

## **Chapter 1: Estimating Industry 4.0 Impact on Job Profiles and Skills using Text mining**

Industry 4.0 is introducing rapid and epochal changes and challenges. Among these, the issue of skills and job profiles is assuming a critical role. In fact, the literature highlights not only the necessary integration of existing skills in professional profiles, but also the inevitable creation of new ones to properly manage the digitalisation trends. Although, the state of the art mostly focuses on building models to assess the digital maturity of companies, considering instead the impact on the labor market as a hazy issue. Moreover, the literature tends to offer qualitative approaches to the topic, making the results uncertain; on the other side, quantitative ones tend to be mainly applied on structured databases, while the supply and demand of competences (findable in CVs, vacancies or firm's job profiles) are less treated. The goal of the present research is developing a measure for quantifying the readiness of employees belonging to a big firm with respect to the Industry 4.0 paradigm. To reach the goal, a data-driven approach based on text mining techniques is applied to a case study. In particular the present methodology makes use of a previously developed enriched dictionary of technologies and methods 4.0 (Chiarello et al., 2018). The source is used to analyze job profiles' descriptions belonging to Whirlpool, a multinational company with a structured database of jobs and skills. The process allows the identification of technologies, techniques and related skills contained in job descriptions. Starting from these, the Industry 4.0 impact on each job profile is measured. Finally, the metadata of the job profiles are analyzed to evaluate to which extent the skills of profiles 4.0-ready and non-4.0-ready differ. In the end, the work provides a framework for estimating the Industry 4.0 readiness of enterprises' human capital which demonstrates to be fast, adaptable and reusable.