

# **Benchmarking Hospital Services: An Application of the Data Envelopment Analysis Technique**

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## **Abstract**

In a context of economic crisis, the concern about the efficiency of public services becomes particularly important. This paper describes an internet platform for benchmarking public hospitals in Portugal. The Hospital Benchmarking (HOBE) platform allows hospitals to have access to a set of indicators online that can be used to compare their performance with other hospitals at a national level. The platform allows benchmarking hospital services according to a management perspective, where indicators of costs and productivity are available for the entire hospital, as well as at a more detailed level regarding medical specialties. The platform also provides a composite indicator to reflect the overall performance of each hospital. This overall measure, estimated using the Data Envelopment Analysis (DEA) technique, is obtained by aggregating the indicators available for the services of each hospital (medical specialties). DEA obtains a performance score for each hospital based on a comparison with the actual achievements of best-practice hospitals. For the hospitals considered inefficient, it is possible to identify peers and targets, promoting the continuous improvement of hospital services. The main contribution of this research is to propose new perspectives to explore hospital performance, and enable a benchmarking exercise in real time, using a platform online.

## **Keywords**

Hospital benchmarking, Performance assessment, Data Envelopment Analysis, Healthcare services improvement

## **Biography**

**Ana S. Camanho** is an Associate Professor, and Pro-Director of the Master of Science in Industrial Engineering and Management of the School of Engineering of the University of Porto, Portugal. She earned B.S. in Industrial Engineering and Management from the School of Engineering of the University of Porto, and PhD in Industrial and Business Studies from Warwick Business School, University of Warwick, United Kingdom. She has published more than 30 papers in international journals indexed in the Web of Knowledge (ISI Science Citation Index). She has done research projects in the following sectors: banking, retailing, healthcare, education, fisheries, construction industry, regulation of electricity distribution companies and urban quality of life. Her research interests include performance assessment, Data Envelopment Analysis, Productivity measurement, Data mining and Customer Relationship Management. She was vice-president of the Portuguese Operational Research Society (APDIO) and Pro-director of the PhD program in Industrial Engineering and Management of the School of Engineering of the University of Porto.

**Maria C. Portela** is an Associate Professor at Faculty of Economics and Management of Catholic University at Porto, Portugal. PhD in Management Science and Operations Research, Aston University (UK). MSc in Management Science and Operational Research, Warwick University (UK). B.S. in Management, Catholic

University at Porto. Research interests in the areas of efficiency and productivity analysis applied to various fields (e.g. schools, banks, retail, regulation, universities and the health sector). She has been the leading researcher of 3 projects in the area of benchmarking schools and hospitals, which have resulted in two web platforms for benchmarking public services in Portugal. She has published several articles in international journals of management and economics and two international book chapters. Associate editor of Journal of productivity Analysis, and Editor of Journal of Data Envelopment Analysis

**Isabel M. Horta** is a post-doctoral researcher in the Department of Industrial Engineering and Management in the School of Engineering of the University of Porto, Portugal. She holds a B.S. in Civil Engineering and a PhD in Industrial Engineering and Management from the School of Engineering of the University of Porto. Her research activity includes efficiency and productivity measurement, Data Envelopment Analysis, Stochastic Frontier Analysis, Econometric and Statistical models, and Data Mining. She has done research projects in the field of construction industry organizations and environmental sustainability. She is author of several publications in international journals indexed in the Web of Knowledge (e.g. International Journal of Production Economics, Expert Systems with Applications, Journal of Productivity Analysis, Journal of Construction Engineering and Management).