Christa Larsen, Sigrid Rand, Alfons Schmid, Andrew Dean (Eds.)

Developing Skills in a Changing World of Work:

Concepts, Measurement and Data Applied in Regional and Local Labour Market Monitoring Across Europe

Rainer Hampp Verlag

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The world of work is changing fundamentally and quickly as a result of technological transformation, demographic development and globalisation. The contributions in the anthology show for ten European countries that not only do the degree and speed vary significantly between occupations, sectors and firm types – the changes take on diverse forms in different geographical locations. Labour market actors at regional and local level need to know which skills, competences and know-how are required from the labour force so that they can set up their strategies in line with the future developments.

Regional and local labour market observatories, which are established in over 550 regions and localities in Europe already, can provide significant support in these processes as they have far-reaching experiences with applying a wide variety of methods to collecting, analysing and combining data. Furthermore, they are embedded in regional/local networks of labour market actors and actively contribute to shaping regional strategy processes evidence-based labour market policies.

The contributions demonstrate from different perspectives the approaches to skills and competence monitoring applied in various European regions and localities. In particular, the authors focus on the methods and sources of data and information, implemented instruments, resulting strategy-building and role of observatories in these processes. The compilation of approaches offers an overview of the state-of-the art in labour market monitoring, which can be used for building up skills and competence monitoring frameworks at regional and local level.

Key words: skills, competences, skills and competence requirements, regional and local labour markets, evidence-based policy-making, labour market monitoring, applied labour market research, labour market observatories

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Foreword

Globalisation, technological progress and demographic change are having a profound impact on the world of work. These mega-trends do not only determine the number of jobs that are available but, most importantly, affect their tasks and skill content. Technological change is, for instance, contributing to the automation of many industrial processes and increasingly of some service-sector job tasks. Similarly, population ageing is driving new skill needs by increasing the need for health and care-related services.

Although the timing and the speed of these changes differ across countries, empirical evidence suggests that they will continue (or even accelerate) in the coming decades and quickly extend to emerging economies. The ability of labour markets to adjust to such changes and of firms to make most of new technologies and move up the value chain will, to a large extent, depend on the ability of their workforce to adapt and develop labour market relevant skills.

In such uncertain context, measuring all these dynamics becomes crucial in order to provide an evidence-based rationale to labour market policies, contribute to our understanding of these phenomena and develop solutions ensuring that no workers are left behind in a labour market that becomes more inclusive. The analysis of regional and local labour markets is also of paramount importance as these are the functional areas where demand and supply of skills meet.

This volume discusses several new approaches to measuring skill needs across European countries and provides invaluable insights into the fundamental aspects driving skill mismatches. Furthermore, it addresses the various strategies for filling these gaps.

Fabio Manca

Directorate for Employment, Labour and Social Affairs
OECD, Paris

TABLE OF CONTENTS

2. DIFFERENT AVENUES TO SKILLS AND COMPETENCES IMPLEMENTED IN REGIONAL AND LOCAL LABOUR MARKET OBSERVATORIES

2.1. Demand for Skills und Competences in Sectors, Occupations and Enterprises

2.2. Supply of Skills and Competences and Their Evolution in Different Target Groups of the Labour Market

2.3. Regions and Localities as Contextual Frameworks for Skills, Competence and Knowledge

3. TAXONOMIES AND FURTHER DEMAND FOR DEVELOPMENT

Introduction

Christa Larsen and Sigrid Rand

The Starting Point

The world of work is changing fundamentally and quickly as a result of technological transformation, demographic development and globalisation. However, a comparative view on regions and especially localities shows that these changes take on diverse forms in each case: the degree and speed vary significantly between occupations, sectors and firm types in different geographical locations. Accordingly, employees need to acquire skills and competences that enable them to retain their employability during the change processes that affect them. Firms and regions also need to address this issue, as their economic success depends the availability of relevant skills and competences.

Consequently, labour market actors have the task of capturing which skills, competences and know-how the employed and unemployed as well as graduates need in these change processes. The increased transparency serves as a basis for designing appropriate offers and approaches or for changing the existing ones with regard to future developments. Regional and local labour market observatories, which are established in over 550 regions and localities in Europe already, can provide significant support in these processes because of the four characteristics that they display:

- **The application of mixed methods and use of data from different sources (holistic approaches):** statistical data are usually not sufficient for depicting regional and local labour markets and the resources available for generating data are often limited. Therefore, further sources of data and information are used in order to adequately describe the developments in the labour markets. Against this background, elaborate practices have evolved in which statistical data are systematically connected to local expertise and administrative processes of organisations (e.g. Labour Offices), or, increasingly, to Big Data from the Internet (especially online job portals). In these processes, important practical knowledge concerning methods and content has been created. Furthermore, prognostic approaches need to be mentioned here, which contain both quantitative and qualitative elements.

- **Scientific insights concerning overarching developments**: in their work, observatories need to study overarching trends in society and the economy in order to determine how they influence development at the regional or local level. This especially concerns the developments in vocational education and training (VET) and higher education systems or in specific sectors, but also the politics and governance of the labour market. Accordingly, observatories have close connections to scientific research or are located at universities, which enables them to tailor scientific studies to the specific situation in the region or locality.
- **Process-orientation in regional and local monitoring:** the role of regional and local labour market observatories goes beyond generating information. Regional labour market monitoring requires a complex process in which demand-oriented (i.e. suitable and relevant) information is created for regional and local labour market actors. The observatories also support the interpretation of information and ideally ensure that all labour market actors share a common conception of the situation. This is why the observatories do not limit their activities to providing information and instead focus on the knowledge of labour market actors. The observatories provide further support by converting knowledge into action. This concerns the regional strategy processes of evidence-based labour market politics. After the strategies are implemented, the next step is evaluation, which can lead to adjustments. Correspondingly, regional labour market monitoring is an action-oriented cyclic approach. This makes it possible to continuously record changes in the labour market and react to them strategically.
- **A Europe-wide network as a resource for innovation**: the work of many regional and local labour market observatories in Europe is influenced by their limited resources (time, money, personnel) and often geographical isolation. To still enable innovations, the regional observatories have united to build the European Network on Regional Labour Market Monitoring (EN RLMM). In this network, good practices are exchanged, common projects are initiated and the concept of regional labour market monitoring, which addresses the needs for practical implementation of ideas, is systematically developed further. For over ten years, the network has served as a resource for the conceptual and content-based work of many regional and local labour market observatories. Furthermore, it provides them with important support for the application of continuous innovations in their field of work.

These characteristics of regional and local labour market observatories constitute an excellent prerequisite for developing a Europe-wide system for skills

and competence monitoring in regions and localities. Before envisaging what it could look like, changes in firm-based processes and work have to be considered in more detail.

The Changing World of Work in European Regions and Localities

Digitalisation is considered to be the essential driver of changes in the economy. The division of responsibilities is also changing within firms, bringing about new requirements for employees, for example in regard to communication, creativity and flexibility as well as taking initiative and assuming responsibility. Additionally, technical competences for dealing with new digital technologies are required. Firms can benefit from digitalisation only when its employees are equipped with the above-mentioned skills and competences fitting exactly its needs. It has long been clear that even well-qualified professionals do not have the appropriate skills and competences needed for retaining their employability throughout change processes. Furthermore, ever more employers understand that lifelong learning is crucial for employees if the firm is to remain competitive. In this situation, the professional education field, comprising vocational education and training as well as higher education, is confronted with several challenges. Often it is difficult to conceive what types of knowledge and which skills and competences need to be conveyed and practiced. Furthermore, curricula are difficult to change, since VET courses and degree courses last for several years and it is difficult to integrate the dynamic changes arising from digitalisation into them. Especially in the field of professional further education and the training of people who are already employed, aspire to return to their careers or are currently unemployed, there is a need for a suitable, often individualised format as well as opportunities for further education integrated into work processes. Currently, this poses great challenges for the providers of further education in many European regions. Transparency is needed in order to empower actors in the field of education. Regional and local labour market observatories can play a crucial role in creating it.

When talking about skills and competences, the two terms are often used as synonyms. Definitions and demarcations are considered less relevant, especially in the practice of observatories or in sectors and occupations. Instead, the

manifestations of single skills or competences are of greater interest. Moreover, no existing definition has been authoritative enough to establish itself in research as well as among the intermediaries in politics and administration or labour market actors. In Europe, the most frequently used definition is found in the ESCO taxonomy of the European Commission. It differentiates between knowledge, skills and competences. The definition for skills originates from the European Qualification Framework and denotes "the ability to apply knowledge and use know-how to complete tasks and solve problems. Skills can be described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments). […] The term skill refers typically to the use of methods or instruments in a particular setting and in relation to defined tasks. The term competence is broader and refers typically to the ability of a person – facing new situations and unforeseen challenges – to use and apply knowledge and skills in an independent and self-directed way".[1] Accordingly, the term competence "means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. Competences are described in terms of responsibility and autonomy".[2] In contrast, knowledge can be clearly demarcated: "Knowledge means the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study".[3]

OECD definitions are also used in addition to the ESCO taxonomy. In the OECD Skills Strategy – unlike in ESCO – skills and competences are used as synonyms. They are understood as a bundle of knowledge, attributes and capacities that can be learnt. Further concepts of skills and competences are used in many studies: for example, in regard to individuals they often refer to "key competences" as well as work- and organisation-specific competences. Additionally, the use of the term "hard skills" for technical and methodological competences and "soft skills" for social-communicative competences is widespread. Apart from the professional or subject-specific competences, the focus is on those competences that can be used in all professional fields. In the empirical re-

[1] https://ec.europa.eu/esco/portal/escopedia/Skill.

[2] https://ec.europa.eu/esco/portal/escopedia/Competence.

[3] https://ec.europa.eu/esco/portal/escopedia/Knowledge.

search literature there is a widespread consensus that these are so-called "transferable" skills or competences. The various concepts of skills and competences are, for example, applied when developing competence profiles for specific occupations or areas of activity.

Compared to the numerous definitions of skills and competences, the description of skills and competence acquisition and development in particular is a "black box". Especially, this concerns their application in the field of education, even though first attempts have been made to explore the learning processes (opportunities for learning as well as willingness and motivation to learn), the framework conditions facilitating learning in organisations (time, support, spaces, financing, voluntariness) as well as the situation in regions or localities (networking of labour market actors, steering of communication, regional and local strategies). However, the insights are rather fragmented and lack descriptions of application processes relevant to practice.

Furthermore, at the moment a process that takes place at earlier stages of monitoring has received heightened attention – the question of how to build up the so-called "signalling". This means that the relevant labour market actors in the field of education, but also in placement services or governance, learn within a narrow time frame which changing skills and competence requirements are currently being developed in individual firms located in a region or locality (cf. Restuccia and Taska in this volume suggesting to orientate towards the Talent Pipeline Management Initiative implemented in the U.S.). This example conveys that in the field of education and in employment services many regional/local actors increasingly orientate towards the skills and competence requirements of the firms. The latter are often seen as customers whose needs are to be met with flexible and appropriate offers. Consequently, some labour market actors, especially those in the field of education, have to re-adjust their self-perception. Eventually, these changes lead to a break-up in the pillarisation of employers and education providers. Education providers especially have been observed to take crucial steps towards leaving the silo mentality behind them. Such processes are not very distinct in countries with highly formalised VET systems (e.g. Germany and Austria), unlike in countries with less complex and locked-in structures (e.g. England, Scotland and Italy). Despite the opening of the field of education in many regions and localities, there is still need for support from third parties to improve the communicative connections between

these two pillars and contribute to the optimisation of skills and competence development. Regional and local labour market observatories assume a special role in this process.

The Role of Regional and Local Labour Market Observatories in Accompanying Skills and Competence Development for the Changing World of Work

Regional and local labour market observatories carrying out labour market monitoring have good prerequisites for building up a regional and local skills monitoring framework. In the first instance, this arises from the experiences that they have with combining quantitative and qualitative methods as well as different sources of information and data when creating transparency for labour market actors. The holistic approaches to depicting the situation in regional and local labour markets have been applied for many years almost out of necessity. Conceptually, most observatories are built on the matching approach from labour market research: they bring together the demand from firms with the regionally and locally available supply in regard to occupations, sectors and qualification levels. Matches or mismatches can be calculated on the basis of structural data. However, this approach does not allow observatories to take into account all changes in the behaviour of firms or employees, graduates and the unemployed, as structural data are essentially observations of the past. Therefore, to position and validate structural data, many observatories resort to local expert knowledge, which enables them to estimate the situation currently as well as in the near future. The perspectives of as many actors as possible are thereby taken into account. In many observatories, very mature practices for extracting expert knowledge have been established that are oriented towards focus group and Delphi methods. By incorporating expert knowledge (bottom-up) it is possible to capture and specify the skills and competence requirements that arise in regional and local firms. As the examples in this anthology demonstrate, experts can make statements related to sectors and occupations, depending on where they are located. At the moment, observatories are systematically extending their expert circles in order to determine and measure skills and competence needs.

Moreover, the examples from European regions presented in this anthology demonstrate that the matching approach is often implemented using instruments known as Occupational Barometers (cf. Maleszyk; Sosnowska for Poland as well as Plaimauer for Austria in this volume). In this approach, experts are of major importance and the information created this way is highly accepted in regional and local evidence-based planning and political decision-making. Other examples show that besides using structural data as a basis for validation by regional and local experts, Big Data from online job-portals is applied as a means of gathering further information increasingly often (Mezzanzanica et al. for Italy and Baruffini for Switzerland in this volume). Especially in the last three to five years, many observatories have tapped into the Big Data from online job-portals and occasionally also social media in order to enhance their understanding of the requirements of firms. Apart from qualification levels and occupations these data deliver information at the level of skills and competences, thus constituting an excellent basis on which local experts can rely on when validating skills and competence requirements. Furthermore, in many cases, further information sources such as observations at job fairs (cf. Oding for Russia in this volume) or simple electronic employer surveys (cf. Sosnowska for Poland and Atin for Spain in this volume) are used to describe skills and competence needs as precisely as possible. Moreover, some observatories capture future skills and competence needs by using foresight techniques or quantitative prognoses, which are validated through qualitative expertise.

Secondly, the close connection of observatories to research institutions helps them implement regional and local skills monitoring. Scientific insights on overarching trends in particular can be used as reference points. In regard to the demand for and development of skills and competences, scientific studies make clear that the exclusive focus on the labour market is too narrow. On the one hand, the emergence of skills and competence requirements and their development needs a well-founded understanding of the processes of organisational change resulting from digitalisation. On the other hand, the essential role of organisational culture has to be recognised, as it frames the development of skills and competences (cf. Fontana et al. and Di Nicola et al. in this volume).

Besides the organisational processes, the skills and competence needs of specific target groups are important, be it Generation Z, which is gradually joining the labour force (cf. Panzaru and Iotu in this volume) or low- and unskilled em-

ployees, who are supposed to receive additional workplace training. For these groups especially, competences based on attitudes and motivation are partially more important than subject-specific knowledge (cf. Atin and Serrano in this volume). An important target group in the firms are women, especially in regard to their further development and careers. Here, fundamental research insights urge actors to take a broader view on skills and competences (cf. Di Nicola and Cioce in this volume).

The emergence of specific skills requirements within firms is manifested in the labour market as the demand for skills. The other side of the coin is related to the educational sphere. Even there, scientific insights are necessary in order to comprehend why offers for skills development are designed in a certain way. This, for example, is related to the unemployed whose workplace integration is to be supported through skills development (cf. Keil and Splittgerber in this volume). Additionally, important scientific research on how to break up the pillarisation between firms and education providers is carried out in observatories, and these insights enrich our understanding of labour market developments.

Thirdly, the strong process-orientation of regional and local labour market observatories means that they do not perceive themselves just as producers of information and data, but as framers for the development of regional strategies with the ultimate goal of matching supply and demand. Especially in the case of regional and local skills monitoring, the established networks and communication structures of observatories are very helpful for deliberations on skills requirements, skills development and designing suitable approaches, which are often taking place outside of formal structures. Regarding these functional trust-based networks, the region or locality simultaneously sets the framework and constitutes the source for the identity of the actors. Consequently, not only labour market actors, but also other actor groups from civil society as well as representatives of the regional and local politics are often involved. This way, as in the case of the Skills Escalator in Exeter (cf. Dean and Neild in this volume), all training offers can be directed towards the acquisition of specific skills and competences by involving the regional economy and politics. The concept of the Resource Center, which is employed in St. Petersburg, Russia, is slightly different, since it works as a clearing house between supply and demand and offers a broad information base that facilitates the optimal

matching of supply and demand of skills and competences (cf. Oding in this volume).

Fourthly, as the observatories' resources are limited and they are geographically isolated in their localities, they receive considerable impulses for innovation from the EN RLMM. For over ten years, most of the regional and local labour market observatories in Europe have been connected to each other through the network. Correspondingly, a well-established practice of exchange between the observatories and third parties from international organisations, research, administration and politics has been developed. It involves the definition of topics, which need to be framed and developed further through the Annual Meetings, Anthology or network projects. The Anthology serves as a stock-taking on the topic of regional and local skills monitoring and prepares the basis for targeted and focused exchange at the Annual Meeting. These two channels for exchange enable the representatives of observatories to further their insights into concepts and approaches and serve as a platform for presenting the experiences that they have gathered with their implementation. Moreover, many European observatories have implemented innovations in their line of work that emerged from the exchange within the Network and the pooling of available resources. Therefore, a specific focus of the Annual Meeting of 2018 will be on the role of taxonomies in regional and local skills monitoring. In particular, the advantages of top-down and bottom-up approaches regarding the applications in observatories will be explored, since taxonomies need to account for the quickly changing environment shaping the development of skills and competences (cf. Bobkov et al., Djumalieva et al. and Žakelj in this volume). The contributions to the anthology explore the different ways that regional and local labour market observatories can implement regional and local skills monitoring.

The Structure of the Anthology

The 22 articles in the Anthology enable insights into the topic of regional and local skills monitoring at three different levels. Chapter 1 assembles the contributions concerned with change processes in firms and the associated skills and competence requirements, while Chapter 2 explores the different avenues to regional and local skills and competence monitoring as it is currently imple-

mented. Chapter 3 focuses on the fundamental question of the use, necessary adjustments and further development of taxonomies, which are of great importance as dominant sorting structures in regional and local skills monitoring. These pivotal thematic lines need to be taken into account when building up sustainable approaches to regional and local skills monitoring.

Chapter 1 presents research results that can serve as the orientation point for building skills monitoring. Renato Fontana, Carmine Piscopo und Erika Nemmo focus on the so-called digital professions and the relevant cross-cutting competences and soft skills. They impressively elucidate the relevance of fundamental skills and competences in this context, which can also be of importance in other economic sectors and firm types. Patrizio di Nicola, Alessia Cremonini, Michela Cossu and Stefano Scravaglieri explore the central role of management in change processes and stress the importance of taking the role of office leadership during these processes into account. The contribution by Carsten Kampe, Daniel Porep and Anja Walter extends the focus to further sectors and actors in the firm and considers which soft skills and competences are needed in firms. Further perspectives are introduced by Eugenia Atin, Raquel Serrano und Ibon Zugasti from the Basque Country in Spain, who reflect upon future skills developments in relation to the programme ”50 Strategies for 2050“.

Chapter 2 showcases three different approaches to the implementation of skills monitoring in regions and localities. To start with, in Sub-chapter 2.1. the focus lies on economic sectors, occupations and firm types. Three contributions describe the implementation of Occupational Barometers. Piotr Maleszyk as well as Marta Marzena Sosnowska show how different data sources can be connected in two Polish regions, with the aim of capturing information on skills and competences that is as detailed as possible. In both regions, local experts play a very important role in validating data from other sources. For the quality of data it seems to be essential to include as many different expert perspectives as possible. Claudia Plaimauer demonstrates for Austria that the use of expert knowledge goes beyond the validation of structural data and can take on an independent status.

The following contributions apply the matching approach from labour market research to different data. Pierre-André Gericke and Alfons Schmid draw attention to the fact that many newly unemployed people were formally overqualified in their most recent job. They show how competence development in

the workplace affects one's further professional career and analyse the differences between East and West Germany as well as various occupations. Using Big Data from online job portals, Dan Restuccia and Bledi Taska demonstrate which occupations have developed skills gaps in the U.S. In the cluster of articles following sector-specific approaches, Moreno Baruffini demonstrates how a regional labour market observatory can capture skills requirements in a demand-oriented manner for the commercial sector in a Swiss Canton. Aleksandra Webb and Ronald McQuaid turn to the Early Learning and Care sector in Scotland and show how skills development can also be used for improving the attractiveness of a sector. The final contribution in this sub-chapter is by Mario Mezzanzanica, Fabio Mercorio and Emilio Colombo, who show in a very detailed manner how data from online job vacancies can be used to measure the requirements for digital and soft skills within professions and evaluate the probability of job automation in the next step.

Sub-chapter 2.2 covers the supply-side of skills: two contributions focus on socio-demographic definitions of target groups in the labour market while two others concentrate on qualification-based target groups. In the case of the former, Generation Z is in the centre of attention. Ciprian Panzaru and Alina Iotu report on the self-perceptions of Generation Z in regard to their skills and juxtapose them with the expectations and perceptions of employers. Furthermore, Patrizio Di Nicola und Mariaroberta Cioce address women's skills potential for career development as a result of motherhood. Regarding the qualification-based target groups, Eugenia Atin und Raquel Serrano explore the case of low- and unskilled workers and how their employability can be improved through targeted skills and competence development. Rolf Keil and Bettina Splittgerber address the target group of long-term unemployed and consider how to facilitate their re-entry into the labour market. The authors demonstrate how the skills development of this target group can be addressed at the juncture of employers, occupational safety administrations and placement services.

Sub-chapter 2.3 focuses on regional and local approaches. Andrew Dean and Ben Neild demonstrate how in the Exeter region, the Skills Escalator helps to systematically connect different offers in a specific skills field, identify gaps in the skills supply and develop a skills offer precisely fitting the needs of the region, making it attractive not only for employees, but also for employers. Simi-

larly, Nina Oding explores the interplay between the innovative economy and skills development in St. Petersburg, Russia, showing impressively how very different data sources can be brought together with the aim of capturing skills needs. This particularly exemplifies the potential of observatories for skills development.

Chapter 3 is dedicated to taxonomies, which are used to frame regional and local skills monitoring. In their contribution, Vyacheslav Bobkov, Vadim Kvachev and Irina Novikova consider the taxonomies for skills monitoring that are used in different parts of the world. They advocate for the development of an overarching international system, which seems plausible in regard to global labour markets. Tjaša Žakelj argues that the ESCO taxonomy is well-suited for the countries of the European Union and demonstrates which challenges have arisen for Slovenia in the process of establishing a skills monitoring system based on the ESCO taxonomy. Jyldyz Djumalieva and Cath Sleeman point out that the pre-defined, i.e. top-down taxonomies, are too static to take into consideration newly emerging skills and competence needs and therefore cannot do justice to the dynamic developments. They suggest assuming a bottom-up approach that is developed using Big Data from online job portals and involves developing taxonomies on the basis of clustering. Both approaches provide a good basis for further discussion about the possibility of combining pre-defined taxonomies with flexible elements. Finally, Anna Grochowska suggests a possible route outside these taxonomies: the concepts used to frame regional skills monitoring can vary between regions or localities based on their economic structures and development.

Next Steps and Perspectives

The contributions in this anthology not only offer important proposals for those interested in regional and local skills monitoring, but also form the basis for the Annual Meeting in 2018. There, the Network members will discuss the state of the art in skills monitoring and develop further approaches. The Network Meeting gives a good overview of the existing examples of good practices, explores how all European observatories can be further engaged in this discourse and considers which role different European and international organisations could play.

We would like to thank all the authors for their valuable contributions demonstrating that combining various perspectives – both in this anthology and at the Annual Meeting – is necessary when addressing the complex issue of skills monitoring. Therefore, we appreciate the opportunities to approach innovative topics in the EN RLMM and are looking forward to further steps and topics.

Last, but not least, we would like to thank Amelia Wallace for her careful and diligent proofreading of this year's contributions.

1. RELEVANCE OF SKILLS AND COMPETENCES IN A CHANGING WORLD OF WORK

Cross-cutting Competences and Soft Skills in Digital Professions: Knowledge-sharing and Social Stratification in the World of Tomorrow

Renato Fontana, Carmine Piscopo and Erika Nemmo

Introduction

The advent of what has been called the "post-industrial" and "post-modern" society by some (Touraine 1970, Bell 1973, Offe 1985, Lash and Urry 1994) and "network" (Castells 1996) or "knowledge society" (Rullani 1994) by others has deeply changed our way of perceiving, living and relating. At the basis of the various definitions of contemporary society there is a common denominator enabling a transformation that we are still unable to grasp: the advent of Information & Communication Technology (ICT). ICT has become part of our daily life, permeating places and "non-places" of our existence, radically and cross-cuttingly changing the working contents and approaches of almost all professions and, at the same time, creating jobs that did not exist up to a few years ago. It is natural, therefore, to expect from a store man or a waiter the digital skills required to use an app for localisation or registering orders, just as we are not surprised by a friend of ours who works in the field of computer science performing a job we find impossible to understand. If we are not familiar with the job title, we are not even able to form an idea about what they do in their profession or what it is needed for.

The objective of the following considerations is twofold. First of all, we wish to reflect on how skills change and grow; secondly, we aim at understanding the consequences of the on-going changes in terms of social stratification inside the composite aggregate that we call the labour market.

Let's start with the first item. What is the direction taken by skills today? What are the tools we need to dispose of in order to face the *zeitgeist* of knowledge society? In sum, is it easier or more difficult to produce, work and express oneself today than when the Taylor-Ford model prevailed in the industrialised Western world? Do not expect exhaustive answers; we do not have any.

We know, however, that the world of skills is more articulated in comparison to the times mentioned above. In the following pages, we will in particular talk about the on-going transformations in the world of digital economy, reflecting on:

- Technical-professional skills;
- Cross-cutting a-contextual skills;
- Socio-relational skills.

While the first item reminds us of scenarios well-known in literature, the second one makes us think that ICT professions are going through a socio-professional stratification similar to the one experienced by traditional professions and trades during the Second Industrial Revolution in the second half of the 19th century. In this context, the suspicion emerges that the representatives of some medium- to low-profile professions are excluded from acquiring cross-cutting skills that would enable them to work better and manage important discretionary spaces. Unfortunately, training is expensive. This would make us imagine configurations similar to those of enterprise power structures as we have known them so far: a sort of concentration without centralisation (Sennett 2000: 55).

As we shall see, technical-professional skills, i.e. those connected to a specific and delimited working task, are less important in the ambit of the activities carried out in an organised context. On the contrary, acontextual, cross-cutting skills prevail in the various ways of working. In other words, on the Web, tasks are gradually being transferred to machines, while the skills that count are the ones that go beyond the "technicalities" and look at the need to sell to a potential user/client the product of one's intelligence such as goods, services, knowledge, innovation, culture, ideology, etc. In the ambit of the so-called cross-cutting skills, the socio-relational ones are the most important as they get the consumer hooked, make them think that the product is more than necessary to improve their own and/or family's quality of life or social status and get

them to buy it. The socio-relational skills make them feel like the centre of the universe – as somebody who is unique and special.

The purchase is not simply an economic transaction based on mutual gain between the seller and the buyer, i.e. between the subjects who represent the offer and the demand on the market, respectively. It is much more than that and goes beyond it. The purchase of a product often means moving into a new world "full of opportunities" but also becoming part of a "community of intents and values", as happened, for example, to the people who centuries ago knew the meaning of "good neighbourly" relationships, where they shared not only time together, but also customs and traditions day after day.

The enterprises of the sector considered in this paper therefore do not limit themselves to searching for professionals with high technical skills, but instead look for skills consonant with the on-going digitalisation process, where standardised and Taylor-like processes are replaced by de-standardised ones displaying a high rate of uncertainty. The greatest skill today is knowing the starting point of a project without knowing the precise arrival point. The imagination of a path and its re-modulation in reality is certainly an essential phase for organisational systems and their protagonists, especially in the meanderings of the sharing economy. This is done step-by-step to avoid being overcome by anxiety and to try to keep the process under control instead.

The spread of ICT certainly requires a continuous updating of technical-professional skills, but in our view, what counts more is the recognition of the cross-cutting technical-professional skills in sociological terms. As we shall see, work becomes easier for those who willingly accept communication and being part of a team; in contrast, it becomes more difficult for those who do not know how, cannot or do not want to relate to the other actors of the production process, both in- and outside the labour market circuits. We pass from the valorisation of strictly contextual skills to the introduction of skills separated from specific professional codes.

The skills connected to digital platforms seem to have a "soft" connotation, since their main applications are firstly to allow the protagonists of the organisational arena to relate to the outside world and, secondly, to adapt to it. Therefore, enterprises do not simply look for professionals with a sound technical/engineering background; sometimes they search for professionals with strong communicative skills directly. Hence, the hypothesis we aim to follow is

that technical competences are melting in front of the extraordinary opportunities offered by the Web and by the professional profiles connected to social logic, whether real or virtual.

Digital Technology as a Socio-relational Practice

To evaluate and understand in detail digital skills, which are increasingly demanded by the current labour market, we need to step back 20 years to when the debate over digitalisation (it would be more correct to talk about the "Internet") and its impact on the socio-economic sphere was centred on the concept of the "digital divide".

Indeed, at the beginning of the new millennium, the digital divide was considered a critical issue and was at the centre of public and political debate: it was such an important factor that it was able to undermine territorial economic development. The theme was discussed during the G8 held in Genoa in 2000 and an international co-operation programme was introduced[4]:

> "Digital Opportunities for All: Meeting the Challenge, contained a vision of global development based on the power of information technology to promote sustainable growth, advance social justice and strengthen democratic governance" (DOT Force 2002).

Digital development has always been considered the perfect tool to face the criticalities of the modern age, where the gap between rich and poor, personal freedom and oppression, opportunities and injustice flatten our society into two extreme positions between those who have and those who have not. From the scientific point of view, the theme was not yet widespread or developed and the studies proposed various perspectives centred more on the relationship between the man and machine and on the opportunities for being globally connected. For this reason, digital technology had to be managed in a different

[4] "In July 2001, G8 leaders endorsed the Genoa Plan of Action, a product of the work of the Digital Opportunities Task Force. The DOT Force, which was formed following the 2000 G8 Summit in Okinawa, represented both a unique model of international co-operation and a new way of responding to the challenges of development. It brought together committed leaders from government, industry and civil society, drawn from G8 member countries and from the developing world, to conceive a forward-looking action plan designed to expand the use of digital technology and to universalize its benefits" (Digital Opportunity Task Force 2002: 2).

way. Specifically, the Internet had to be a universal tool, a project capable of removing gaps and of favouring inclusion.

However, in the past, the public debate on the Internet was forced to discuss the theme of infrastructural accessibility, using exactly the categories it was trying to fight against: those who have and those who have not. The spreading of digital technology was mainly intended to increase the possibility of access to a personal computer and an internet connection with or without a modem. A few years later, thanks to rapid technological development, the concept of the digital divide started to find other interpretations. Scholars analysed the issue, trying to identify the possible factors that were compromising the spread of digital opportunities, including socio-economic variables. In the mid-2000s, the digital divide was already considered to be more than a problem of access to information. No-one could have imagined at the end of 2000 that new digital devices would have once again changed the social landscape.

Among the categories of products and services that had the economic and cultural strength (and perhaps the luck) to overcome concerns about the access to technology, we can consider mobile devices, social networking sites and Web 2.0 services. Thanks to the extremely wide global diffusion and the high profitability of these three tools, we rapidly overcame the infrastructural limits (connections, lines, and devices), generating a quick multiplication in the opportunities linked to productivity, entertainment and interpersonal communication. We could therefore think of a drastic reduction in or the disappearance of the digital divide, but that would be an incorrect deduction. On the one hand, the problem of Internet access is certainly much smaller today than it was in the past. On the other hand, we cannot consider the digital divide an out-dated concept. Today, the digital divide is no longer linked simply to access but also to the skills and opportunities that technology can generate. The issue is no longer geographic (between rich and poor countries) or technical (related to the availability of lines and connections), but cultural and educational.

This important change in the interpretative paradigm requires a considerable intellectual effort to understand a new world that is always connected and in which people work, interact and live using digital contents and tools.

Hence, the analysis perspective is expressed in terms of Digital Literacy (Gilster 1997), that is, the ability of the individual to use digital resources in a context totally immersed in technology.