

## **Performance benchmarking: bridging the gap between frontier analysis research and user-tailored decision support**

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Benchmarking is the process of comparing the performance of one unit against that of ‘best practice’ units. Benchmarking can be considered as a strategic tool that allows the firm to identify possible sources of improvement in order to increase its performance and competitiveness. It is particularly valuable when no objective or engineered standard is available to define efficient and effective performance (Sherman and Zhu, 2006).

Production-theory based frontier methods, like Data Envelopment Analysis (DEA) and Stochastic Frontier Analysis (SFA), are relative performance evaluation techniques that support advanced benchmarking (Bogetoft and Nielsen, 2005). Since its origin, literature about frontier analysis abounds (see e.g. Emrouznejad et al. (2008)). Nevertheless, only few papers can be found on the application of production-function-based methods by managers and other decision makers for decision support in practice.

This poster presents ongoing research on closing the gap between frontier analysis research and user-tailored decision support. The objective is to investigate why production-function-based benchmarking techniques insufficiently find their way into practice and to determine what needs to be done in order to make them being used by decision makers.

First, the demand side is analyzed. We review the literature to identify the willingness of managers to benchmark and use production-function-based benchmarking methods. Perceived benefits include assessing relative performances, increasing productivity, identifying competitive strategies, enhancing learning and identifying potential areas of growth. Perceived limitations include the lack of time and resources, the fact that one should be able to recognize one’s shortcomings, the required solid understanding of organization’s operations and the openness to change and new ideas. Literature also reports an absence of production-economic thinking in manager’s benchmarking efforts. Partial productivity indicators are often used, but they do not provide an aggregate measure of productivity and ignore the underlying production function.

Second, the supply side is considered which consists of decades of frontier analysis research. Frontier analysis literature mainly consists of theory extending papers and so-called real-world applications. While application papers mainly report on work by researchers applying existing methods to real-world datasets, they largely ignore the application of frontier analysis by managers and other decision makers. Some papers can be found that provide a frontier-analysis-based decision support framework, but information about the actual implementation and use of the framework for decision support in practice is mostly missing. Specifically related to DEA, Lai et al. (2011) report on the scarcity of studies about the link between DEA and decision support or knowledge based systems.

Based on analyzing the demand for and supply of production-function-based benchmarking, we define key issues for reconciling demand and supply. Key issues include the practical relevance of methodological assumptions, the possibility for flexible benchmarking, the language barrier and the role of intermediates. In order to be applied for practical decision support, underlying assumptions of frontier methods need to comply with user preferences. These assumptions include the functional form of the production function, the input minimizing or output maximizing objective and the weights attributed to inputs or outputs. Flexible benchmarking refers to the flexibility to use the benchmarking method according to the firm-specific situation. For example, managers may not want to compare with best practice units. As performance improvements occur generally in a stepwise manner, they may be more interested in comparing with units that are situated more nearby in the input-output framework. The language barrier refers to avoiding the jargon that accompanies frontier analysis. Managers cannot be expected to become familiar with terms like ‘translog’, ‘cost efficiency’ and ‘truncated normal distribution’. Finally, we focus on the role of facilitators, who may be more suitable to apply production-function-based benchmarking methods for their advisory tasks, compared to actual managers.

## **References**

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