Club of Florence – Workshop 2019 – Call for Papers

"Artificial Intelligence, Robotics and Employment Relations"

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Background and Rationale

Work and employment is facing the most severe change since industrialization as digital applications such as artificial intelligence and robotics are affecting every industry and job sector. Various studies investigate the substitutability of jobs by computers, robotics and machines (e.g. Autor, 2015; Bonin, Gregory, & Zierahn, 2015; Bowles, 2014; Frey & Osborne, 2013). Starting from the question whether or not advances in robotics and information technology increase unemployment in the USA, the seminal work of Frey and Osborne (2013) analyzed to what extent occupations are susceptible to computerization. This generated a particularly high level of attention. They found out that 47% of jobs in the USA are potentially at risk. However, automating human work must be worthwhile. Moreover, legal and ethical aspects reduce the probability of the computerization of activities being implemented (Bonin et al., 2015). Above this, technological change in the past has led to higher labor productivity and added value (e.g. through the use of AI and robotics) as well as to wage increases and has created more jobs than were destroyed (Graetz & Michaels, 2015). This was discussed since the 1980s pointing at results of technological change regarding job design, motivation and efficiency (e.g. Davis, 1986; Dewar & Dutton, 1986; Hyclak & Kolchin, 1986; Pierce, 1984; Roskies, Liker, & Roitman, 1988). The objective is to forward the analysis to the current developments with digital applications in the world of work. So far, empirical investigations analyzing changes of employment in organizations using AI and robotics are still missing. There is also a lack of theoretical foundations to explain current developments in this regard. There are indications that the profound transformation in the world of work leads to a variety of changes, which can be broken down to the following levels of analysis:

At the *individual level*, perceptions, beliefs, and attitudes towards AI and robotics are decisive for adoption processes (Endsley, 1994; Griffith & Northcraft, 1993; Guntram, 1984; Robertson, 1967; Rogers, 2003; Schraeder, Swarmidass, & Morrison, 2006). According to Self-Determination Theory (Deci & Ryan, 2012; Ryan & Deci, 2000) changes in work organization could have an impact on motivation as it can be assumed that motivation and well-being of the workforce increase when central human needs for autonomy, competence and recognition or human solidarity are fulfilled. Likewise, changing job demands due to the use of digital devices could result in stress depending on individual resources as the Job Demands Resource Model (Bakker & Demerouti, 2007) conceptualizes the relationship between work demands and resources or competencies as being decisive for motivation, health maintenance and employability of the workforce. Equally important is the concept of self-efficacy (Bandura, 1997), whether workers feel competent in using new technologies or learning how to use them. This also relates to worker perception regarding autonomy and control as two sides of one coin (Mazmanian, Orlikowski, & Yates, 2013; Smith, Tisak, Hahn, & Schmieder, 1997; Stohl, Stohl, & Leonardi, 2016).

At the *group level*, size and structure as well as cohesion and social norms in teams are expected to change in the course of implementing AI and robotics into work organization since workers have the opportunity on the one hand to check their own performance and compare it with that of their colleagues (Collins, Hislop, & Cartwright, 2016). This can for example serve as an incentive to improve performance and promote competition among the workforce. On the other hand, there is a higher transparency of performance so that superiors can monitor the activities of individual workers more closely and intervene in work processes (Langfred, 2000).

At the *organizational level*, structure, work design and goal setting alter in the course of digitalization (Damanpour, 1991; Frese, Teng, & Wijnen, 1999; Lam, 2005; Pierce & Delbecq, 1977; Wilkesmann & Wilkesmann, 2018). From a transaction cost perspective (Williamson, 1975) it can be explained that organizational structures are changing as a result of the increasing digital transparency, and engagement of external workers (Connelly & Gallagher, 2004; Kalleberg, 2000; Matusik & Hill, 1998). Issues of efficiency and social sustainability in the light of the Second Machine Age (Brynjolfsson & McAfee, 2014) or Industry 4.0 concept developments (Marsh, 2012; Rifkin, 2014) as well as the potentials and challenges of AI and robotics for organizational performance need to be further investigated – so far, the discussion focuses on the opportunities for saving personnel costs and staff reduction (Lovergine & Pellero, 2018;). Here, the outlined questions of job losses or job gains as well as changes in job demands are located (Juillerat, 2010; Parker, Wall, & Cordery, 2001).

In a fourth *cross-level* perspective, work design questions and Human-Computer-Interaction (HCI) are located. The rising use of AI and robotics will fundamentally change the collaboration of humans with machines and this will affect individual, group and organizational decisions and processes (Cummings & Bruni, 2009; Lee, Bagheri, & Kao, 2015). For example, individuals, groups and organizations will have to cope with the fact that humans will refrain more and more from operational tasks and have to migrate their capabilities and attention towards supervisory tasks. In addition, HCI changes due to increased AI and robotics development will also affect work cooperation among humans, as for example human-machine teams (hybridization, cobots) have to work together in corporate processes. This will again affect also motivation, communication and collaboration schemes and requirements among humans due to different capabilities and insights of such teams. Finally, this is relevant for industrial relations and actors like e.g. unions and employer associations or work councils and management with issues like data protection and job design policies.

Objectives of the Workshop and a Journal Special Issue

With the "Club of Florence" 2019 Workshop and the subsequent special issue in an academic journal[1], we aim to shed light on the implementation of AI and robotics with their resulting questions for employment relations and work organization. This encourages research from a wide range of disciplines investigating different fields of employment. Items for contributions include – but are not restricted to – the following topics:

(1) Job losses or job gains – empirical analysis regarding impacts of digitalization
(2) Enrichment or simplification of jobs – new digital work organization
(3) Job demands and resources – job satisfaction and perceived stress in new work settings
(4) Autonomy and control in digital work – workforce between self- and external control influencing motivation
(5) Efficiency improvement hypothesis – how to design digitalization efficiently
(6) Social sustainability – is there an artificial divide to fear?

[1] A proposal for a special issue in a high-ranked academic journal is submitted; SI publication is planned for 2020.

Submission and Workshop Instructions

The deadline for workshop submissions is **February 21, 2019.** Short papers up to 3,000 words should be submitted via E-Mail to the conveners in MS Word and/or PDF format. This is intended for the development of academic papers towards the indicated special issue in a high-ranked academic journal with a full paper submission deadline later in 2019. The 2019 Workshop of the Club of Florence will take place on **Friday, March 29** at the University of Florence. Detailed instructions will be sent out before February 28, 2019 to all participating experts and authors. Questions regarding this call can be directed to the conveners Caroline Ruiner (ruiner@uni-trier.de) and Matthias Klumpp (matthias.klumpp@uni-goettingen.de).

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