

SUSTAINABLE DEVELOPMENT AND NEW FORMS OF WORK. A SCENARIO OF COMMON, BASIC CHALLENGES FOR PUBLIC AND PRIVATE PLAYERS

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Abstract

The article illustrates the implications for the world of work of two decisive factors of change in the global situation: the joint commitment of states to promote sustainable development according to the normative guidelines of the United Nations and the effects of the pandemic crisis. It proposes the reference to the institutionalist theoretical approach as the most appropriate to provide a valid interpretation of the diversity of orientations in economic and social development policies, including labour policies, which occur on the global scene. The article presents the analyzes on the professions of the future and the relative employment prospects for 2030 contained in two studies developed in Italy on the basis of predictive models that applied specific Artificial Intelligence (AI) techniques, officially presented in the first half of 2021. Presented research recalls the ultimate meaning of the phenomenon of structural crisis, the value of institutionalist theory in understanding the complexity of the processes of development, and progress of communities and, in the context of the choice for sustainability, the importance of the changes that lie ahead in the world of work in relation to the specific green and digital transition processes currently promoted by the states. Article's findings may stimulate research on predictive models in the field of employment and new professions projected beyond short-term trends, in the broader dimensions of perspectives and scenarios.

Keywords: structural changes, institutional economics, quality of development, sustainability, labour market changes, digital revolution, skills, competences, new professions

Introduction

The subject of this article is the analysis and evaluation of the profound processes of change taking place in the world of work which find one of the most significant manifestations in the reorganization of working methods and in the increasingly pressing and widespread demand for new skills and professions.

It is the author's opinion that in order to understand the extent and impact of the aforementioned changes, formulate reliable hypotheses on their possible evolution and contribute to the definition of proposals for interventions that bring out the most positive aspects and real progress, it is essential to make reference and have a clear awareness of the structural, non-conjunctural crisis, that we are experiencing at a global level: in individual states, in civil communities and in the workplace. This crisis is generated by two main factors: the decision made by the international community and by the states to pursue a model of sustainable economic development, radically different from the current one, and the tragedy of the global pandemic. These two factors have accentuated the processes of change that have been going on for some time in our societies, for example due to the impulse of digital innovation and great scientific and technological progress; at the same time they have also triggered completely new processes, which concern not only the geopolitical and geo-

economic balances between states and the various geographical areas of the world, but which intervene in the depths of our economic and social systems: in the lifestyle and in the values' system of people, in the ways of producing, working, consuming, in social relations, in the orientations of thought on the organization of one's life, on trust in the future. By their nature, structural crises always mark a profound discontinuity with the situations of the past, ancient and recent; once started, their evolution is marked by the impact of numerous imponderable variables of the most diverse nature which interact with each other, creating completely new and unexpected situations. Only a multidisciplinary and systemic interpretative approach can allow the formulation of plausible hypotheses on their possible outcome in the short, medium and long term.

The objective of this article is, therefore, to read the changes taking place in the world of work in the light of the broader changes that are taking place at the level of the economic and social system; in this regard, the Author proposes to use – this is the methodological hypothesis of the study – the contribution of institutionalist theory as the most suitable tool to provide an adequate interpretation of these changes and, at the same time, to redesign a valid regulation of the new development processes to ensure a positive outcome. This will allow, for

example, to find answers to the main factors of uncertainty that the structural crisis to which we refer has generated and is currently generating in economic and productive activities, in the psychology of people and in the choices of operators regarding the need to proceed. In any case to the construction of a new order, more just and balanced than the current one; an order that is largely to be defined and in any case all to be built. The path indicated by international institutions to operate with the utmost commitment according to the principle of sustainability indicates a valid, decidedly innovative and important path, to which radical changes in the world of work are also connected. This is an interrelation to be considered very carefully in order to ensure that even the scientific world, with its studies and insights, can play an active role in identifying a line of shared progress. In the final section of the article, the illustration of two studies on the professions of the future, presented in Italy in the first half of 2021 by authoritative scientific institutions, offers knowledge and methodological insights to carry out further research on this topic.

1. The value of institutionalist theory in the analysis of development processes

This article refers and proposes, first of all, the value of the institutionalist theory which introduced the role of institutions within mainstream classical economic theory and this in order to better illustrate and understand the evolution of the capitalist system and its multiple articulation, currently present in the contemporary world scene, in multiple capitalist systems characterized by considerable diversity, processes and development prospects. The institutionalist theory, which has been developed since the last century by scholars such as Thorstein Veblen (1857-1929) [15], the Nobel laureate in economics Elinor Ostrom (1933-2012) [13], Alessandro Cavalli (1939-) [5], Geoffrey. M Hodgson (1946-) [10], Ernesto Screpanti (1948-). [14] takes as a reference the agents of the economy and society who interact with each other in multiple ways; an interaction that leads to the creation of functional institutions for the survival and evolution of a community, to the realization of common objectives, but also to the origin of different forms of capitalist systems. Institutional thought disputes rationality in human behaviour as a guiding principle of economic choices to classical economics and emphasizes that such behaviours are rather social products, that is, the result of conscious and unconscious thinking habits, often instinctive impulses, models and rules of behaviour constructed, consolidated over time and incorporated into the social context in an individual lives; therefore, they are behaviours that also refer to other values and needs, in addition to the strictly economic ones, such as ethical,

cultural, religious, social, political values. Institutions are therefore the system of rules, formal and informal, which arise from these individual orientations and behaviours, are founded, shaped and influenced by the multiple values and sensitivities of individuals; but in turn they orient and condition their action, in a continuous reciprocal interaction. On the positive side, institutions can encourage virtuous behaviour, favouring the introduction of innovative processes and / or facilitating the solution of social and economic problems. On the negative side, institutions can create and sustain rent positions, facilitating the control of market segments and the manipulation of power relations. Thus, there are institutions that generate wealth and promote development and employment, while other institutions hinder the development of the productive forces and social progress.

The thesis presented in this article is to assume the institutions – in the aforementioned definition, it is repeated, of a system of formal and informal rules that condition and interact with the individual, fruit of the history and culture of each country – as the main factor that determines: 1) the different forms of organization of the economy and society and the related systems and subsystems, including subsystems relating to the labour market and 2) the variety of paths of change and development; paths, it should be added, that despite their diversity, they still retain the identifying traits of the capitalist mode of production. It is the binomial capitalism – capitalisms.

An element of support to this thesis can be found in the analyses of those economists engaged in the studies and evaluations of the structural changes of economic processes that find their origin in the succession of technological cycles. As an example, we cite the Russian economist Sergey Glaziev according to whom the «*modern socio-economic development is characterized by the leading role played by scientific and technological progress (STP) in supporting economic growth. According to various estimates, STP accounts for 70 to 95% of GDP growth in developed countries. A key role in the formation of scientific and technological progress is played by: the society's intellectual potential, support institutions for innovational activity, and the state's R&D and innovation policy*» [9: 48]. According to Glaziev, therefore, the determinants of contemporary economic development are the transition to an economy based on knowledge and the emergence of the strategic role of technological-scientific-STP progress; two factors which, among other things, led to the emergence of a new scientific discipline: knowledge-based economics. The new technological cycle that is establishing itself for the next two to three decades is based in particular on three main technologies: biotechnologies, nanotechnologies, artificial intelligence and is destined to determine the

transition from the current consumer society to what is defined as the intellectual society, destined to favour the aspects connected to the quality of life; with a production system in which the value will no longer be in the means of production but in active skills, decisive tools for new creative and quality consumption. The fact that the economist Glaziev points out is that «*the substitution of technological modes requires certain changes to social and institutional systems that remove organizational barriers and facilitate the mass penetration of the technologies of the new technological mode and its particular consumption and lifestyle type*» [9: 79]. The role of the institutions in promoting or hindering the new development process is fundamental, in particular the economic institutions for which a profound change is hoped for. «*The main obstacle to the growth of the new technological mode is the disconnect between the existing institutional structure and opportunities for its development. Current institutions, from the human-resources training systems to the planning methods under the government's science-and-technology policy, rest on the reproduction of the previous technological mode and are ill-suited to the requirements and development opportunities of the new one*» [9: 166]. From what has been illustrated so far, the reference institutionalist theory suggests the opportunity to promote specific scientific research initiatives aimed at analysing in depth and as far as possible exhaustive the impact of the system of formal and informal rules and of the prevailing thinking habits in a given system on the diffusion of active skills in the economy and society.

Section 1. The world of work and the sustainability of development

In this section, the article summarizes the fundamental aspects of the sustainable development model defined and approved by the United Nations, including references to labor policies; then examines and evaluates the problems opened by the specific process initiated with the green transition in the productive economic system, in employment and in the professions.

1. The new model of sustainable development: fundamental aspects

With regard to the scenario envisaged by sustainable development, the main point to be clarified is related to the extent and implications for the world of work of the choice made by the international community with the approval of the United Nations 2030 Agenda (2015)¹; a choice that has been repeatedly confirmed in recent years in all

locations, from international coordination such as G20, BRICS, SCO, to supranational institutions such as the EU and the EAEU, to national development plans formulated by states and by an ever-increasing number of private operators. In 2019, on the occasion of the debate on the results achieved up to that date in the application of this Agenda, the UN presented a specific report entitled «*The Future is Now: Science for Achieving Sustainable Development*» and launched a great «*alarm*» signal confirming that the current model of development is not sustainable, that the damage caused by this model to the world in which we live risks being «*irreversible*»², that in the face of this situation a great common effort is needed and to accelerate at most the processes of change aimed at applying an alternative development model: «*Perpetuating current modes of production and consumption, and current levels of inequality threaten the achievement of the entire 2030 Agenda*»³.

The transition to a truly sustainable development model requires «*a profound and intentional departure from business as usual*», the adoption of a different, also cultural, approach to economic problems («*Economic activity should be seen not as an end in itself, but rather as a means for sustainably advancing human capabilities*»⁴), a clear sharing of responsibilities between public and private entities: «*Every Head of State, every Government and every citizen has a responsibility to ensure that the Sustainable Development Goals are met. Instead of reducing international relations to business transactions and trade wars, the Goals are significant achievements that show the power of multilateral diplomacy and States coming together in their collective self-interest*» (Gro Harlem Brundtland)⁵.

The goal of sustainability therefore implies the assumption of new references in the definition of values, indicators and metrics with which to promote and measure economic progress; it implies the transition to a development model based on the «*quality*» factor, rather than on the «*quantity*» factor, as has happened up to now. Sustainability intervenes on the reduction and / or elimination of the risks of breaking the balance of a system, both global and national, or local, to ensure a stable and lasting evolution, particularly in the medium and long term; it guides the transition processes towards more advanced balance, in the sign of a common and shared progress.

² UNITED NATIONS, The Future is Now: Science for Achieving Sustainable Development, Global Sustainable Development Report (GSDR) 2019, New York. URL: <https://sustainabledevelopment.un.org/globalsdreport/2019>. (accessed: 11.09.2019).

³ Ibid.

⁴ Ibid.

⁵ Ibid.

¹ UNITED NATIONS, Transforming our World. The 2030 Agenda for Sustainable Development, A/RES/70/1, New York, September 2015 Website: sustainabledevelopment.un.org

Finally, the idea of sustainability offers the possibility of enhancing the capital available to communities and their respective public and private operators, overcoming the limits of an interpretation restricted to the production of goods and services traded on the market (traditionally measured with the GDP parameter) to affirm a process of capital enhancement in its broadest meanings: natural capital, industrial capital, financial capital, intellectual capital, human capital and social and relational capital.

The commitment to a sustainable development model defined by the United Nations is based on some precise conditionalities.

a) The construction of an organic relationship between Science and Politics, organized in a circular, non-linear way, albeit in the distinction of their respective roles. In particular, science is required to operate on the so-called emerging problems and promote the resulting innovative processes «*ethically acceptable, sustainable, socially desirable*»⁶.

b) The adoption of a systemic, inter-disciplinary and trans-disciplinary approach in the assessment of problems and in the definition and implementation of sustainable development programs.

c) The pursuit of the objectives and targets of sustainability, in the threefold economic, social and environmental dimensions, in an organic, integrated, parallel and simultaneous way, avoiding to operate with restricted sectoral approaches and that the results achieved in an area of intervention are to the detriment of other areas, jeopardizing the system equilibrium.

d) The adoption of a new governance system for development processes at an international and national level, a multi-stakeholder governance, which recognizes the primary role in defining and application of the new policies also to private operators, as well as obviously to public actors; a governance defined inclusive and by goals. The starting point is the construction of an effective «*collaborations between traditional stakeholders and emerging actors*»; and again: «*the success of the 2030 Agenda thus depends on the cooperation of governments, institutions, agencies, the private sector and civil society across various sectors, locations, borders and levels*»⁷.

The illustration of the fundamental aspects of sustainability policies suggests the opportunity to promote, within academies and universities, initiatives of analysis and in-depth analysis specifically

⁶ UNITED NATIONS. The science policy interface and the high-level political forum on sustainable development, Global Sustainable Development Report, Brief 1, p.1, New York, 2015.

⁷ UNITED NATIONS, The Future is Now: Science for Achieving Sustainable Development, Global Sustainable Development Report (GSDR) 2019, New York. URL: <https://sustainabledevelopment.un.org/globalsdreport/2019> (accessed: 11.09.2019).

of the *National Voluntary Plans* for sustainability that the states have officially presented to the authorities of the Nations United in recent years to verify the validity of their respective commitments and policies implemented at national level. Such in-depth analysis can offer valuable information to better understand the guidelines and actions promoted in the field of economics and work within the respective systems and at the same time encourage an international comparison between best practices.

2. The new policies for sustainability and the world of work

The world of work is fully involved in the system of changes promoted for sustainable development. In this regard, a significant clarification on the terms of this involvement comes from the 2020 report of ASVIS, the most important Italian coordination structure in terms of commitment to sustainability according to which: «*Sustainable development, understood in its various dimensions, will bring many transformations in the world of work and one of the most important of these transformations will concern not so much the birth of new professions and new skills as the birth of constellations of new professions and skills. To the extent that it is stated that sustainability is a multidimensional process, it follows that the works, activities, skills linked to the dynamics of sustainable development do not evolve distinctly but co-evolve in a single process*»⁸.

In general, three elements must be kept in mind in this regard:

1) The guidelines and plans of the United Nations 2030 Agenda, although not legally binding for the states, still have a «regulatory» value, not merely indicative: «*The 2030 Agenda is more than the sum of measurable Goals, targets, and indicators. It is both a normative orientation and a guide for action for identifying and pursuing sustainable development priorities and creating coherence between policies and sectors, in all contexts – local, regional, national, transnational and global*»⁹;

2) The construction of a sustainable development model implies the transition to a different conception of wealth, income and related production methods, inter alia with consequent, profound restructuring in the related systems. The political and social commitment to grow in a different way, change orientation to our way of living and consuming,

⁸ ASViS, L'Italia e gli obiettivi di sviluppo sostenibile [Italy and the sustainable development goals]. Rapporto ASViS., Milano, 2020. URL: www.asvis.it (accessed: 11.09.2019).

⁹ UNITED NATIONS, The Future is Now: Science for Achieving Sustainable Development, Global Sustainable Development Report (GSDR) 2019, New York. URL: <https://sustainabledevelopment.un.org/globalsdreport/2019> (accessed: 11.09.2019).

directing it towards those needs that can be satisfied by reducing the use of natural resources, creates a situation in which the company is induced to assume precise responsibilities also towards the external context in which it operates and measure its ability to produce value over time by strengthening the following categories of capital: Financial capital, Manufacturing capital, Intellectual capital, Human capital, Social and relational capital, Natural capital. It is the transition from a linear economy model to a circular economy model, destined to produce great changes also in the way of conceiving and organizing work activities;

3) The actions taken in the context of work, in its quantitative and qualitative aspects, must respond to specific objectives and indicators for measuring and evaluating the results actually pursued. The references currently in force are the following:

Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

(With respect to this goal, indicators that measure the progress of the workforce in digital skills and culture and in actions for sustainability are of particular importance).

Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

(With respect to this goal, the indicators that measure the results of policies that create new productive activities and promote youth employment are of particular importance).

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

(With respect to this goal, the indicator that measures progress in the development of a new industrialization is of particular importance).

Goal 10. Reduce inequality within and among countries

(With respect to this goal, the indicator that measures progress in reducing economic and social inequalities is of particular importance).

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable

(With respect to this goal, the indicator that measures the social cohesion of urban systems is of particular importance).

Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

(With respect to this goal, in the "multi-stakeholder partnerships"¹⁰ section, the indicator that measures the degree of collaboration between the

main development actors, including the workforce, is of particular importance).

It should be noted that also the ILO, on the occasion of the 108th International Labour Conference, held in Geneva on 21 June 2019, in approving the *Final Declaration on the Future of Work*¹¹, launched a profound revision of the reference standards on labour precisely in order to make them functional to the new scenarios of sustainable development; new standards, it should be emphasized, which will have to be ratified by the member states.

The illustration of the aspects relating to labour policies in the framework of the development process launched for sustainability, should stimulate scientific research aimed at evaluating the correlation between the evolution of the multidimensional aspects of this process and the birth of what the Italian association ASVIS defined as the *constellation of professions*, both aspects of a single process; Another issue that emerges with particular relevance in the UN commitments concerns the effective, active participation of the world of work in the definition and co-management of radical change processes linked to the transition from a linear economy model to a circular economy model.

3. Work in the green transition scenario

The world of work is fully involved in the transformations of the production system linked to the so-called green transition pursued by the main international organizations and states; an involvement that concerns the levels of employment and income, the methods of work performance, the system of skills and professionalism. An example comes from the policies that the European Union is promoting in implementation of The European Green Deal strategy presented in 2019 as «*an integral part of the Commission's strategy to implement the United Nations 2030 Agenda and the sustainable development goals*»¹². These are policies that pursue the general objective of climate neutrality by 2050, established by law, and the specific and functional objective of promoting the circular economy model in the European system. In this regard, the commitment to involve the production world is very clear: «*Achieving a climate neutral and circular economy – says the Commission document – requires the full mobilization of industry. It takes 25 years – a generation – to transform an industrial sector and all the value chains*»¹³. The assumption from which

¹¹ ILO Centenary Declaration for the Future of Work, Geneva, 21 June 2019.

¹² EUROPEAN COMMISSION: The European Green Deal, Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee, the Committee of the Regions, COM(2019) 640 final, Brussels. 11.12.2019.

¹³ Ibid.

¹⁰ UNITED NATIONS, Global Indicators Review, New York, E/CN.3/2020/2

the new EU policy is based is that «*The – green, nda – transition is an opportunity to expand sustainable and job-intensive economic activity. There is significant potential in global markets for low-emission technologies, sustainable products and services. Likewise, the circular economy offers great potential for new activities and jobs.... The European Green Deal – the document continues – will support and accelerate the EU's industry transition to a sustainable model of inclusive growth The circular economy action plan will include a 'sustainable products' policy to support the circular design of all products based on a common methodology and principles. It will prioritize reducing and reusing materials before recycling them. It will foster new business models and set minimum requirements to prevent environmentally harmful products from being placed on the EU market. Extended producer responsibility will also be strengthened*»¹⁴.

In the subsequent communication of 10 March 2020, relating to «*A New Industrial Strategy for Europe*»¹⁵, the Commission confirms its commitment to work in all its policies on «*twin ecological and digital transitions*»¹⁶ with investments in new technologies and widespread innovations of products and production processes destined to create new markets and business models. According to the Commission, the commitment to support companies in this reconversion effort has value «as much as the environmental and moral imperative»; moreover, its forecasts are that «*applying circular economy principles in all sectors and industries has the potential to create 700,000 new jobs across the EU by 2030, many of which in SMEs*».¹⁷

For the issue we are addressing – the future of work, skills and professions – this policy setting that the EU is actively promoting in the European system with numerous very specific and targeted measures, already approved in the 2020–2021 period even in full emergency pandemic, offers important elements for reflection and study. The first element concerns the radicality of the transition from a linear economy system, based on the extraction-production-consumption-waste axis, to a circular economy system based on the maintenance of stocks and on the cardinal principle of conservation of the value of use of goods by means of reuse, repair and reconditioning systems so that the material and energy are not dispersed. In a linear system, in order to create wealth (GDP growth) it is necessary to continue to produce

more and more goods. In order to obtain this result it is necessary that consumers are always willing to buy new goods to replace those owned, regardless of the fact that these have not reached a technical or use obsolescence. The efficiency of the production process and economies of scale are the basis for increasing the creation of value regardless of the scarcity of resources or the exploitation and pollution of the planet. The circular economy pursues a different model of growing and producing wealth that involves the maximum decoupling between the consumption of natural resources and the creation of value. The benchmark is the scarcity of natural resources and the need to safeguard and regenerate them with new models and suitable production processes, which go well beyond the processes of activating the recycling of waste and production waste. Consequentially:

1) the citizen is required to change orientation in his traditional way of living and consuming and to address those needs that can be satisfied by reducing the use of natural capital;

2) the entrepreneur is required to design production cycles based on the conservation of stocks rather than on production flows and to assume specific responsibilities regarding the characteristics and use of the product that he places on the market. A responsibility, it should be added, to concretely testify with the undertaking of the commitment to integrate the traditional corporate balance sheet, of profits and losses, with a new form of balance sheet, the integrated balance sheet, in which the concrete benefits that the company guarantees its shareholders, but also the social community and the ecosystem in which it is inserted and operates;

3) the worker, and in particular the young person who is preparing to enter the labour market for the first time, is required to develop adequate awareness, certainly with the support of education and training structures, about the significant implications of this transition to a new development model for the system of skills and professionalism that will be increasingly requested by the market. Because it is clear that the more the new circular economy model becomes precise and concrete, also due to the impulse and incentive of public measures – the EU directives on sustainable products are an example – the newer opportunities for qualified employment will emerge, including the need to recover professions considered obsolete. In the construction of a building, for example, 80% of the resources are consumed by the supporting structure (and only 25% by the work) while in the renovation activity the absorption is reversed. With this in mind, it becomes essential to deepen the role of work within a circular economy. On the other hand, it should be borne in mind that the circular economy, in the organization of its market, is destined to bring

¹⁴ Ibid.

¹⁵ EUROPEAN COMMISSION: A New Industrial Strategy for Europe, COM(2020)102 final, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions, Brussels, 10.3.2020.

¹⁶ Ibid.

¹⁷ Ibid.

many productive activities back to the local level and spread them throughout the territories, correcting the concentration processes underway in many realities. In fact, all the activities of reuse, repair, reconditioning of the products will be able to have the maximum profitability if developed locally and organized in small enterprises distributed throughout the territory while the more industrialized activities would be located on wider territories but in any case, at a regional level and in companies. medium size. Also, this aspect of the diffusion of productive activities and the organization of new markets in the territories should be carefully considered by those who organize their professional qualification together with their work and life project.

From the illustration, albeit concise, that of the main elements that characterize the political choice of the green transition, the twofold need emerges for a theoretical and practical study of the capitalist development model that lies ahead with the political choice of promoting the circular economy and evaluating the role and contribution of the labour factor to the qualification of this model; a contribution that can only emerge from the interrelation between the behaviour and choices of citizens, entrepreneurs and workers themselves; an interrelation, it should be added, which presents itself as the true generative factor of new skills and professionalism.

Section 2. The world of work and the digital revolution

1. Work in the digital transition scenario

Together with the circular economy, digitization is the other megatrend destined to mark the evolution of work in a decisive and highly interdependent way. A confirmation of this statement can be found, for example, in the National Voluntary Plans for sustainable development sent by states to the United Nations authorities for their evaluation and verification. Another example can be found in numerous public plans drawn up for reconstruction after the pandemic crisis. The element that emerges clearly concerns the interconnection between green and digital: if, on the one hand, digitization can favour the circular economy, on the other, the circular economy can give a further boost to digital technological innovation. Digital technology is commonly considered as an essential ally for the development of sustainability in companies, institutions and territories. According to a report by the International Institute for Applied System Analysis IIASA (2018), cited as an example of the numerous literature on the subject, «*The digital revolution is a priority factor of sustainable development because it is linked to a multiplicity of factors of progress and development such as artificial intelligence, connectivity, information, the internet of things, the use of Big Data, the use of virtual reality,*

machine learning, blockchain, robotics, quantum computing»¹⁸. According to the IIASA, the digital revolution represents for the fourth industrial revolution what the steam engine represented for the first industrial revolution.

The aforementioned UN Report 2019 on the updating of the 2030 Agenda is oriented in the same direction which, while on the one hand places particular emphasis on the fundamental role of the digital revolution in progress for the achievement of the objectives of sustainable development and the dissemination of the related benefits, on the other hand, however, it also highlights the aspect of possible negative impacts, especially in the world of work. With this new approach, the structural changes implicit in the new model of sustainable development find a turning point precisely in the digital world. A turning point, it should be added, that the pandemic crisis, that is to say the other element of structural change underway, has helped to accelerate.

«*A key enabler of sustainable development in the coming years will be the digital revolution, constituted by ongoing advances in artificial intelligence, connectivity, digitization of information, additive manufacturing, virtual reality, machine learning, blockchains, robotics, quantum computing and synthetic biology. The convergence of those new digital technologies could be explosive, with many winners and losers. The digital revolution is already reshaping work, leisure, behaviour, education and governance. In general, those contributions can raise labour, energy, resource and carbon productivity; reduce production costs; expand access to services; and may even dematerialize production. But there are also clear dangers and downsides, including the loss of jobs, rising inequality, and the further shift of income from labour to capital. With automation and advances in artificial intelligence and robotics, many more workers, even those who are highly skilled, may find their jobs and earnings under threat. While new jobs might replace old ones, the new jobs may come with lower real earnings and working conditions". And again: "significant numbers of people may work as self-employed workers, or under non-standard labour contracts, for example in platform labour markets ... With those trends in mind, the ILO's Commission on the Future of Work has recommended measures, such as universal labour guarantees to cover all workers irrespective of contractual status, and governance systems for labour platforms*»¹⁹.

¹⁸ IIASA: Transformations to Achieve the Sustainable Development Goals TWI2050 Report, Wien, 2018. Website: www.iiasa.ac.at/web/home/research/twi/TWI2050_Report_web-small-071018.pdf

¹⁹ UNITED NATIONS, The Future is Now: Science for Achieving Sustainable Development, Global Sustainable Development Report (GSDR) 2019, New York. URL: <https://sustainabledevelopment.un.org/globalsdreport/2019> (accessed: 11.09.2019).

The emphasis placed by the UN on the ambivalent effects of the digital revolution first of all recalls the theoretical need to be able to refer in sector policies and plans to a shared definition of the complex phenomenon of the digital revolution, its scope and implications; a need that the OECD, for example, has clearly highlighted in its work to support the international coordination of the G20. In the Report «*A Roadmap toward common frame work for measuring the Digital Economy*»²⁰ prepared by the OECD on the occasion of the presidency of Saudi Arabia 2020 for the special working group G20 Digital Economy Task Force – DETF it is well highlighted that, at present, there is still no shared definition of what the digital economy actually is, nor a single shared way to measure the extent and evolution of the phenomenon. In fact, the conceptual solutions adopted for the identification and interpretation of the phenomenon, the methodological approaches and the indicators applied for its evaluation are numerous and much diversified. A finding also made by other international bodies such as the IMF International Monetary Fund according to which the «*lack of a generally agreed definition of the «Digital Economy» or «digital sector» and the lack of industry and product classifications for Internet platforms and associated services are hurdles to measuring the Digital Economy*»²¹. Hence the OECD proposal, received by the G20 summit in 2020, of a first comprehensive definition of the different tiers in which the complex process of digitization (conversion of information into digital form) and digitalization is articulated (application of digital technologies): «*The Digital Economy incorporates all economic activity reliant on, or significantly enhanced by the use of digital inputs, including digital technologies, digital infrastructure, digital services and data. It refers to all producers and consumers, including government, that are utilising these digital inputs in their economic activities*»²²; then the indication of an in-depth path of the shared basic concepts to which to connect the international governance of the phenomenon and public policies (including legislative and legal regulation) for companies (products and services), society (individual growth and cohesion social), the overall development of states.

One thing is certain: the digital revolution is redesigning the business, and beyond, in entirely new terms; new is its way of producing wealth, new

²⁰ ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT- OECD, *A Roadmap toward common frame work for measuring the Digital Economy*, Report for the G20 Digital Economy Task Force, Saudi Arabia, 2020.

²¹ INTERNATIONAL MONETARY FUND-IMF, *Measuring the Digital Economy*, IMF Policy Paper, Washington, DC, 2018. URL: <https://www.imf.org/en/Publications/Policy-Papers/Issues/2018/04/03/022818-measuring-the-digital-economy> (accessed: 11.09.2019).

²² ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT- OECD, *A Roadmap toward common frame work for measuring the Digital Economy*, Report for the G20 Digital Economy Task Force, pg.34, Riyad, 2020.

is its relationship with human capital. A structure, a community of capital and work, a place less and less of the past but a place where a possible future is built. The business of the future is innovative, sustainable, increasingly interconnected; is a company capable of integrating the results of scientific advances into new products and services, transforming environmental constraints into opportunities and enhancing the development potential associated with ITC technologies, improving efficiency and production capacity.

The digital transformation of the production system is a complex and demanding process that poses numerous and different challenges, among which the challenge of continually updating skills emerges among the most important and decisive for facing the changes underway. In the new context, human capital constitutes one of the fundamental strategic factors of companies, if not the principal. Being able to take advantage of a workforce with the right mix of skills, attitudes and knowledge can make the difference to ensure that a company remains on the market. If in the past the most important success factor was given by the possession of physical capital or some raw material, currently the production of added value is mainly linked to the availability of quality human capital, capable of innovating, of managing innovation, to know how to insert it into business processes, if not to anticipate it. In order to overcome the challenges of the digital revolution and provide adequate responses to profound changes in the qualitative dimension of labour supply and demand, therefore, policies aimed at the development of new skills, in the dual individual and collective dimensions, are needed; taking into account the fact – it should be added incidentally – that, as recognized by a widespread scientific literature, it is mainly collective skills, formed and matured in group work, the way through which, on the one hand, the value of each individual contribution and, on the other, the true distinctive element of a company is affirmed. If there is a disruptive risk on the labour market, the answer can only be the following: more education and training, and more investment in human capital.

From the references of some essential aspects of the digital revolution in progress illustrated above, suggestions for research activities that are useful for orienting employment policies in positive terms emerge. They concern in particular: 1) the theoretical study of the digital process to build reference points essential for its regulation; 2) the development of matrices useful for evaluating the positive and negative aspects of these processes, with particular reference to employment and work, a prerequisite for proper management of the same; 3) a definition of the strategic human capital resource and a shared identification of its value in order to contribute to the best orientation of support and qualification policies.

Section 3. Studies on the professions of the future – Italy 2021

To supplement and support the considerations made so far on the impact of the green and digital transition on the world of work and the problems that this complex process raises in relation to the need for new skills and professionalism, the assessments on the subject contained in two recent studies published in Italy are reported. In the first half of 2021: 1) a report on the professions of the future with a perspective to 2030 prepared by a pool of three primary international structures: Ernst & Young, world leader in professional services, Manpower Group, multinational world leader in innovative workforce solutions and Pearson, world leader in education; 2) a report also on the professions of the future prepared by the Association of entrepreneurs of the Lombardy-Assolombarda region, the Catholic University of Milan and the CRIPS Interuniversity Research Center for Public Utility Services.

1. The Future Professions Study by Ernst & Young, Manpower Group, Pearson

The study presented in February 2021 by Ernst & Young, Manpower Group, Pearson, entitled «*Professions 2030: the future of skills in Italy*» [6] tried to outline what the changes in work and skills will be after the changes that the health emergency it has imposed in various sectors such as the environmental, social, political and technological sectors. The study analyzes the changes underway in the world of work but above all emphasizes the importance of evaluating these processes by integrating them with forecasting models useful for knowing what the skills required by the professions of tomorrow will be in order to allow timely adaptation to emerging situations and new.

The study constitutes an innovative analytical tool to support the decision-making processes of institutions, policy-makers, companies, training agencies and individual users in order to better predict and accompany the transformative processes of the labour market. The study applies, updating it, a skills forecast methodology conceived by the University of Oxford (Oxford Martin School) together with Pearsons and Nesta in 2017, in the United Kingdom and in the United States [2], subsequently applied with modifications in Canada by Nesta, in collaboration with The Brookfield Institute for Innovation + Entrepreneurship (BBI + E) [3]. This tool, thanks to the use of artificial intelligence techniques, aims to build a predictive model of the demand for professions and skills in Italy over the next ten years in order to be able to act on the basis of expected developments and implement any useful action to better grasp the opportunities that will arise.

The innovative methodology is mainly based on the use of a specially created machine learning

algorithm, which supported both the data acquisition phase and the development phase of the forecast model definition, on the basis of which the employment projections were carried out in the next decade. In particular, the machine learning algorithm was used to combine the qualitative judgment expressed by experts from multiple sectors of the labour market with the quantitative trend data available in open data, highlighting the complex dependencies between the characteristics of a profession, declining in terms of skills, abilities and knowledge required, and future employment trends. The study is configured both as a survey on the future of the professions and as research on the future of the demand for skills, introducing a mixed approach to forecast estimation methods, able to combine the judgment of experts in the sector and the opinions of multiple players in the work market with the databases of public, national and supranational bodies, concerning the Italian employment framework.

The scenario envisaged for 2030 describes a positive employment trend, in some cases even significantly positive, for a wide range of professions, not only those related to technology, but also to education and training, communication, care services and support to the person. For other professions, on the other hand, a considerable downward trend is expected. Overall, these are very significant transformations, which will affect an extremely large number of workers over the course of a decade, and which consequently must be governed with awareness of the objectives and interventions to be implemented. More than ever, it becomes necessary to provide for investments in education and training systems taking into account the real needs of the professions of the future, in order above all to avert what emerges as the greatest risk linked to the transformations underway and accelerated by Covid-19, namely the shifting the focus of the employment problem from the mismatch between demand and supply of skills to the structural difficulty of insertion / reintegration into the labour market (*disemployability*), a risk that emerges clearly also at a global level²³.

The study takes as reference the national classification of professions CP2011 of the National Institute of Statistics – Istat, linked with the European and international counterparts. The CP2011 classification is a structure organized into groupings, divided into 5 levels: large professional groups (9), groups (37), classes (129), categories (511) and professional units of particular singularity and distinction UP (800). The general framework of the classifications is as follows:

1. Legislators, entrepreneurs and senior management;

²³ See the Website: <http://www.job2030.it>

2. Intellectual, scientific and highly specialized professions;
3. Technical professions;
4. Executive professions in office work;
5. Qualified professions in commercial activities and services;
6. Artisans, skilled workers and farmers;
7. Plant operators, workers of fixed and mobile machinery and drivers of vehicles;
8. Unqualified professions;
9. Armed Forces.

The study identifies the following main megatrends: climate change, demographic imbalances, the influence of new governance systems, technological innovation and hyperconnection, growing consumerism, changing working patterns, scarcity of natural resources, social inequalities, continuous urbanization.

Based on the analyses carried out, the megatrends that currently have the greatest impact on the transformations of the labour market are: technological innovation and hyperconnection, (a megatrend that alone can contribute 20% of the overall effect); social inequalities; changing health challenges.

Evidently all the trends are correlated with each other by a cause-effect relationship. In general, a trend affects others according to a relationship that can be negative or positive. Individual events, such as the 2008 financial crisis or more recently the health emergency linked to Covid 19 act as accelerators or decelerators of other trends and have an impact on the various professional sectors as a function of the correlation between trends through direct and indirect effects (See Table n.1)

The study also investigates the role that skills play in defining the employment trends of professions between now and 2030. The objective, on the one hand, is to identify a set of skills, or more than one, that guarantees the resilience to employability of the people until 2030; on the other hand, it is to better understand the transformative processes, already underway today, which will modify the space of

professions, gradually adapting it to the needs of the market. The study refers to the classification of the National Institute of Public Policy Analysis-INAPP which attributes a set of characteristic and specific skills to each profession. The model identified the skills that will have the greatest impact on the future employment opportunities of the professions. The result is the following:

- **five fundamental skills** that have a broad impact on all professions and therefore should be included in any educational and / or training program that aims to increase people's employability. They are defined as «fundamental» because the model found that they are consistently and frequently associated with growing employment trends. The 5 fundamental competences isolated from the model are: 2 skills considered basic (active learning, listening actively), 2 social skills (adaptability and understanding others), and 1 ability to solve complex problems. It should be noted that three out of five competences concern the general ability of an individual to relate to others, while the other two concern the individual's personal ability to continue learning and solve complex problems. Both of these skill groups clarify the participants' idea of what will be important in the labor market between now and 2030 to ensure employability:

- an **ecosystem of additional skills** that act, in a different way for each profession, in an augmentative manner with respect to the fundamental skills and basic characteristics, specific to each profession;

- a set of **hybrid skills** that represent the driving force that governs the transformation processes of professions. The study confirms that there is a correlation, moreover to be further explored, between the future employment trend of a profession and the related skills. Over the next decade, the professions officially surveyed by the Italian national statistical institute ISTAT will be subject to complex transformative processes characterized by the decomposition and reassembly of skill sets that will modify them to adapt them to the new needs of the labour market (See Table n. 2).

Table No.1

Evolutionary Trends In Demand For Professions In Italy Over The Next Ten Years

Таблица №1

Эволюционные тенденции спроса на профессии в Италии в течение следующих десяти лет

Initial sample of the survey	Growing professions	Stable professions	Decreasing professions
793 professions	43,50% (345 professions)	20,30% (161 professions)	36,20% (287 professions)

Overall, **about 30.80% of employed persons by 2020 are pursuing a profession destined to a strong quantitative change, be it positive or negative.**

Source: Ernst&Young, Manpower Group, Pearson, Professioni 2030, 26 p.

Table No. 2

Map of Fundamental Skills

Таблица №2

Карта базовых навыков

<u>Type of competence</u>	Problem Solving Skills / Solving Complex Problems	Basic Skills / Active Learning	Social skills / Adaptability	Social Skills / Understanding Others	Basic skills / Active listening
Description	Identify complex problems and gather information to evaluate possible options and find solutions	Understand the implications of new information for solving present and future problems and for decision making	The ability to coordinate one's actions with those of others	Understanding the reactions of others and why they react in certain ways	Pay attention to what others are saying, pausing to understand the essential points, asking questions at the appropriate time and avoiding inappropriate interruptions

- Skills that mostly intervene in the transformative processes of the professions:
- Resource management skills / Time management;
- Systemic skills / Analytical skills;
- Systemic skills / Evaluating and making decisions;
- Systemic skills / Evaluate systems;
- Social skills / Adaptability;
- Social skills / Service orientation;
- Social skills / Persuading;
- Technical skills / Technological design;
- Technical skills / Programming;
- Technical skills / Repair;
- Cognitive skills / Ideation;
- Knowledge / Legislation and Institutions;
- Knowledge / Communication and Media;
- Knowledge / Services to customers and people;
- Knowledge / Psychology;
- Knowledge / Business and business management;
- Knowledge / IT and electronics.

Source: Ernst&Young, Manpower Group, Pearson, Professioni 2030, 50-51 p.

With regard to the professions of the future, the study highlights that the professions are not a static and immutable whole but, on the contrary, are inserted in a market that is extremely changing and in which, in particular, companies must increasingly respond to the needs of global competition. . The study highlights, in particular, that more than 50% of the UP professions, defined as professional units of particular singularity and distinction, will undergo transformative processes of a non-linear nature, of three types: creation, destruction, mutation.

These three processes can be implemented through:

a) The *creation of a profession by separation of competences* from an existing profession. The new profession will be defined by a set of competences which constitutes a subset of the original profession.

The split describes the specialization dynamics of a profession. In general, the original profession could survive or die.

Example. The birth of a new professional figure who has skills on work organization issues and at the same time a strong ability to understand computer and electronic systems; to operate in contexts in which automation will enter as a replacement / supplementary tool for the role covered by people.

b) The *creation of a profession by merging skills* from two or more existing professions. The merger of two or more professions involves the creation of a new profession and the simultaneous destruction of the professions that have merged;

Example: The Integration Officer with assembly robots who is born from the merger of all the workers involved in the assembly of industrial products.

c) The *mutation of a profession by hybridization*, that is, a profession evolves by adding a subset of skills normally associated with other professions. It is a cross-cutting process common to all professions, which tends to make them evolve by adding some skills considered very useful to ensure greater resilience with respect to the impact of megatrends.

Finally, with regard to the future of the labour market, the study by Ernest Young, Manpower Group and Pearson presents a predictive model that seeks to provide an exhaustive picture of employment trends from 2020 to 2030, also in light of the effects of the related health emergency at Covid-19. The model highlights how employment trends are linked to the evolution of the skill set of each profession and their interrelation, with reference to the fundamental and additional ones.

Necessary skills to invest in over the next decade

«The ability to propose ideas (conception) even innovative (originality), associated with a high adaptability, understanding of others and the ability to evaluate situations and make decisions (autonomy) emerge as necessary characteristics on which all workers should invest in the next decade. These skills should be a fundamental element for any intervention aimed at improving the employability of young people but also to complete any path of retraining of workers. The real challenge for decision makers and those who provide training and education consists in designing innovative intervention methods that allow the acquisition or reinforcement and, subsequently, the certification of these skills which, as complex to measure, are also difficult to demonstrate for workers. In a complementary way, the model defines a set of additional skills specific to the different professions, which amplify the effects of fundamental skills on the employability and re-employability of workers. These skills, as measurable and quantifiable, can be easily integrated into training and education courses» [6: 64].

Dynamism of markets and transformative processes

To complete, the model considers the dynamism of the markets (through a scenario analysis on 14 megatrends) and consequently of the transformative processes that markets can induce, over the decade, in the system of professions and employment. These processes largely determine both the creation of new professions and the evolution of existing professions through a hybridization mechanism of skill sets. Covid-19 has accelerated these dynamics already underway, accentuating digitalization and hyper-connection processes that will require composite skills profiles, able to manage complexity in working contexts that are currently difficult to imagine. In this context, the study presents a clear indication for education and training systems: that of initially

focusing on people's original talent and primary skills, and then dynamically building additional ones through lifelong learning. From this derives «the need to rethink» linear «*educational systems that operate over long cycles, without focusing on the basic skills of the person, as well as massive training activities that are not very focused on the individual and his / her real learning ability*» [6: 65].

The complexity of the scenario that the model describes and its constant evolution make it necessary to continue and further develop these analyses. To this end, EY, Pearson and Manpower Group propose the establishment of a permanent Observatory, which will operate specific focuses on areas of the country, single sectors or economic districts. The commitment to relaunch the issue of skills in education and training courses remains essential, which are, today more than ever, the fundamental strategic levers on which to invest to build the next generation necessary for the relaunch of the country.

2. The study on the professions of the future by Assolombarda, Università Cattolica, CRIPS

A study on the professions of the future presented in Italy on January 26, 2021 by the Association of Assolombarda entrepreneurs, the Catholic University of Milan and the CRIPS Interuniversity Research Centre for Public Utility Services, entitled «*The professions of the future. How technology and the pandemic change the Lombard job market*» [1], he emphasized that the pandemic crisis has simply accentuated and accelerated some processes of job change that have already been underway for some time under the pressure of digitalization.

The study analysed the world of work in the Lombardy region, one of the most industrialized regions of Italy and Europe, using an innovative database, *Wollybi*²⁴, which contains information extracted from job offers posted on the web: *Online Job Advertisement -OJA*. The *Wollybi* platform, operational since 2013, regularly monitors the main websites where job advertisements are published every week; specialized websites (job boards), websites of primary employment agencies, sections

²⁴ The *Wollybi* platform allows you to access the data of millions of job vacancies posted on the web by Italian companies and to process them with the use of Big Data analysis, offering information in real time. The platform constitutes a unique database on the Italian and international scene. Its value has been officially recognized at the European level, in particular by the European agency CEDEFOP, specialized in VET education and training policies and in the definition of competences and skills for the European labour market. This methodology and related tools are currently recommended in Action 2 «Strengthening skills intelligence» of the new «European Skills Agenda for sustainable competitiveness, social fairness and resilience» presented by the Commission on 1 July 2021. URL: www.wollybi.com (accessed: 11.09.2021).

dedicated to job offers on the websites of the main national newspapers. The job offers posted on these sites are extracted through dedicated software (Web Scraper); then analysed and classified by professions, skills, geographical area, reference sector.

The use of machine learning algorithms makes it possible to extract the relevant keywords for the aforementioned classification and subsequently to make the data collected homogeneous with the official international (*International Standard Classification of Occupations – ISCO*) and European (*European Skills, Competences, Qualifications*) classifications, and *Occupations – ESCO*). The study on the professions of the future analysed a total of more than 500,000 OJA published in the Lombardy region in the period February–September of the years 2019 and 2020. The data collected were compared with the employment trends of the same period, in order to evaluate both the impact of the pandemic crisis on the state of the professions most in demand by companies (short-medium term evaluation) and the long-term impact of the main selected megatrends: digital revolution (impact on production of goods and services), globalization (reorganization of supply chains) value), aging of the population (effects on the labour market), environmental sustainability (reference to the policies of the European «Green Deal» strategy).

The study highlighted the following main trend: that «technological change puts all professions at risk, even the most highly qualified, which until recently could be considered immune» [1: 5]. This happens because the change in the labour market induced by technological progress operates along two dimensions: the extensive margin, through the destruction of some occupations and the creation of new jobs, and the intensive margin, through the change of skills necessary in the professions, due to the transformations of existing works. «*While the first-dimension concerns in particular some medium-skilled professions, the second dimension concerns all professions and will have a much deeper and more relevant impact. To analyse the intensive margin, it is necessary to look at skills and their change over time*» [1: 5].

In this regard, the study recalls that in recent years a large literature has developed on the subject to try to measure and quantify this phenomenon. From a methodological point of view, the prevailing approach followed by the scientific literature is based on the task-based approach, according to which work can be broken down into a series of tasks (tasks), each of which requires certain skills to be carried out. In turn, some tasks are susceptible to replacement by technology because they require activities that can be performed by the machines. In this way, by measuring the degree of substitutability of each single task by the technology, it is possible to construct

an index of «risk» associated with each occupation. For example, highly qualified professions are spared from automation as they are characterized by few routine activities, but are susceptible to significant impact from artificial intelligence AI; the most basic professions are susceptible to automation, but are spared from the impact of AI as they are not complex enough to require the performance of activities in which AI can be used efficiently; on the other hand, many intermediate professions possess characteristics that make them replaceable both by machines and by algorithms and are therefore particularly exposed to technological risk. These include, by way of example, all the basic administrative professions, now replaced by management and administrative software, and the customer care professions, increasingly replaced by virtual assistants driven by artificial intelligence.

To better grasp the different facets of the impact of technology on occupations, the Italian study proposes to use three different indicators relating to:

1. *Automation*. This is the measure of Frey and Osborne (2017) [8] which capture the probability of task automation;

2. *Machine learning*. Brynjolfsson and Mitchell (2017) [4] focus more specifically on how machine learning can replace certain tasks;

3. *AI exposure*. Felten, Raj, Seamans (2019) [7] measure the impact of artificial intelligence on the performance of complex activities (image recognition, text analysis, strategic games, etc.). All three measures are based on US occupations that use a different classification than the European / Italian (ESCO).

The fact that all professions – some more accentuated, others less – are affected by technological risk suggests correcting that disruptive approach which in evaluating the impact of the technological revolution underway has placed the accent on the aspect of prevailing destruction of jobs due to the progressive replacement of man with machines. Based on the elements that emerged from the investigations on the industrial reality of the Lombardy region, in particular with regard to the evolutionary trends of the professions of the future, the study concludes that a more correct and in-depth approach brings out a different reality: «*not all occupations will be replaced technology, but that in all professions some activities (tasks) will be carried out by algorithms or machines in an efficient way. This implies that all professions will have to change, in particular the skills required to carry out the professions and adapt to the new technological environment will have to change. This is the change along the intensive margin outlined above*» [1: 17].

With regard to the new skills, the study presents the classification system to which it refers and highlights the importance of two processes that have emerged based on the results of the research: the combination

of the most diverse skills (skills blend) and usefulness increasing transversal skills, as a response to the new needs of the labour market. The classification of skills used is as follows:

- *Cognitive skills*: all the skills that have to do with thinking applied to the work aspect (e.g., problem solving, thinking creatively, team management, etc.);
- *Social skills*: skills that have to do with relationships with others both within the company (working in a group) and with the outside world (customer management);
- *Digital skills*: digital skills both of a general nature (use of Microsoft Office) and of a specific nature (use of advanced programming tools);
- *Technical skills*: employment-specific technical skills, such as maintenance.

Two additional groups of skills have also been added to these types in relation to:

- *Tools*: the use and type of typically IT tools;
- *Knowledge*: general basic and specific knowledge.

With reference to the framework of competences and their evolution, the following situation emerges:

«One of the clearest results that emerges from the analysis of the skills required by the labour market in the Lombardy region is that in the jobs of the future there are different skills that have different origins and that contribute to creating a unique and particular blend (blend), functional to enable the professions of the future to face the challenges posed by technology. We can identify two directions in which this blend of skills occurs:

i) on the one hand we observe how technical and specialized professions increasingly require transversal skills (for example cognitive and social skills) that complement the technical skills that typically characterize them;

ii) on the other hand, we observe technical skills, such as digital skills, becoming more and more pervasive and therefore being important not only for technical-scientific professions, but also for professions that are not strictly technical. This is the case, for example, of the administrative professions which are among those most at risk of being replaced by technology. The administrative figures who will be able to survive the technological impact will have to use complex management and administrative software and, therefore, must have a high degree of digital skills» [1: 24].

Therefore, by operating with a tool developed in order to measure the value of the skills on which the most attention of the market is focused – the skill relevance indicator – the study comes to highlight that the decisive skills for the professions of the future, including the technical professions are:

1) *creativity and problem solving*, which emerge as the most requested cognitive skills at all levels, that is, both for high skill professionals and for medium and low skill figures;

2) *relational and communication skills*: relationship with the customer, team building and communication.

By way of example, the study recalls that in many areas of the industrial sector the transition to the so-called Industry 4.0 has taken place recently or is currently being implemented; in this situation, many technical professionals linked to the digital world (such as data scientists) are employed in very heterogeneous sectors; consequently, they are called to adapt their highly specialized skills to different contexts. Thinking creatively, applying adequate relational and communicative approaches are therefore decisive skills also for these specialized technical figures who find themselves operating in these differentiated production contexts.

Finally, the study presents two specific recommendations to support the action of public and private decision makers. They concern the world of youth and the world of education and vocational training.

The first recommendation concerns the need to pay particular attention to young people entering the labour market for the first time who are particularly penalized by the effects of the global pandemic, mainly related to: 1) changes in the modalities of the training offer, in many cases its reduction, caused by the closing measures of the relative structures; 2) the widespread economic recession.

The second recommendation concerns university education and vocational training. In this regard, the study highlights that «the great importance of transversal skills suggests a rethinking of the training system in terms of content (through greater alignment with the skills required by the market), in organizational terms (through greater participation of the production system) and methods of teaching delivery that favour more participatory forms on the part of students» [1: 5]. Many transversal skills, in fact, can be stimulated and developed thanks to more inclusive forms of teaching, able to stimulate the active, conscious and responsible involvement of students.

Conclusions

The studies presented in Italy in the first half of 2021 that are illustrated in the third session of this article have highlighted in particular the importance of using AI Artificial Intelligence techniques to build predictive models on the evolution of the demand for new skills and professions. over a certain period of time and to link this process to employment trends. Beyond the value in themselves, these initiatives that have been carried out with a broad collaboration between public and private structures, academic and non-academic, have the merit of having achieved two

important results so far: on the one hand they have acted as a catalyst and enhanced the work of many organisms that carry out a data collection with merit which, however, is often more oriented to photograph the past and to identify the trends of the present than to measure themselves on future projections; hence the importance of the stimulus that comes from the two studies illustrated in this article; on the other hand, the in-depth analyses on the complex world of skills and their evolution make it possible to have knowledge elements capable of correcting many prevailing opinions, often excessively optimistic or pessimistic, on the real employment trends connected to the green and digital transition of sustainable development and to focus attention on the economic and non-economic factors that condition and guide people's choices, thereby broadening the spectrum of analyses. What emerges, in essence, is a forecasting framework in which all professions will be subject

to adaptation of the skills system to which they refer, whatever their qualitative level: high, medium or low; at the same time it clearly emerges that the challenge of safeguarding or expanding employment levels is played on another table, that is, it is measured on the ability of a system, of its public and private operators, to know how to regulate and manage adequately the processes of structural change in progress and to enhance the fundamental resource of what is increasingly emerging as the knowledge society: human capital. Based on a clear awareness of what it means and involves the construction of a sustainable development model oriented towards quality rather than quantity of goods produced and consumed, the fact of operating on predictive models on the future of work, professions and employment, is in itself an important stimulus for the research world to build indicators of real progress.

References

1. Assolombarda, Università Cattolica del Sacro Cuore, CRIPS: *Le Professioni del Futuro. Come la Tecnologia e la Pandemia Modificano Il Mercato del Lavoro Lombardo* [The Professions of the Future: How Technology and the Pandemic Modify the Lombard Labor Market], Ricerca (Research). No. 1, Milano, 2021.
2. Bakhshi H., Downing J., Osborne M., Schneider P., *The Future of Skills: Employment in 2030*. London: Persons and Nesta, 2017.
3. Brookfield Institute for Innovation, Entrepreneurship e Nesta, *Ahead by a Decade: Employment in 2030*. 2020.
4. Brynjolfsson E., Mitchell T. What can machine learning do? Work-force implications. *Science*. 2017. Vol. 358 No. 6370. P.1530–1534. DOI: 10.1126/science.aap8062.
5. Cavalli A., Doulgas M, Istituzioni. Processi e tipologia. *Enciclopedia delle Scienze sociali [Encyclopaedia of Social Sciences]*. Treccani. Roma. 1996. 122 p.
6. Ernst&Young, Manpower Group, Pearson. *Professioni 2030: il futuro delle competenze in Italia* [Job 2030: the future of the competences in Italy]. Milan. February 2021.
7. Felten EW, Raj M, Seamans R. The Occupational Impact of Artificial Intelligence: Labor, Skills, and Polarization. *SSRN Electronic Journal*. 2019. DOI: 10.2139/ssrn.3368605.
8. Frey C.B., Osborne M.A. The future of employment: How susceptible are jobs to computerisation? *Technological Forecasting and Social Change*. No. C. P. 254 – 280. DOI: 10.1016/j.techfore.2016.08.019.
9. Glaziev S. *Strategy for growth in the contest of the global economic crisis*. European Academy of Natural Science, Hanover, 2015.
10. Hodgson G.M. What are institutions? *Journal of Economic Issues*. 2006. Vol. 40. No. 1. P. 1-25. DOI: 10.1080/00213624.2006.11506879.
11. Hodgson G.M. Evolutionary and Institutional Economics as the New Mainstream? *Evolutionary and Institutional Economics review*. 2007. Vol. 4. No. 1. P. 7-25. DOI: 10.14441/eier.4.7.
12. Hodgson G.M. *Conceptualizing Capitalism. Institutions, Evolution, Future*, University of Chicago Press, Chicago, 2015.
13. Ostrom E. *Understanding Institutional Diversity*. Princeton University Press, Princeton, 2005.
14. Screpanti E. *The fundamental institutions of capitalism*, Routledge, London, 2001, 257 p.
15. Veblen T. *The Place of Science in Modern Civilisation and Other Essays*, Huebsch, New York, 1919, 239 p.

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УСТОЙЧИВОЕ РАЗВИТИЕ И НОВЫЕ ФОРМЫ ЗАНЯТОСТИ. СЦЕНАРИЙ КЛЮЧЕВЫХ ВЫЗОВОВ ДЛЯ ГОСУДАРСТВЕННЫХ И ЧАСТНЫХ ИНСТИТУТОВ

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Аннотация

Статья иллюстрирует ожидания в отношении мира труда, взаимосвязанные с двумя определяющими факторами глобальных преобразований: 1) единство государств в продвижении целей устойчивого развития согласно нормативным рекомендациям ООН, 2) эффекты кризиса пандемии. Статья предполагает отсылку к институционалистскому теоретическому подходу, как к наиболее подходящему для осмысленной интерпретации разнообразных политических ориентаций в экономическом и социальном развитии, включая политику в отношении рынка труда, что проявляется на глобальной арене. Работа представляет анализ профессий будущего и перспективы в отношении занятости до 2030 г., содержащиеся в двух исследованиях, разработанных в Италии на основе прогнозных моделей с применением специальных техник Искусственного интеллекта (ИИ), официально представленных в первой половине 2021 г. Предлагаемое исследование обращается к фундаментальному значению феномена структурного кризиса, ценности институционалистской теории для понимания сложности процессов развития и прогресса сообществ и в контексте выбора в пользу устойчивости значимость предстоящих изменений в мире труда в связи со специфическими «зелеными» и цифровыми переходными процессами, ныне продвигаемыми государствами. Выводы статьи могут способствовать исследованиям по прогнозным моделям в сфере труда и новых профессий, проецирующих дальше краткосрочных трендов в более широкой перспективе и сценариях.

Ключевые слова: структурные изменения, институциональная экономика, качество развития, устойчивость, изменения на рынке труда, цифровая революция, навыки, компетенции, новые профессии

Список литературы

1. Assolombarda, Università Cattolica del Sacro Cuore, CRIPS: Le Professioni del Futuro. Come la Tecnologia e la Pandemia Modificano Il Mercato del Lavoro Lombardo [The Professions of the Future: How Technology and the Pandemic Modify the Lombard Labor Market], Ricerca (Research). No. 1, Milano, 2021.
2. Bakhshi H., Downing J, Osborne M., Schneider P. The Future of Skills: Employment in 2030. London: Persons and Nesta, 2017.
3. Brookfield Institute for Innovation, Entrepreneurship e Nesta, Ahead by a Decade: Employment in 2030. 2020.
4. Brynjolfsson E., Mitchell T. What can machine learning do? Work-force implications. Science. 2017. Vol. 358 No. 6370. P.1530–1534. DOI: 10.1126/science.aap8062.
5. Cavalli A., Doulgas M. Istituzioni. Processi e tipologia. Enciclopedia delle Scienze sociali [Encyclopaedia of Social Sciences]. Treccani. Roma. 1996. 122 p.
6. Ernst&Young, Manpower Group, Pearson. Professioni 2030: il future delle competenze in Italia [Job 2030: the future of the competences in Italy]. Milan. February 2021.
7. Felten EW, Raj M, Seamans R. The Occupational Impact of Artificial Intelligence: Labor, Skills, and Polarization. SSRN Electronic Journal. 2019. DOI: 10.2139/ssrn.3368605.
8. Frey C.B., Osborne M.A. The future of employment: How susceptible are jobs to computerisation? Technological Forecasting and Social Change. No. C. P. 254 – 280. DOI: 10.1016/j.techfore.2016.08.019.
9. Glaziev S. Strategy for growth in the contest of the global economic crisis. European Academy of Natural Science, Hanover, 2015.
10. Hodgson G.M. What are institutions? Journal of Economic Issues. 2006. Vol. 40. No. 1. P. 1-25. DOI: 10.1080/00213624.2006.11506879.
11. Hodgson G.M. Evolutionary and Institutional Economics as the New Mainstream? Evolutionary and Institutional Economics review. 2007. Vol. 4. No. 1. P. 7-25. DOI: 10.14441/eier.4.7.
12. Hodgson G.M. Conceptualizing Capitalism. Institutions, Evolution, Future, University of Chicago Press, Chicago, 2015.
13. Ostrom E. Understanding Institutional Diversity. Princeton University Press, Princeton, 2005.
14. Screpanti E. The fundamental institutions of capitalism, Routledge, London, 2001, 257 p.
15. Veblen T. The Place of Science in Modern Civilisation and Other Essays, Huebsch, New York, 1919, 239 p.

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