

Robotisation and its Social Implications: The skills gaps and digital learning

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Abstract—This paper discusses the effects on the Labour Market in the “era of robots”. Interaction and collaboration between humans and robots will increase. The employment and jobs will be transformed. The current model will have to adapt to its new stage of Digital Disruption.

I. INTRODUCTION

The vertiginous process of digitalization and robotization of the economy impacts on the Labour Market, so it is essential to analyze how this market could change in order to articulate some solutions under the premise of the principle of technological, social and legally responsible innovation. There will always be human work: “the relevant thing will be how the existing one is distributed and how to guarantee equal opportunities to have access to it” [1].

Technology changes the type of production and the types of jobs or workforce needed and will always require some reorganization of work and a new division of labour. In the context of robotisation, measuring its impact in terms of quantity of employment/quality or nature of work performed by humans has for years been the main concern. If we focus the analysis around the division of labour, and this from the employment rate/unemployment rate comparison, there is no consensus on the results and on the projections in the short, medium and long term.

II. LABOUR MARKET POLARISATION

In the scenario of “polarisation” of the labor market, it is said that the substitution effect will not be so much of jobs but of specific tasks, particularly those that are considered repetitive, whether physical or data processing. In this regard, it is argued that the type of tasks that robots or other automation tools will not be able to perform soon, even with advances in artificial intelligence, are those that focus on creativity, empathy, persuasion, an understanding of knowledge and a high level of sensory-motor skills, which are influenced by the level of education or training of workers. But paradoxically, it has also

been analyzed how technology can contribute to create jobs where intermediate digital skills are required and these can be more easily replaced in a technological advance.

In this context of uncertainty about job creation, reduction or polarisation, it is necessary and urgent to take strong measures in the labour market. Even if it is claimed that there will be no negative impact on jobs, it is a different matter whether the labour market has workers with the necessary skills for the new jobs that may be created. In this respect it has been rightly stated that “countries that are able to train their workers in the new skills and retain talented workers can shorten the transition period. This will allow them to be more competitive and take advantage of the benefits of automation [2]

In order to face the future of work and employment successfully, it is essential to adopt measures to redirect the division of labour in the context of the training and qualification of workers in order to tackle skill shortages, skill mismatches, skills gaps and the lack of lifelong learning.

A. SKILL GAPS & WAGE GAPS

The “competence” gaps (the so-called skill gaps) are another factor in the wage gaps. If the worker has average competences/skills and his job can be robotized, he will not be able to aspire to a job related to his training, he will have to do lower qualified work and, therefore, suffer a reduction in his salary. If the worker does not have these required skills, the gap will occur in the short term and, therefore, a new type of inequality or vulnerability will be installed in the labour market derived from the difference or mismatch between the skills that employers are looking for and the skills that workers have. Observing these inequalities in the context of the wage gap, the process of robotization and the advance of technological innovation may generate greater polarisation because the increase in the wages of low -and medium- skilled workers. So more low -skilled jobs will be available with fewer opportunities for wage growth [3], perpetuating the problem.

¹Inbots, CSA, H 2020, G.A. n.780073 and FuWorkTech Spanish Project: *El impacto de la digitalización en las relaciones de trabajo, retos y oportunidades*, PID 2019-104287RB-100

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B. TRAINING AND QUALIFICATION: DIGITAL LEARNING

Training for a qualification is necessary to address the gaps and deficiencies detected in the design and immediate implementation of specific measures. A public-private collaboration programme should be advocated that precisely sets the objectives, mediate and immediate, and their different phases. Today more than ever, the digital transformation requires workers with multipurpose training and lifelong learning to adapt to the technological advances that are taking place.

It's necessary to train in digital skills and support employment through access to, among other measures, digital learning. It is estimated that up to 90% of jobs in the EU will require some form of digital competence in the coming years [4] (That is why the European Commission is firmly committed to the promotion of advanced digital skills as one of the five priority areas of the Digital Europe 2021-2027 Programme. But also, the necessity to qualify and train in other competences or skills, in particular those that can be qualified as "social and emotional skills", among them, advanced communication and negotiation skills; interpersonal skills and empathy; leadership and management; entrepreneurship and pro-activity; adaptability and continuous learning; teaching and training should not be overlooked.

International Organisations and EU institutions (within the framework of the European Pillar of Social Rights) have been focusing on lifelong learning as a guarantee of people's employability for a long time. In this transition period, the question is who is to pay for the re-skilling and retraining of those who are currently in the workplace but may lose their jobs as a result of robotization, and how.

The latest Spanish's labour reforms, especially in 2011 and 2012, enshrined important advances in vocational training for employment in the individual employment relationship that allow workers to face the permanent challenge of training demanded by the digital transformation, among others, the training account [5]. Some of these are in line with the measures proposed by the European Commission's High-Level Expert Group on the Impact of the Digital Transformation on EU Labour Markets (2019).

Training in digitization and robotics will certainly help to minimize the impact of the digital transformation on job destruction and skills mismatch. Moreover, the establishment of an effective vocational training system that allows workers to be constantly retrained, to fully develop their skills, to facilitate their job transitions and to enable companies to have a skilled workforce with which to respond to technological change and robotization, must be an essential component of employment policies.

C. PROPOSALS OF VOCATIONAL TRAINING FOR EMPLOYMENT

The current situation advises a calm reflection on the future of vocational training for employment and, in the context of

digitalization in general, and robotisation, proposals can be made in this regard. Among them: inclusion of a new priority group in the Employment Act, that of workers with a deficit of training in new technologies and digitization and with difficulties of integration into the labour market [6]. The implementation of employment stimulus measures for certain productive sectors or geographical areas that may have been affected by the irruption of new technologies. The establishment of guidance and continuous professional training actions in the field of digitalization and new technologies as an adjustment mechanism to avoid the negative effects on workers, especially older and less qualified ones. The promotion of entrepreneurship and self-employment as an option for labour insertion, to meet the enormous opportunities for growth and employment made possible by new technologies. And finally, assessing the bonuses or reductions in social contributions for companies that introduce new technologies, maintain the level of employment and qualify their workers [7]. The aim of the measure is to contribute to the retraining and outplacement of these workers from within the company, without expelling them from the labour market as far as possible. The incentive to technological innovation and the conversion of companies and activities from the traditional model to a more technological model must be accompanied, at least during the transition phase, by economic incentives for those companies that invest really and effectively in the technological "training" of their workers.

III. CONCLUSION

It is urgent to prioritise the modernisation of the vocational training system for employment. It must be adapted to the new needs demanded by the labour market derived from digitalisation. The ultimate aim must be to avoid the skills gaps, as it will allow to match labour supply and demand in an increasingly robotised labour market.

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