**Appendix**



**Figure A.1.** Skills Profiles Cluster Analysis Validation Methods: Internal Validation

*Note:* Connectivity, Dunn Index and Silhouette Width. Connectivity [0, ∞] should be minimised, Silhouette Width ([-1; 1]) and Dunn Index ([0, ∞]) should be maximised. See Julia Handl, Joshua Knowles and Douglass B. Kell, ‘Computational Cluster Validation in Post-Genomic Data Analysis’, *Bioinformatics*, 21: 15 (2005), pp. 3201–12.

*Source*: Authors’ elaboration.



**Figure A.2.** Skills Profiles Cluster Analysis Validation Methods: Stability Validation

*Note:* Three stability measures are used to compare the results from clustering based on the full data to clustering based on removing each column, one at a time: a measure of average proportion of non-overlap (APN), a measure of the average distance (AD) and a measure of the average distances between means (ADM). K. Y. Yeung, D. R. Haynor and W. L. Ruzzo, ‘Validating Clustering for Gene Expression data’, *Bioinformatics*, 17: 4 (2001), pp. 309–18.

*Source*: Authors’ elaboration.

**Table A.1.** Skills Profiles Validation Measures Aggregation Rank

|  |  |
| --- | --- |
| Rank | Option |
| 1 | hierarchical-5 |
| 2 | hierarchical-4 |
| 3 | hierarchical-3 |
| Algorithm: CE, Distance: Spearman. Score: 1.09. |

*Note:* Rank aggregation measure (Pihur *et al.*, 2007); uses the default cross-entropy method with weighted Spearman’s foot-rule to order results.

*Source*: Authors’ elaboration.