

World State of Quality (WSQ): Multivariate Statistical Contributions

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In a joint project involving two Portuguese universities (University of Minho and University of Coimbra), a first attempt is being made to establish an international quality-oriented ranking of performances achieved by different countries, with a pilot conducted so far in the European Union (EU) countries. Therefore, an extended data collection was performed across a variety of sources regarding the 28 EU countries, in order to assess their maturity on quality-related performance and characterize the different profiles in terms of contributions to the overall level of quality achieved. For that purpose, we considered 21 indicators of quality, partitioned according to 10 different dimensions (education, research, organizations, professionals, health, innovation and entrepreneurship, sustainability, satisfaction, social cohesion, and competitiveness).

This rich data set was analyzed using multivariate graphical and data analytics capabilities provided by JMP. Statistical methodologies employed include PCA, PLS, linear regression with variable selection, clustering (including dendograms and constellation plots) and parallel coordinates (used interactively, providing insights about the specificities of each country).

In the end, the application of these methodologies contributed to the construction of a clear picture of the current state of quality in the EU, with plans to be later on extended to other countries as well.

More information about the World State of Quality initiative can be found in the website:

<http://wsq.dps.uminho.pt/>

The full report that supports this presentation is available for download at:

http://wsq.dps.uminho.pt/eqs_report2016/eqs_report2016.pdf