

---

# Improving the Quality of the Wine Tasting Process

Helena Alvelos<sup>1,2</sup>, Ana Raquel Xambre<sup>1</sup>, Ana Luísa Ramos<sup>1,3</sup>, Leonor Teixeira<sup>1,4</sup>, Bento Amaral<sup>5</sup>  
helena.alvelos@ua.pt, raquelx@ua.pt, aramos@ua.pt, lteixeira@ua.pt, bamaral@ivdp.pt

<sup>1</sup> Department of Economics, Management and Industrial Engineering, University of Aveiro, Portugal

<sup>2</sup> CIDMA - Center for Research and Development in Mathematics and Applications, University of Aveiro, Portugal

<sup>3</sup> GOVCOPP - Governance, Competitiveness and Public Policies

<sup>4</sup> IEETA - Institute of Telematics and Electronic Engineering of Aveiro

<sup>5</sup> IVDP - Douro and Port Wine Institute, Porto, Portugal

---

## Abstract

Products' quality of conformance is usually assessed by measurement instruments which are regularly calibrated in order to guarantee reliable results. In Sensory Analysis, the characteristics measured are products' organoleptic characteristics (appearance, odour, touch, taste and noise). As there are not conventional measurement instruments to evaluate these characteristics, they are usually assessed by professional Tasting Panels (TP). Nevertheless, the specificity of tasters as measurement instruments does not allow for the use of the same calibration and control methods employed with conventional instruments. This type of panels are widely used in the food industry, namely, wine, olive oil, chocolate, among others, as well as in other types of industry, for example cosmetics and perfumes.

This work will be developed considering the specific scenario of the wine industry. The Tasting Department of the Douro and Port Wine Institute (IVDP), as a partner in this study, will be involved in the development and validation of the study.

The aim of the IVDP is to promote Port and Douro wines, control the quality and quantity of these wines, regulate the production process as well as the protection and defence of the Protected Denominations of Origin of Porto and Douro as well as Duriense Geographical Indication. So IVDP is the certifying authority of these wines. Certification is a process of checking the conformity of those products and is a process of quality assurance based on the principles of objectivity and impartiality.

The purpose of this work is to present a software solution that incorporates a set of methods used, on the one hand for appraising tasters' performance, and on the other, for supporting decisions of the Tasting Panel's responsible, regarding the acceptance or rejection of the wines under evaluation.

The proposed solution will thus contribute to the tasting process quality improvement in two ways: (i) the evaluation of the tasters' individual performance will generate information that will be used to calibrate the TP and (ii) the calibration of the TP will improve the reliability and accountability of the wine samples' evaluation.

Therefore, in terms of research results, this work expects to contribute to a not well studied area of knowledge, usually known as Evaluation and Calibration of Tasting Panels in Sensory Analysis. This area is complex and multidisciplinary, involving contributions from different fields, such as Quality and Statistics. In addition, the use of Information and Communication Technologies (ICT) as a way to aggregate the available data, integrate the different methods and generate results will definitely add value to a consistent evaluation process.

The collaboration of IVDP in the study will be essential to develop and test the proposed solution. Since IVDP has an unusually complex environment, the extrapolation of the results and adaptation of the proposed solution to other certification scenarios in Sensory Analysis will be facilitated.