

SHORT-CIRCUITS 4.0 – HOW TO CONNECT BUSINESSES AND HIGHER TECHNICAL EDUCATION

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Digital skills have become a critical component for the productivity and competitiveness of companies and workers. These skills include an understanding of information technology, the ability to develop digital solutions, and the ability to work collaboratively using technology. A long tradition of research has highlighted the link between knowledge and skills within organizations and the impact of digital in terms of labor productivity: see Bettiol *et.al* (2021) for a recent contribution on the subject.

The problem has two faces.

On the one hand firms have both promoted the recruitment of talents capable of using new technologies effectively and responsibly, and invested in training and retraining for their employees to ensure that they have the digital skills needed to perform their activities efficiently and competitively. The combination of this two-fold investment was intended to not only increase the productivity of companies, but also to improve the career opportunities for workers, and their resilience in the labor market. The attempt has so far proved only partially successful insofar as firms have been and still are experiencing growing difficulties in recruiting young talents who appear interested not only in a salary in line with the market but increasingly concerned to several complementary aspects related to the quality of the job, the person's professional growth, work-life balance and alignment of personal values with those of the company.

On the other, many universities and community colleges struggle in finding teaching methodologies to engage high-potential students to enhance their growth path.

Many experimentations have been conducted to enlarge the cohort of people motivated in acquiring digital competences at various levels. Many of these experimentations indicate a common direction: the shift from passive to active learning, the use of innovation management tools in a teaching and learning perspective, the establishment of physical spaces and digital platforms to foster the integration of corporate actors and training institutions. All these elements are characterizing this process of experimentation to support of increasingly competitive innovation ecosystems.

For cultural and demographic reasons Italy represents an interesting case study in terms of lack of digital professional profiles (cf. Micelli S. (2014)). Not only the country has a long tradition in supporting humanities rather than scientific disciplines, the problem of human capital is also related to an important reduction of births and a substantial absence of foreign workers coming from abroad. The lack of talented young students with digital skills has been particularly critical especially in the so called Made in Italy industries (Food, fashion, furniture and mechanics) where an original mix of analog know how and digital tech is crucial to achieve competitiveness (cf. Bugliesi and Nardelli (2023) for a general picture).

In this perspective, several interesting projects have been launched to increase productivity. Among them, Upskill 4.0 is a particularly interesting one. Created in the wake of a successful project promoted by MIUR (Ministry of Education), Upskill 4.0 is a University spin off that connects firms and higher technical education (ITS) to solve complex problems related to the use of 4.0 technologies. Upskill 4.0

does so through the involvement of groups of students based on the methodology of design thinking. The companies formulate a 4.0 problem to Upskill 4.0, which engages a group of young people from an ITS to start an innovation journey based on the methodology of design thinking.

Design thinking is a user-centered approach to innovation that promotes creativity, collaboration and problem solving. This method is key to developing innovative and sustainable solutions that respond to the challenges and opportunities presented by the fourth industrial revolution. The connection between higher technical education and business helps create an ecosystem of continuing education that can support the competitiveness of businesses and workers within more cohesive and aware territories.

The results Upskill 4.0 has been able to achieve show the model's potential. During its first two years of activity, in the midst of the post covid conjuncture, the spin off developed more than one hundred research projects in collaboration with as many companies, involved fifteen ITSs, as well as dozens of professors and experts who mentored young people and managers. Thanks to various sources of funding, both corporate and philanthropic, it has been possible to support a variety of 4.0 innovation processes that would otherwise be difficult to imagine with SMEs of various sizes and activity sectors.

The paper analyses the Upskill 4.0 case study considering quantitative and qualitative evidence. Professionals, professors, and students involved in twenty-five projects have been interviewed to evaluate the impact of this innovative methodology in terms of learning and technology advancements. The results confirm the potential of problem-based learning and the relevance of new teaching and learning methodologies for firms and institutions. The connection between tertiary education and firms produce virtuous short-circuits that favor territorial competitiveness. In conclusion, the paper elaborates guidelines to support private-public cooperation in technical higher education to sustain the diffusion of digital competences and promote eco-systems competitiveness.

References

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