positioning firms with regard to competitive priorities or operations capabilities³ from the production competence model, and then to identify any correlations with business performance that may exist. Specifically, in this paper we carry out a conceptual review of the different contributions attempting to identify firms' competitive priorities in operations. For empirical testing, we use a sample of 353 industrial firms located in Spain and that belong to various sectors of activity.

The main contribution of this paper is twofold. On one hand, the authors aim to construct an indicator that measures a firm's ability to achieve a strategic position. From a conceptual perspective, this new indicator offers an improvement over indicators developed previously in the literature since it uses the entire sector's evaluation of the importance of each priority as the weighting in the indicator. In addition, from a practical perspective, the proposed indicator allows managers to determine the degree to which firms have developed capabilities in the operations competitive priorities that currently constitute the basis of competence, as well as their effect on business performance.

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³ "Competitive priorities in operations" refer to manufacturing objectives. "Operations capabilities" indicate the strength developed in manufacturing objectives that are generally recognised in the literature (cost, flexibility, quality, delivery, and others).

The work is organised as follows. First, we review the literature that focuses on the theoretical determination of competitive priorities in operations and their different approaches. Second, we construct an indicator to measure a firm's strategic position with regard to these operations priorities. Third, we carry out an empirical analysis, calculating the value of the indicator for a sample of firms. Subsequently, we present the analyses carried out and the results obtained. We end this paper by summarising our main conclusions and offering suggestions for future research.

2. Competitive priorities in operations

Competitive priorities in operations refer to those objectives that manufacturing units must reach if the company is to be able to compete, achieve the capabilities established for the activity, and reinforce its competitive advantage [4,5]. The term *competitive advantage* is used to describe the choices that operations managers make from among the key competitive capabilities of this functional area [1]. Furthermore, these choices constitute the expression of a firm's competitive strategy in terms that the manufacturing personnel can understand. It has been pointed out in operations management literature that the term "competitive priority" stresses both the strategic importance of the manufacturing function and its responsibility in achieving improved corporate success, and consequently, in attaining a global competitive advantage.

On the question of identifying what elements can become competitive priorities for manufacturing firms, Skinner's initial work [1] offers the following competitive priorities: short delivery cycles, quality, on-time delivery, flexibility, and low cost.

However, different authors consider other elements apart from these basic objectives, for example: innovation, which involves introducing new products and production processes [4,6,12–14]; customer service [15,16]; environmental protection [17–20]; stock levels and batch sizes [21]; and marketing elements such as sales promotion, advertising, customer relations, and the sales force [7,22,16]. By contrast, some authors exclude one or another aspect of the four main competitive priorities commonly accepted [23,24]. Therefore, taking previous literature on manufacturing strategy as a reference, this research adds more recent aspects such as after-sales service and environmental protection to the four classical competitive priorities of cost, quality, flexibility and delivery.

In this study, we include environmental protection as a competitive priority (understood as minimising the repercussions of production activity in the various components of the environment). This is justified since concern for the environment is growing and there are multiple repercussions involved (social, cultural, economic and political). In business, the environment has become a strategic variable since firms are simultaneously causes of environmental problems (consumption of scarce resources, contamination) and part of the solution, as they should and must reconcile patterns of production and consumption [25,26]. Moreover, various authors recommend including environmental protection in the operations strategy to ensure that the objectives and decisions forming part of said strategy take the environment variable into account [17,19,20].

3. Models and theoretical approaches to competitive priorities in operations

Some models and theoretical approaches in the literature have aimed to clarify the competitive priorities concept, for example: the trade-off model, the pyramid model, the sand cone model, and the production competence model.

The model of incompatibilities among firms' competitive priorities in operations underlies any analysis of competitive priorities. This model is known in the literature as the *trade-off* model, which can be traced back to Skinner [1]. The meaning of trade-off is simple and involves treating a competitive priority or operations objective preferentially compared to other aspects, since there are incompatibilities among the different priorities that force managers to concentrate on one of them and sacrifice the others. The contributions of other authors led to the development of the trade-off model, stressing the need to establish preferences from among the different manufacturing capabilities previously pointed out by Skinner: cost, quality, speed of delivery, and flexibility [4,7,27].

In the mid-1980s, researchers began to become aware of the competitive success of Japanese firms, which were proving capable of achieving high levels of performance in the different competitive priorities. It was then that the most significant break from the trade-off model occurred. Nakane [9] proposed a new model, called the pyramid model, to help achieve the operations objectives. The authors who defend this model [28,16] argue for improving the various objectives simultaneously, since they are not conflicting.

Another model that arose is the sequential model, which is that of creating and utilizing the skills and abilities in manufacturing. This model is also referred to as the sand cone model and it suggests that better-performing competitors build one manufacturing capability upon another sequentially, since competing on the basis of multiple operations capabilities simultaneously is associated with higher performance [10,12,21,29–31].

Finally, the production competence model considers that a firm will develop operations capabilities based on competitive priorities. Therefore, a firm's competitiveness and achievement of results relate to the manufacturing function. Various authors have studied this approach, proposing different ways of measuring production competence [11,32–35].

Cleveland et al. [11] are the first to define the concept of competence in production as a function of the productive process and of competitive strategy, measured from the combined effects of the strengths and weaknesses of the manufacturers in the areas that are key for the market.

Vickery [36] revises the competence model proposed by Cleveland et al. [11]. He defines production competence in the context of production strategy as the ability of the production unit to reinforce the competitive strategy specific to each market and product. He includes production competence as an explicative variable of the business performance, given that it turns into a very valuable construct in order to explain the contribution of the production function to the business performance.

Kim and Arnold [33] show production competence as a construct that measures the degree of adjustment between the importance given to the competitive priorities and the strengths of production.

Vickery et al. [32] maintain that production competence is the degree to which production reinforces the strategic objectives keeping in mind three critical factors: assessment of those aspects that have strategic importance (efficiency in cost, delivery, logistics, economies of scale in production, process technology, quality, lead-time, degree of vertical integration, flexibility), responsibility of the production function in said aspects, and the real results achieved in them.

For Safizadeh et al. [34], production competence combines the capabilities of production (strength and ability to compete in basic dimensions such as cost, quality, flexibility, and time) with the competitive priorities (importance given to the previous dimensions). Schmenner and Vastag [35] develop the indicator proposed by Safizadeh et al. [34] for plants with different production processes.

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