

Smart production and industrial relations

Workshop in Lisbon, 6–7 March

**Organised by Francesco Montemurro in collaboration with Emanuele Albarosa
*Ires Lucia Morosini Association***

Smart production: Questions

Will digitalisation increase the amount of work or will the number of job roles decrease significantly? Which role do public authorities play in the control of these procedures and in the promotion of digitalisation in sectors which are of essential social usefulness (Healthcare, Transportation, Services to individuals, Domotics, etc)?

What are the requirements regarding education, development of skills and proficiency, continual learning, as well as adjustments in defining professions? How to re-direct the programming of the ESF (European Social Fund) to meet these needs and how to ensure that both public and private authorised institutions plan efficient, coordinated training systems? What sort of eco-friendly budget is needed for development (bonus for companies that participate in tender notices, tax exemptions, etc)?

What kind of employment regarding contractual agreements and work relations will emerge as a result of network economy and the ever-increasing separation of time and space in a digitalised world (i.e. the growing tendency toward “crowd-working” and “cloud employment”)? In which ways will the “new workers” be represented by the trade unions?

How to guarantee the transition toward digital work in Industry and Services does not place the onus of social expenditure on the workers.

Source: our elaboration in “European Trade Union Confederation (ETUC) 2016”

A concept still in evolution

- The results of the qualitative enquiry carried out among a cross-section of privileged witnesses operating in Europe (organised by the “Ines Morosini Association”).
- Smart production as a concept, together with its multifaceted aspects, is still at an evolutionary stage; its applications are wide-ranging and are being implemented through the use of numerous types of differing technologies. The most common, for now at least, seem to be **robotics** and, more generally, **automation**, **3D printing**, as well as **big data** and **cloud technologies**. There are marked differences in their distribution: in Denmark, for example, one out of two firms uses robotics/automation, while Spain lags behind.
- In Italy, none of these technologies seems to have been implemented on a large scale, even though aside from those already mentioned, it seems that **virtual models** and the **superconnection of systems** are becoming more widespread.
- There still seems to be little space given to technologies which use **augmented reality** and, barring a few exceptions, **Internet of Things**.
- Another factor to bear in mind is the specificity of company solutions which combine different technologies in the production process.

The consequences of Smart Production

The consequences of Smart Production

The overall impact of Industry 4.0 can be divided into four main results:

Creation of work: new sectors, new products, new services: procedures regarding control and coordination; public investments as a guarantee of democratic rules?

Destruction of work: automation, robotisation;

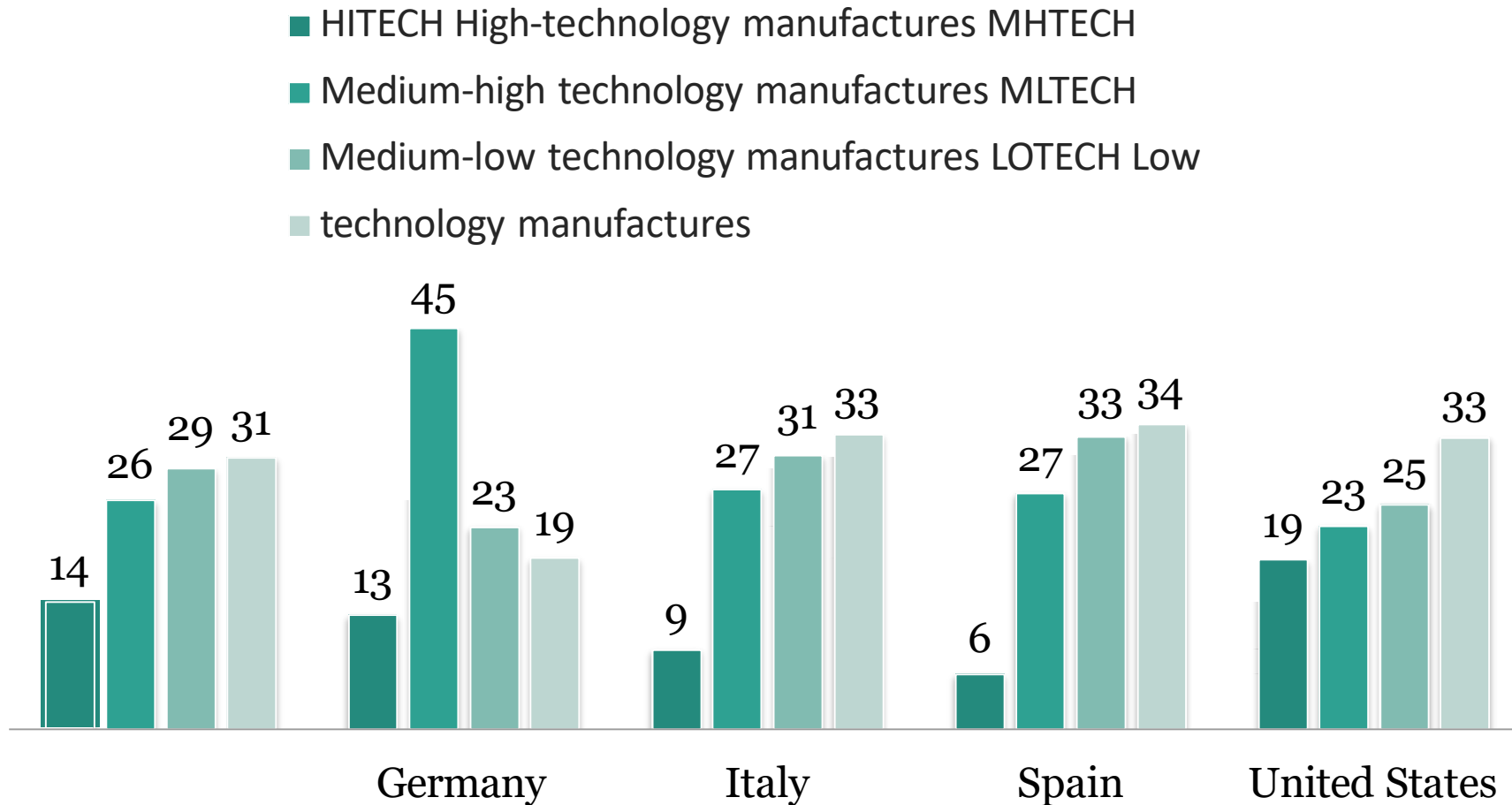
Transformation of work: digitalisation, interfacing between smart machinery and man, new forms of management;

Relocation of work: digital platforms, crowd sourcing, “sharing” economy;

Intensified flexibility and reduced rights and protection (insurance coverage and privatisation of protection measures).

Will the digitalisation of the work market produce new inequalities and will it deepen those already in existence, thus creating a situation whereby platform owners will be forever fewer and more powerful?

Manufacturing for technological intensity v.%



France Source: OECD (Organization for Economic Cooperation and Development)

The EU and the capacity to manage the process of industrial transition

Four groups of countries in Europe.

A relatively small group of “pioneers” (Sweden, Austria, Germany, Ireland) are characterised by a strong industrial base, forward-looking technologies and business conditions (Sweden, Austria and Germany), which seem better prepared for technological and economic change.

By way of contrast, there’s a large group of “hesitators” including Spain, Portugal, and Italy. According to Roland Berger*, these countries, and particularly the ones with serious financial problems, “aren’t able to make their economies stand the test of the future.” However, these studies do not take into account the efforts (legislation controls, strategy programming and development policies etc) carried out on a public scale and the degree of integration of interventions.

Frontrunners

Austria, Germany, Sweden, Ireland

Potentialists:

Denmark, UK, France, Belgium, Holland

Hesitators

Bulgaria, Italy, Poland, Portugal, Spain

Traditionalist

Czech Republic, Slovakia, Hungary, Lithuania.

*Roland Berger 2015: Industry 4.0. The new industrial revolution. How Europe will succeed.

Problem areas

Italy: few manufacturing sectors involved.

Some features:

Greater flexibility but also work productivity; more efficient production both from the point of view of products as well as impact on the environment; also, the organisation of production where workers are more actively engaged. In some cases, where there's a delay in the dissemination of smart production procedures at a national level, often it's multinational corporations or, in any case, large companies which are already equipped with the above-mentioned technologies. In such cases, the adoption of these procedures is sometimes seen as an **alternative to delocalisation**.

However strong the perception that industries as a whole may be interested in the phenomenon, for now at least, the driving sectors seem to be those in the **automotive, aerospace, and pharmaceuticals** fields.

There are also geographical delays and advantages: in Italy, for example, the area shown to be the hub of technological development is the North-East, as opposed to the South which lags behind considerably.

Source: the results of the qualitative enquiry carried out on a cross-section of privileged witnesses operating in Europe (organised by the Ires Morosini Association.)

Manufacturing/services: an unstable boundary

- Innovative services and ICT technologies – software, cloud, outsourcing, satellite services and applications – enterprises that include planning, plant design, facility management and energy services, professional services, engineering and counselling, communication and marketing, evaluation of compliances, credit and financing services, knowledge and education services, creative enterprises operating in the field of culture, sports and entertainment sectors.
- Services and manufacturing are becoming more integrated. Marked territorial differences can be noted, however, where the development of tertiary digitalisation is concerned. Regarding the proportion of manufacturing companies which offer services, according to the McKinsey elaboration of 2010 data, in US manufacturing, assemblage represents less than 50% of total employment (services: 57.7%; manufacturing. 42.2%), while in Italy, the number of manufacturing companies proportionately offering services is equal to approximately 33% (in Spain, Finland, Austria and South Africa, the percentage of companies equals 40%).

Manufacturing/services: an unstable boundary

- The sector involving innovative services in Italy includes 800,000 companies from large, medium to small; 2,100,000 workers, of whom 50% are employees; 255 billion euro sales volume and 110 billion value added.
- Small companies – services – Uber
- Flexibility offered shows up when related to general job insecurity of the active population.
- As long as there is such a great number of unemployed people, Uber and other companies adopting the same business model will always find someone around willing to work for even very little money. And with zero rights.
- **The applications of technologies as a tool for making work more flexible and detaching it from traditional forms of protection?**

Italy and the process of industrial transition: serious delays

Based on an inquiry carried out by Federmeccanica (a businessmen's association) in this country, 64% of the 572 manufacturing companies interviewed declared that they have adopted at least one of the 11 innovative technologies below:

Electro-mechanics; robotics; collaborative robotics; Internet of Things (IoT); Big Data; Cloud computing; Computer Science Security; 3D printing; systems using virtualisation and product simulation; nanotechnologies; smart materials and analyses of aspects pertaining to managerial skills.

The lagging behind of Italian companies on the theme of "Industry 4.0" remains significant. Intentions to invest in smart production in the coming years are, on an average, low. (Generally speaking, most of the companies interviewed showed no interest); among non-adopters (companies currently not applying technologies typical of Industry 4.0) there's a growing lack of interest. In the absence of corrective measures, the difference between more advanced companies and those lagging behind is bound to become more defined.

If the **themes regarding Industry 4.0 have indeed begun to spread** in the area of Italian manufacturing, **this process is still in its initial phase** and needs a greater and more thorough knowledge of qualifying technologies. The weight carried by the evaluation of human capital in choices made by companies is not yet satisfactory.

Organisation of work

The relationship between man and machine (an aspect which has not yet been fully explored)

Collaborative manufacturing vs constructive manufacturing

Collaborative manufacturing: companies in which workers engage in problem solving, where they face and solve the unexpected, employees show a greater degree of commitment than required by contract, in exchange for a cooperative climate, training, possibilities for career advancement and above all increased employability; the company lets the worker have more autonomy and accepts the idea of workers being redeployed elsewhere.

Constructive manufacturing: a conspicuous effect of flexibility/temporary employment, inadequate training, little or no possibility for career advancement, a lack of autonomy in work management.

The unchanging organisation of work – Italy

How some workers' skills have changed (sector of factory workers) with the introduction of innovations adopted. The perception of some businessmen operating in the manufacturing trade. (Scale from 0 to 4)

Interdisciplinary abilities	1.6
Team building	1.6
Leadership	1.4
Autonomy, responsibility, proactivity	2.0
Decision making/Problem solving	1.7
Interpersonal relationships/empathy	1.4
Interpersonal relationships/emotional intelligence	1.3
Ability to work in a group	1.9
Infographic communication	1.3
Digital information	1.6

The results of the survey carried out by the Federmeccanica Association show how behaviour typical of “collaborative manufacturing” (interdisciplinary abilities, autonomy, problem solving, leadership, team building), which should have contributed to a radical change in the work organisation in “smart” companies, is still behind.

Crucial areas: risks facing constructive manufacturing

The critical areas concern experiences in digitalisation used in small and very small companies.

Critical areas: constructive manufacturing.

Weakening of collective actions and industrial relations.

Increase in social inequalities, stagnation of salaries Workers and a loss of control (experience, knowhow)

Digital Taylorism and the emergence of strong competition among workers

Crucial areas: “The smart factory” in medium and large companies.

The organisation of work is not yet “intelligent”.

Production area

Stronger guarantees of work rights in medium and large companies compared to small and very small companies

Strong accent on hierarchical relations

Lack of autonomy for workers

Few innovations in the field of work organisation

Variable salaries, still significantly tied to workers’ presence

Source: the results of the qualitative enquiry carried out on a cross-section of privileged witnesses operating in Europe (organised by the Ires Morosini Association.)

The potential of digitalisation

- The wide potential of digitalisation is also linked to sectors which have a high social impact, such as public transportation and healthcare in particular.
- Important future developments also regarding education and public administration in general. It remains to be seen how the problem of a non-standardised digital culture will be dealt with on a national and demographic level.
- Lack of integration: Regional Operative Plans EFS
- **Source: the results of the qualitative enquiry carried out on a cross-section of privileged witnesses operating in Europe (organised by the Ires Morosini Association.)**

Polarisation of job positions

- Regarding both the macro and micro impact which intelligent production has on the work world, different surveys carried out seem to confirm certain theories. In particular, we are witnessing a polarisation of job positions, both highly-qualified and unqualified; while the former are on the increase (engineers in the fields of technology, electromechanics, environment, biomedicine – and above all ICT specialists), the latter for now are stable or else are decreasing.
- The case of Piedmont.
- The demand for work is addressing itself more and more towards workers with specialised skills. If, so far, the roles requiring computer skills have often been delegated to employees who have acquired these skills on their own, workers currently being hired are expected to have **official qualifications**. The combination of **vocational training** and **digital knowledge** is also becoming an important asset among workers.
- **Source: the results of the qualitative enquiry carried out on a cross-section of privileged witnesses operating in Europe (organised by the Ires Morosini Association.)**

Uncertainty regarding quantitative impact

- There remains, however, a great deal of uncertainty regarding the overall quantitative impact on smart production.
- There is some cautious optimism regarding social risks when it comes to exclusions which can come about; this is a positive point of view strongly conditioned, however, by various factors, namely the capacity of workers and their attitude to innovation and specialisation, and how companies can offer valid on-going training programmes at work; by the capacity of the public administration to incentivise productive transformations which have a positive impact on job positions, to promote digital skills and ensure a valid network of social protection for those who will inevitably live to see their skills become obsolete.
- **Source: the results of the qualitative enquiry carried out on a cross-section of privileged witnesses operating in Europe (organised by the Ires Morosini Association.)**

Flexibility and regulatory innovation

- Regulatory innovation is also seen as a key factor in this process, above all regarding new forms of work which will be created
- Flexibility is considered one of the main qualitative impacts on the work world. In particular, forms on the increase seem to be those such as self-employment (especially partnerships) carried out on **online platforms** and in **crowd working**. **Flexibility as introduced by the new procedures could pose a problem if not accompanied by new regulations made to suit these needs; these measures have so far been judged inadequate in coping with the transformations taking place.** In particular, the issue of contributions towards pensions is seen as being of fundamental importance in future developments of the working world.
- National negotiations – new professional types
-
- **Source: the results of the qualitative enquiry carried out on a cross-section of privileged witnesses operating in Europe (organised by the Ires Morosini Association.)**

New methods of employment prevalent in Italy

Casual work

ICT-based mobile work – Workers do not use their employer’s workplace (or rooms, if they’re self-employed) as their main workplace;

Voucher-based work;

Portfolio work – a self-employed individual carries out small jobs for a large number of clients;

Crowd-working – an online platform satisfies employers regarding workers; projects are often subdivided into micro-activities and divided into a workers’ “virtual cloud”.

Policies

- Public administration has, therefore, an extremely important role in the process of digitalisation of the economy and society.
- First of all, as we have already pointed out, there will be some very important work to be done regarding regulation: the themes under discussion are many, and range from transparency in the process of gathering big-data to rules on the use of Internet of Things, to a rethinking of the concept of ownership (particularly important in the case of autonomous robots), to anti-monopoly measures.
- Then there's a pressing need for **infrastructures**, especially digital ones: the spread of broad band networks being a key aspect.
- It's important to underline the urgent need, especially in Italy, for more streamlined bureaucracy.
- Lastly, the third field where public intervention should focus is **industrial policy**, through the promotion of "digital hubs", centres for technological development, tax incentives which favour Research and Development.
-
- **Source: the results of the qualitative enquiry carried out on a cross-section of privileged witnesses operating in Europe (organised by the Ires Morosini Association.)**

Industrial Relations

- The typology of industrial relations which is given top priority is of the active kind.
- The importance of avoiding an attitude which is contrary to digitalisation, both in order to put to good use its important advantages – where the quality of safety at work is concerned – and also in order to be leading participants in the definition of standards regarding world regulatory measures which will be adopted gradually, together with the spread of smart production.
- At the centre of industrial relations there are undoubtedly the organisation of the working day – particularly **work places and schedules** – and **wage incentives; the gathering and managing of data** regarding workers; **workers' training policies; the organisational work model**, which one feels should engage workers more where processes of innovation are concerned.
- The importance of a serious debate on *digital divide*, on how to make skills available at a universal level since they're becoming increasingly essential.
-
- **Source: the results of the qualitative enquiry carried out on a cross-section of privileged witnesses operating in Europe (organised by the Ires Morosini Association.)**

Industrial Relations

Trade unions are now faced with different issues; from a general point of view, one will have to carve out a space within the modelling processes in new industrial situations. This will certainly require a marked capacity for adaptation and innovation, features which today are still lacking.

In this period of general renovation in the work world, among the measures which have been identified as potentially beneficial, is the need to leave room for innovative solutions, which are doubtlessly to be found within the pioneering companies of digitalisation.

This means there's a need to **rethink the relationship between national and company negotiations**. Another possible path is the **redefinition of regulations regarding the role of the self-employed worker**, which will probably undergo a profound transformation, and with whom the differences with employees will be more fluid.

The role of trade unions will certainly be central to the regulation of the new economy, in **issues to do with taxes, contributions**, as well as those tied to other themes, such as **privacy, transparency, and security** in the work world.

Source: the results of the qualitative enquiry carried out on a cross-section of privileged witnesses operating in Europe (organised by the Ires Morosini Association).

Industrial Relations

Foreseeing changes – Co-determination

Challenges: combining competitiveness (in companies), employability and the quality of work

Human capital as a strategic incentive – employability and permanent education

For a new way of organising work

Interdisciplinary methods

Autonomy

Participation

Less hierarchical relations

Situational Leaderships

Continuing Education

- Evidence gathered in the ETUC 2015-2016 Ires Morosini 2017 surveys proves that proper engagement of workers within the administrative committee and in strategic decision-making helps companies get better results, also in the context of managing of changes and restructuring.

Challenges and themes of industrial relations

- *Collective negotiations*
- *Decentralised negotiations*
- *Strategic business planning*
- *Policies for the development of companies and employment*
- *Work organisation*
- *Training*
- *Cycles of crises – managing redundancies*
- *Engagement of local communities and public administration*
- *Measures for social protection and social security cushions*