**LITERATURE REVIEW**

**The European social dialogue and the development of the solidarity between generations of workers: focus on “over 55” and young workers in the finance sector. Sustainable Growth and generation gap.**

**Summary:** 1. Introduction – 2. The impact of digital technologies on work and its nature: current and future challenges across industries – 2.1. The nature of work – 2.2. Workforce organization – 3. The bank and financial sectors in the face of the digitalization – 3.1. Changing relationship with the customers and business models – 3.2. Qualitative and quantitative impact on work – 3.3. Challenges ahead: changing management practices and female employment

**1. Introduction**

The banking sector is the sector that places itself the most at the forefront when it comes to introducing and adapting to new technologies. However, over the past decades, the increasing use of internet technologies in production and services (so-called Industry 4.0) has put high pressure on banks, which had experienced a growing use of digital technologies when it comes to offer banking services to meet their customers’ demands (Nyangosi et al. 2014). This has entailed a growing trend linked to the use of internet-based services amongst customers, which «no longer need to visit the branches during opening hours or wait in long phone queues, as most of the services are now available online» (Zook & Smith, 2016 in Larsson & Viitaoja, 2017).

As a direct consequence of this shift in service supply, banks are changing the way they create and maintain the interactions with their customers over time, adapting the nature of relationships from the physical environment associated to bank branches to the virtual environment linked to the use of digital platforms and technologies.

According to the literature produced on the topic, the shift towards performing digital service is increasing the power of costumers. Indeed, the latter, on the one hand, desire more independence and self-service products and services, but on the other hand, they required tailored and on-demand assistance when dealing with digital settings. For these reasons, though digitalization is currently disintermediating the relationship between customers and banks, personal contacts between the latters seems to gain even more importance than before. Indeed, it is increasingly deemed to be a central factor for nowadays customer satisfaction. The changing nature of the relationship with costumers produces profound consequences on white collars and bank’s employees that are required to ensure e-loyalty and e-satisfaction amongst the customers (Esmaeilia et al., 2013). However, besides the impact on the relationship between the banks and their customers (Larsson & Viitaoja, 2017), the literature emphasizes that digitalization of banking products and services will also have reduce their operating costs, resulting in lay-offs and apparently a decreasing number of the employees in the banks sector. Furthermore, digitalization is changing the nature of the work (both from a qualitative as well as a quantitative perspective) in the banking and financial industry, similarly to the trends currently undergoing in manufacturing production. In today’s literature, there is very little knowledge about the impact of digitalization on the banking industry. This literature review addresses the scientific framework of reference with regards to the relationship between the use of digital technologies in the service sector and manufacturing industries (the so-called Industry 4.0 phenomenon). Notably the impact of digital technologies on the world of work and on the workforce organization will be explored.

The second part of the literature review realizes a specific focus on the bank and finance sector, by investigating the ways that digital technologies changes traditional business models, relationship with customers, management practices and the share of female employment.

**2. The impact of digital technologies on work and its nature: current and future challenges across industries**

The term digitalization is used by media, companies and science for describing a “process of moving to a digital business” (*Gartner. 2016. “Digitalization,” IT Glossary, available at* [*http://www.gartner.com/itglossary/*](http://www.gartner.com/itglossary/) *digitalization/, retrieved August 8, 2016 p. 201*). Today, enterprises from many industries recognize that making this move is a major challenge with heavy impact on existing business models

(*Butler, T., and Hackney, R. 2015. “Understanding Digital Eco-innovation in Municipalities: An Institutional Perspective,” ECIS 2015, Münster, Paper 21; Veit, D., Clemons, E., Benlian, A., Buxmann, P., Hess, T., Kundisch, D., Leimeister, J. M., Loos, P., and Spann, M. 2014. “Geschäftsmodelle: Eine Forschungsagenda für die Wirtschaftsinformatik,” WIRTSCHAFTSINFORMATIK (56:1), pp. 55–64*).

As for the impact of digital technologies on work, the theories are currently different and often polarized between those who think they are optimistic and those who above all see risks. As shown by *E. Brynjolfsson and A. McAfee in The Second Machine Age. WW Norton and Company, 2014*, today, several technologies are able to replace many human jobs characterized by the centrality of the physical strength of the worker. Also *M. Ford in Rise of the Robots* argues that the replacement of work by machines will lead above all to high technological unemployment. The fears of a widespread replacement of work by new technologies, ensuing the adoption of the Industry 4.0 paradigm, or the usage of advanced robotics or machine learning in industrial production also emerge from the research of *C.B. Frey and M.A. Osborne, The Future of Employment: how susceptible are jobs to computerization ?, Oxford Martin School, 2013,* according to which 47% of US professions would be at high risk of replacement by new technologies introduced in recent years. The authors then elaborated several reports on the topic, such as *Technology at Work v2.0: The Future Is Not What It Used to Be, Citi GPS, 2016 and Technology at Work: The Future of Innovation and Employment, Citi GPS, 2015* in which develop their conclusions. The future scenario envisaged by the two Oxford researchers has been exposed to several critics by other studies, in particular *M. Arntz, T. Gregory and U. Zierahn in The Risk of Automation for Jobs in OECD Countries, OECD Publishing, 2016 (revisited also in the revisiting the risk of automation, in Economic Letters, 2017, 150)* they carry out a different type of analysis that leads to considering only 9% of professions to be susceptible of automation. The authors in fact argue that, though some tasks can be replaced by automation, this doesn’t imply the complete disappearance of the related jobs which could experience significant changes in its role and tasks, undergoing a processes of transformation but not of destruction instead.

There are also specific studies concerning the possible occupational impact of digitalization. Within the German academic debate, *M.I. Wolter, et Al.,* in *Industry 4.0 and the consequences for labor market and economy. Scenario calculations in line with the BIBB-IAB qualifications and occupational field projections, IAB-Forschungsbericht, 2015*, have developed an impact analysis according to which over the next decade (in 2030) the application an usage of digital technologies within production, service and the society as a whole will be fully established and widespread. The full uptake of this scenario will be reached through the set up of five different phases, necessary to address the different factors that may lead to a progressive qualitative and quantitative change in the structure of the labor market. The first step concerns the amount of investments in machinery and technology: a huge investment in technology is deemed to be accompanied by the creation of new employees belonging to IT professions and scientific (in particular those able to develop new IT services), in media science and humanities (including design) as well as managerial figures that needs to be equipped more and more with soft skills (i.e. teamwork, relationships, caring, taking responsibilities). The second scenario focuses on the ensuing impact that the implementation of the investments in the previous scenario may have: as far as technologies like the broadband are concerned, the result seems to be tied to an increasing number of employees in the construction sector, of metal constructions and system engineers, apparently not in services or in the banking/financial sector. After the initial investments, the third scenario that follows, which concerns the expenses for the retraining of personnel, consultancy services and information services. Also in this scenario there should be an increase in demand for IT and scientific professions as well as for adult training specialists. With the growth of services offered by staff particularly focused on them, the production of specific goods and the use of raw materials useful to produce them would decrease. The latter, coupled with the potential increase in productivity would generate a reduction in employment in mining, metal constructions, system engineers, toolmakers, maintainers and machine controllers as well as in general technical professions and all those directly related to production. From the quantitative point of view in 2020, the losses and gains should lead to a net change in jobs of zero, and a loss of 20 thousand places in 2030. The fourth scenario adds the qualitative data of the types of occupations within the sectors and allows us to have a more precise look that leads the authors to some conclusions including that of about 760 thousand jobs that will change the field of employment.

*D. Acemoglu and P. Restrepo in The Race Between Machine and Man: Implications of Technology for Growth, Factor Shares and Employment, NBER Working Paper, 2016, n. 22252*, have subsequently developed a first conceptual framework to understand the impact of the human-machine replacement process in terms of employment: the new element consists in considering that "tasks previously performed by the workers are automated, while at the same time they have created versions more complex than existing tasks in which work has a competitive advantage." The same authors then have the same in *Robots and Jobs: Evidence from US Labor Markets, NBER Working Paper, 2017, n. 23285*, one year after their study, presented an analysis on the impact of robotics on employment in the USA, between 1990 and 2007, which shows how there has been a negative impact of the spread of robots on both employment rather than wages, without it being substantially mitigated by education, income and employment sectors.

A different approach is found, again in relation to Germany, in the analysis of the *Boston Consulting Group, M. Lorenz, M. Russmann, R. Strack, K.L. Lueth, M. Bolle, Man and Machine in Industry 4.0. How Will Technology Transform the Industrial Workforce Through 2025*?, *Boston Consulting Group, 2016.* In the three scenarios presented in the study the total number of workers will grow, even with losses in production, quality control and maintenance. The net will however be positive thanks to workers in the IT sector, data analysis and research and development. While Adam Corlett in Robot wars. Automation and the labor market, Resolution Fondation, 2016, argues, analyzing the UK scenario, that we need more robots, supporting how the experience of the last 20 years (if not the last 250) provides several reassurances that the negative consequences of automation can be simple to overcome. Among those who foresee negative consequences in terms of net employment change also the *World Economic Forum, The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution, 2016*, which foresees a decrease of about 5 million jobs within the 2020. A study of an econometric nature, which presents a less pessimistic view is the article *by J. Bessen, Automation and Jobs: When Technology Boosts Employment, Boston University School of Law, Law and Economics Research Paper, 2018, n. 17-09,* in which the author claims that the introduction of technology leads to employment growth in unsaturated sectors in which there is room for productivity growth thanks to innovation.

More recent research has started to evaluate the impact of automation on various aspects of the labor market in specific terms, from a territorial and sectoral point of view. In *The Impact of Industrial Robots on the EU Employment and Wages: A Local Labor Market Approach, Bruegel, 2018, F. Chiacchio, G. Petropoulos and D. Pichler* have a negative impact of the spread of industrial robots on the employment levels of European countries, in particular for those with medium level qualifications and for younger cohorts, while in their opinion, there is no impact on wages at the moment. Similar results also come from *W. Dauth, et al., German Robots - The Impact of Industrial Robots on Worker, IAB Discussion paper, 2017, n. 30*.

On the theme of the impact on the different types of professional qualification and above all the type of job *performed R. Bachmann, M. Cim and C. Green, in the Long-run patterns of labor market polarization: evidence from the German micro data, in the British Journal of Industrial Relations, 2018, I, also Discussion Paper Series, IZA, No.* 11570, at http://ftp.iza.org/dp11570.pdf, in an analysis of the last forty years claim that workers assigned to tasks Routine users have a higher risk of job loss. To fully understand the technological evolution it is sterile to reason purely in absolute terms, dividing between optimists and pessimists: the reading that gives the impact of new technologies is always inevitably personalistic and subjective. *G. Berta in Technology, entrepreneurship, future. A controversy of Silicon Valley, in A. Cipriani, A. Gramolati, G. Mari (edited by), Work 4.0: the fourth industrial revolution and the transformations of work activities, Florence University Press, 2018, 29*, analyzes two visions opposed to technological development, offered by two of the most famous entrepreneurs in the world: Mark Zuckerberg, founder of the Facebook giant, and Musk, founder of Tesla, Space and Solar City. In the diversity of perspective, something unites them; as the author points out, "if a unifying element is to be traced, it lies in the declared intention of changing the world through the diffusion of innovations" (page 30). The reading of the machine revolution offered by these entrepreneurs incorporates the concern to protect their respective fields of activity: Musk's goal is to create industrial solutions that will prevent (and eventually govern) the dangers triggered by artificial intelligence; while, Zuckerberg's business of representation rather than concrete goods, leaves room for software "always friendly and docile - or at least tamable".

*Renato Giannetti (Technology and work in the Industrial Revolution: employment, skills and jobs, wages and inequality, in A. Cipriani, A. Gramolati, G. Mari (ed.), Op.cit., 275*) adopts a perspective of historical reconstruction of the evolution of the relationship between technology and work in the four industrial revolutions, focusing on the analysis in particular on the development of the potential of technologies, the effects of these on overall employment (and on the relative redistribution of income) and finally on characteristics of the work organization and the required skills. According to the author, compared to previous industrial revolutions, the Fourth evolves at an exponential and non-linear rate and is pervasive also from a geographical point of view because it develops every sector in every country. Also in this essay the idea emerges strongly that the impacts of the Industrial Revolutions can be evaluated according to different historical, geographical and social perspectives that certainly influence the outcome of the evaluation. Pure *Stefano Musso* accepts a perspective of historical analysis (*The transformations of labor in the Industrial Revolutions, ibid., 359*) and traces the transformations of labor between the First, Second and Third Industrial Revolution. Focusing on the analysis of seven pivotal issues, the author concludes that there is a tendency to move back the socio-economic structure in the direction of the nineteenth-century world of work. From the point of view of the legal nature of the employment relationship there is a tendency to return to forms of individual contract which were common practice at the dawn of industrialization; also with regard to the stability of the work relationship, a sort of return to conditions similar to those of the first industrialization can be found, in which employment instability was a widespread condition; also on the relationship between work time and life time there seems to be a return to the tendency of the peasant and artisan work, in which there was not a clear separation between working time and free time. In this context, Industry 4.0 seems to open opportunities for improvement of the quality of work, flexibility capable of interpenetrating the needs of companies and workers. This outcome, however, is not obvious and requires an "effective social comparison (to be understood as a dialectical mixture of dialogue and conflict), a process capable of redefining the rules of the employment relationship (in terms that could be defined as 'non-subordinate participation') and to provide new tools for interaction and regeneration of social ties, starting from the fight against inequality".

Faced with the question "what will be the consequences of the Fourth Industrial Revolution?" Federico Butera is not satisfied with the answers that digitalization is a phenomenon limited to the introduction of new digital technologies, be they pessimistic (in the foregone loss of competitiveness of entire nations, dramatic disappearances of companies, the replacement of a large number of jobs by technology) or optimistic (because they see in digital technologies the opportunity to build better organizational forms and create more suitable spaces and working time, as happened in previous revolutions industrial). In his essay (*Industry 4.0 as participatory planning of social-technical systems in the network, 81*), the author proposes a perspective of overturned analysis: from the effects of technology to projects. Butera recalls the responsibility that everyone has as "system architect" to recompose through the design the upheaval that the new technologies will introduce in the cities, in the enterprises, in the organizations and in the new society. Enterprise 4.0 is a process that has already begun to integrate technology, organization and work: "now we need to design and implement it in a virtuous way in all the infinite variations required by the various companies, Public Administrations, territories, industrial platforms" (page 83).

There would be nothing more wrong than being carried away by the dominant technological determinism and being persuaded that organization and work are already incorporated in the solutions proposed by the technology providers or are just "the intention that will follow". Concretely, the project proposal for systematically addressing digital evolution is based on three key points: a) public and private industrial policies that intervene on growth variables; b) exemplary projects of social-technical systems in the network; c) participatory methodologies for the design and implementation of complex systems developed by different actors also in conflict but based on agreed parameters of prosperity and quality of life and with the participation of people. The scenario of the Fourth Industrial Revolution outlined by Federico Butera is that of organizational networks of companies in highly connected supply chains, inserted in a cognitive ecosystem. The network is itself embedded, that is, immersed in an ecosystem made up of companies (large and small), public administrations, universities, research centers, and above all of people interacting on the digital network. People who bring their skills and their passion. The basic units of organizations are operational and semi-autonomous microstructures, such as production islands and teams based on self-regulation, interchangeability and flexibility. The work of people is based on the responsibility of the results and requires not only technical but also social skills; it provokes commitment and passion and is made of positive relationships between people and machines. In this context, work calls for the creation of "innumerable and changing roles, professions and professions that are new or deeply modified. The company organization consists of a wealth of open roles and professions, scripts acted out and enriched by people, which are alternatives to the tasks and positions of the classical organization "(page 97). The device that makes it possible to bring the diversity of professions back to unity is the concept of a profession that better than the job manages to paint the various nuances of professionalism. In conclusion, the author proposes some methodologies for the design of systems for the strengthening of Industry 4.0, including the methodology of structural change management and territorial strategic planning.

*Diego Ciulli (The economics of platforms: technological trends and transformations of work, 203*) shares the sense of responsibility that each of us has before the changes that new technologies are bringing into our daily life and believes that we should "commit ourselves to so that the opportunities that our era offers us are opportunities for all "(page 211). In particular, Ciulli analyzes some technological trends that underlie the structural changes in the economy: first, the breaking down of space borders ("the world is closer") means that in the next few years, any company may be a small multinational capable of to offer its goods and services potentially worldwide; secondly, the diffusion of the so-called data driven innovation, or the ability to create value and innovation from data, will lead to the creation of new business models and products; finally, the increasing diffusion of connected objects and the progressive integration between manufacturing and software (think of the smartphone case from a technological object to a mass consumer good). Not being able to ignore the effects that these trends have on the organization of business and work, in terms of competition and productivity, the author proposes some initiatives to be taken to seize opportunities and minimize risks. In particular, he recognizes that "the challenge to keep together economic growth, job creation and quality work is all in the conversion of human capital, starting from the theme of formation" (page 210).

Also *Serafino Negrelli and Valentina Pacetti in Technologies, Labor, Organization in Industry 4.0, ivi, 373*, also starting from a sociological perspective of the phenomenon of Industry 4.0, warn the reader from taking the approach of technological determinism, which should be rejected in favor of a systemic view of the relationship between organization, work and technology. In fact, "the trap of technological determinism lies in the perspective error that prevents us from considering technologies as part of a system in which other institutional factors play an equally important role, such as professional training, industrial relations, relations between actors (networks of companies, relations between companies and research centers, relations between the training system and the labor market, etc.) "(page 374).

**2.1. The nature of** **work**

The Fourth Industrial Revolution has impacts on the nature of workas well, reducing the boundaries between sectors, between subordination and autonomy, and between "manual" work and "intellectual" work*. Laura Pennacchi (op.cit Innovation and work: the humanistic hinge between macroeconomics and microeconomics, in A. Cipriani, A. Gramolati, G. Mari (ed.), Work 4.0: the fourth industrial revolution and the transformations of the activities working, Florence University Press, 2018*), proposes an idea of ​​work as freedom, autonomy, creativity, democracy: therefore the conception of work as a practical-manipulative activity loses its centrality. In this regard *Enzo Rullani (Work in transition: tests of the Fourth Industrial Revolution in Italy, in A. Cipriani, A. Gramolati, G. Mari (ed.), Op.cit.)* Suggests that it is necessary to react to this devaluation of labor merely executive, looking more attentively at the new jobs that are taking shape: intelligent jobs, with a high level of generative knowledge, which give the worker strong autonomy. Therefore, it also changes the organization of work, being this activity with a high exploration content, no longer bound to prescriptions and programs dropped from above, but rather oriented towards the result to be achieved. In this new scenario, the worker can self-organize his work context, thus losing contact with the traditional image of an employee and employee.

**2.2. Workforce organization**

In the volume Work 4.0: the fourth industrial revolution and the transformations of work activities by A. Cipriani, A. Gramolati, G. Mari, Florence University Press, 2018, the theme of work organization in context 4.0 is addressed by a plurality of points of view. A. Bennardo (The role of the teams in industry 4.0, 3) assumes the typical perspective of the business dimension and finds that the type of work required by the Indsutry 4.0 presents complexity and multidisciplinarity that are captured and better valued in the group dimension rather that in the individual one. In the context of the team emerges what is called "collective competence": the definitions found in the literature on this subject are different, but it is agreed that the collective competence is something different and further compared to the sum of individual skills. The organizational plan also includes the perspective of the workspace, whose health and safety aspects are analyzed in the book (F. Carnevale, Health and safety of workers in Italy) Continuity and transformation from the first industrial revolution to the digital one , 117), and of time, with the consequences in terms of working hours (G. Della Rocca, Digital work, time and hours: the crisis of the standard timetable system, 251). The boundaries of the workplace expand towards the social space as a whole and new technologies, facilitating agile work, contribute to a deconstruction of the traditional conception of time. It should be noted that Della Rocca intends to avoid the logical overlap between the entry of new technologies and the transformation of the way of understanding working hours, highlighting the other social and cultural factors that have led to this evolution. From an individual perspective, one wonders, instead, what the relationship between man and the new digitized and globalized context in which he is called to operate (R. Bennati, Industria 4.0 and WCM), notes on human work: global digitalisation and participation, 19): the importance of the cognitive and transformative attitude of the human being is confirmed, with which the "pseudo-knowledge" of digital machines can not enter into competition. The man - machine relationship is analyzed from the point of view of the link between the level of widespread knowledge and the necessary expertise in the industrial work plan, as well as in the perspective of the government and the control of man on production processes and products. Workers' experience and knowledge are at the center, with evident repercussions on the centrality of learning and education. The attempt to facilitate and make more rational the relationship between man and machine is also found in the discipline of ergonomics, which focuses on the human being, with his physical and cognitive characteristics (S. Spada, Ergonomia e Industry 4.0 in the automotive sector, 455).

In the attempt of defining the nature of the work of the future, the contribution of *Giovanni Mari (Work 4.0 as a performative linguistic act) is useful, for a linguistic turning point in the analysis of the transformations of the work, in A. Cipriani, A. Gramolati, G. Mari (edited by), op.cit., Work 4.0: the fourth industrial revolution and the transformations of work activities, Firenze University Press, 2018, 315*) which states that work 4.0 consists of a "performative linguistic act", the whose strength is realized precisely in the recomposition of those elements that have always been separated, within the dualism of mental work / manual labor. The idea that work 4.0 marks the overcoming of the division between intellectual and manual work is also confirmed by *Francesco Totaro (Work 4.0 and person: plots and distinctions, there, 475*), which underlines how this represents, in fact, the discontinuity of knowledge work with respect to the mechanical approach of the Fordist organization of production.

*Ubaldo Fadini (The company enters the 'factory': the work over time of Industry 4.0, ibid., 263*) emphasizes the need to overcome the rigid division between the work tools and the individual workforce itself. What seems to be increasingly counting is self-organization, therefore a clear recovery of protagonism on the part of the work subject or of what Mari interprets as self-realization in work, which is based on the right to a chosen, quality work, to freedom in the work, with elevated cultural and professional contents, updateable and perfectible in continuity. Even though the whole text is trying to answer the question about the nature of work 4.0, it is not easy to reach a univocal conclusion.

Interesting is the contribution of Federico Butera who puts emphasis on a new idea of ​​work: a work of knowledge based on the responsibility of the results, which requires technical and social skills. The work of the Fourth Industrial Revolution - alternative to the Taylor-Fordist one, based on the tasks of a division of labor - will consist of new and deeply modified roles, professions and professions, generated not by ineluctable "technology effects", but by the design capable of reinventing the idea of ​​trade and profession on new foundations. It can therefore be centered on the professional model, in the perspective of a "professionalization of all", not only of managers and professionals. The model of the professions and professions of services (service professions) could, therefore, become a plausible reference paradigm also for the operational works and, in perspective, could unify the dependent work and the self-employment, the work of symbolic knowledge and the craftsman . The centrality of professionalism is focused, in particular, on Pietro Causarano's reflection, according to which it is precisely in the transition phase between old and new technologies that the aspect of professionalism would emerge, capable of overcoming the historical dichotomy between intellectual work (for the company) and manual work (in the company) and characterized by the combination - from the standpoint of autonomy and control over the production process - of three precise dimensions: knowing, knowing how to do and knowing how to be.

In a transformation phase like the current one, the question on what the role of labor law is in relation to the changes that are affecting the production paradigm and the concrete attitudes of labor dynamics is essential.

In a "macro" perspective, related to the context in which it is located, *Treu (A second phase of flexicurity for employability, there, 497)* frames the question in the context of flexicurity, a formula promoted by the Community institutions since the early 90s and in the first decade of 2000; in the last 15 years the parable has begun a descending phase and now, in conjunction with the economic crisis, the need for a change of course is revealed: it is necessary to promote the continuity of employment already during the working relationship and not to concentrate the protections on the sole dismissive moment. The effectiveness of measures aimed at guaranteeing the quality of employment in a constant relationship depends on the relationships between the business parties: the participation of workers is necessary and it is noted that in the absence of forms of institutional participation, forms of direct participation have developed, demonstrating the continuing usefulness of union relations in promoting the quality of personnel management. Public support is also necessary for this purpose: this collaboration, when it is implemented, is an innovative example of tripartite management of labor policies within companies. Outside the company context, state intervention is required in the implementation of a system of active policies that make the transition from one job to another sustainable, both in terms of short period (guaranteed by an effective system of services for employment), both in terms of economic sustainability (guaranteed by a system of social safety nets that respects the dignity of those who work).

This last point is shared by all the academic community and their studies on the nature of work, and also by *Riccardo Del Punta (A labor law 4.0, ibid, 225)*. As anticipated in the first paragraphs, the author deals with analyzing the impact that new production mechanisms can have on working relationships, analyzing individual institutions. The main aspect that is analyzed is the disruption of the categories that have guided labor law thinking throughout the twentieth century: work 4.0 should, as marked by greater worker's executive and decisional autonomy, weaken the dimensions of heterodirection and heterologous organization, questioning the meaning given to the notion of subordination in the 21st century; on the other hand, in a perspective that A. defines as less attractive, it is a notion that obviously would be needed in other contexts (we refer to the types of "gig" works), in which it is denied: recent jurisprudential expressions that have ascribed these workers to the category of self-employed as free, in essence, not to work. Also the introduction of agile work systems, to the extent that they weaken the employer's control over the space and time of the performance of the service, contribute to modify the meaning of subordination, as well as that of time-based remuneration. The latter represents "a complex signifier", which contains the raison d'être of the legal and social institution of subordinate employment and has a precise political significance: keeping the salary free from the performance of the business inevitably puts the worker and the employer in a dialectical relationship based on the opposition. A more flexible system had already been proposed since 1993, linking the remuneration to the productivity of the subject and the company, with a view to designing a participatory system on the pay side, and, coherently, on that of the union relations that should have (and should) evolve in the direction of strategic collaboration, based on a logic of productive and distributive collaboration together. In this context, in light of the new value attributed to the worker and his professionalism, it is considered that the institutes of professional occupations should be coherently reformed (for which, probably, the use of the notion of competence rather than the task) and dismissal: according to the same A. "the dignity of the worker can not be emphasized one day and trampled on the next one" (page 238). Here again, the essential theme of the systemic effects that free recession can exert on the employment relationship during its execution is also relevant: we are expressly talking about the "Concern that the increase in margins within which the employer can shake the threat of dismissal creates the conditions for an abuse of authority and therefore [could] compromise mutual trust, which is an indispensable condition for the efficiency of work relationships and the company" (page 239).

**3. The bank and financial sectors in the face of the digitalization**

Over the past years, the traditional banking sector is being challenged by several processes such as deregulation, digitalization and the entering in the financial market of new competitors (Berger et al., 2015). In particular, the banking sector is deeply involved in the challenge of the digital transformation, competing with non-bank operators, that are subject to a less restrictive regulation.

FinTech-companies, niche banks, and other financial institutions and companies such as Google and Amazon are only a couple of examples of technology-driven providers entering the market for simple financial services (Bush & Moreno, 2014). This gives rise to a new competitive environment. According to Dapp (2014) «*the offerings of the new players already range from digital payment solutions and information services, savings and deposit-taking right through to modern online banking, multi channel advisory and securities trading services as well as simple financing solutions and the use of compatible financial software*». Furthermore, as several authors have pointed out, banks are experiencing serious difficulties in differentiating themselves because of the easiness of duplicating services and products (Kumar & Gangal, 2011; Schuchmann & Seufert, 2015).

The profound challenges will not only affect the relationships with customers. Indeed, workforce organization and the labour market will experience major transformations, as well as the rights of workers and unions (Lodesani *et al.* 2018). This means gradually moving beyond the notion regarding the traditional work schedules and locations that have been embedded in employment relationships for decades, as it will be further argued in the next paragraph. However, challenges and opportunities are often the two sides of the same coin. Indeed, there are several reasons why implementing a digitisation strategy is indispensable for banks in the 21st century. No doubt, what matters is, among other things, the optimisation of process and cost structures as well as the adaptation to rising data volumes. Furthermore, the change in customer demands is an equally decisive factor as the new competition conditions in the market for standardised financial services. Last but not least, regulatory arrangements and control mechanisms can be handled more efficiently by a digital infrastructure.

**3.1 Changing relationship with the customers and business models**

The banking industry is heavily affected by the digital transformation as customers’ expectations drive the need for adapting strategies, processes and IT. To stay competitive Bush and Moreno (2014) argue that banks «…*must move further into the commercial lives of their customers. They must learn to play a greater role not just at the moment of financial transactions but before and afterwards as well*». A high-quality relationship between the bank and its customers can therefore be seen as a differentiation tool resulting in customer satisfaction and loyalty (Cohan et. al., 2006; Kheng et al. 2010). Indeed, to compensate for the loss of revenue sources coming from traditional products, studies have highlight the importance for banking to counterbalance these changes in their business models by granting more attention on individual customer benefits. According to Dapp (2014) «*The more intelligently banks connect existent and emerging data sets and information on the demands and the behaviour of their customers, the more effectively individual wishes can be met and customised offers can be provided. Here, they will only succeed if they a) make timely investments in modern data analysis management as well as a higher data quality as a competitive advantage, b) provide customers with additional benefit and c) integrate both in user-friendly and secure IT systems*»*.*

Customer relationships are fundamentally affected by digitalization and the production of great amount of data. According to *B. Jahn, and M. Pfeiffer, “Die digitale Revolution — Neue Geschäftsmodelle statt (nur) neue Kommunikation,” Marketing Review St. Gallen (31:1), 2014 pp. 79–93* the customer demands are changing from static and predictable to continuous adapting and unpredictable.

This altered usage of media requires more frequent interaction. However, many companies react rather than act in an active way. Companies are encouraged to focus on the crucial customer interactions (*S. J. Berman,“Digital transformation: opportunities to create new business models,” Strategy &* *Leadership (40:2), 2012 pp. 16–24*). Further topics such as big data and analytics stress the relevance of tools (*IBM, “Digital reinvention,” IBM Institute for Business Value, 2014 (available at* [*https://www-935.ibm.com/services/us/gbs/thoughtleadership/digitalreinvention/*](https://www-935.ibm.com/services/us/gbs/thoughtleadership/digitalreinvention/)*, retrieved June 15, 2016*) to create precise user profiles for inventing financial products, which fit to the individual customer (*Koye, B., and Auge-Dickhut, S. 2014. “Big Data als Game Changer,” Zeitschrift Führung + Organisation* *(83:6), pp. 386–391*). Customer loyalty can be established by inventing innovative products and outstanding service (Bain & Company. 2014. “Loyalty in Retail Banking 2013,” (available at http://bain.de-/Images/BAIN\_REPORT\_Loyalty\_in\_Retail\_Banking\_2013.pdf, retrieved June 15, 2016).

As a direct consequence od changing relationships with customers, digitalization changes the value proposition of business models. The first area is the product differentiation. Product differentiation is a consequence of more dynamic customer needs that require appropriately adapted products (Jahn, B., and Pfeiffer, M. 2014. “Die digitale Revolution — Neue Geschäftsmodelle statt (nur) neue Kommunikation,” Marketing Review St. Gallen (31:1), pp. 79–93). The behavioral products for example can be adapted in real time to the browsing or consumer behavior (Koye, B., and Auge-Dickhut, S. 2014. “Big Data als Game Changer,” Zeitschrift Führung + Organisation (83:6), pp. 386–391) of the individual customer. Thus, the market shifts from a seller’s to a buyer’s market (Lasi, H., Fettke, P., Kemper, H.-G., Feld, T., and Hoffmann, M. 2014. “Industry 4.0,” Business &

Information Systems Engineering (6:4), pp. 239–242). Within the main channels that need to be considered as part of a new business model, the omni-channel approach (Bain & Company. 2014. “Loyalty in Retail Banking 2013,” (available at http://bain.de/Images/BAIN\_REPORT\_Loyalty\_in\_Retail\_Banking\_2013.pdf, retrieved June 15, 2016) and improved communication and collaboration with customers (Sola, J., Gonzalez, A., and Lazaro, O. 2015. “Future Internet Technologies and Platforms to Support

Smart, Digital and Virtual and Business Processes for Manufacturing,” Enterprise Interoperability,

Hoboken: John Wiley & Sons, pp. 53–58) are core requirements. The goal of approaches in this area is to improve the customer experience when interacting with companies through integrated and co-existing communication channels. The interfaces to customers move in the context of digitalization of localized and personal to anywhere and impersonal. Furthermore, banks prioritize the use of customer segmentation and structure the related business areas accordingly. Digitalization allows and requires a finegrained analysis of customer segments. Two core segments emerge: “economy” and “premium” (Bain & Company. 2014. “Loyalty in Retail Banking 2013,” (available at http://bain.de/Images/BAIN\_REPORT\_Loyalty\_in\_Retail\_Banking\_2013.pdf, retrieved June 15, 2016).

In order to enable these all-encompassing changes, Schmidt *et al.* (*Digitalization of the Banking industry: a multiple stakeholder analysis on strategic alignment, Twenty-third Americas Conference on Information Systems, Boston, 2017* argue that one key resource is the organizational culture. Only companies with a high innovation affinity, particularly in the technology sector (Scott 2007), can actively participate in the digitalization. Companies that are in business for a long time tend to have a rather weak capacity for innovation in the field of digital technology (Scott, J. E. 2007. “An e-Transformation Study Using the Technology-Organization-Environment Framework,” BLED 2007 Proceedings, p. 55). Organizational hierarchies should be reduced through decentralization, to act more quickly by using short decision processes (Lasi, H., Fettke, P., Kemper, H.-G., Feld, T., and Hoffmann, M. 2014. “Industry 4.0,” Business & Information Systems Engineering (6:4), pp. 239–242). In addition, the architecture of the companies must be well-defined and standardized as well as based on reusable technology (Scott, J. E. 2007. “An e-Transformation Study Using the Technology-Organization-Environment Framework,” BLED 2007 Proceedings, p. 55). The used digital technology has to be coordinated with each other (Berman, S. J. 2012. “Digital transformation: opportunities to create new business models,” Strategy & Leadership (40:2), pp. 16–24). The variety of digital technologies led and still leads to an increasing volume of information that needs to be optimized (Sola, J., Gonzalez, A., and Lazaro, O. 2015. “Future Internet Technologies and Platforms to Support Smart, Digital and Virtual and Business Processes for Manufacturing,” Enterprise Interoperability, Hoboken: John Wiley & Sons, pp. 53–58.).

To sum up, how modern banking will look? According to *T. F. Dapp Fintech – The digital revolution in the financial sector. Algorithm based banking with the human touch, Deutsche Bank, 2014,* modern data analysis methods will be used just as routinely as a seamlessly integrated web of all distribution channels. Flexible digitised infrastructures will in future enable banks to implement modern technologies and appropriate finance-specific internet services efficiently and above all in a timely manner with the aid of (open) programming interfaces. Strengthening one's own brand and identity as well as the obligation to handle client data confidentially will also help to deliver a sustained increase in customer satisfaction and loyalty. The culmination of this development is algorithm-based banking (algo-banking), combined with a personalised greeting and individual service.

**3.2 Qualitative and quantitative impact on work**

According to Schmidt *et al.* (*Digitalization of the Banking industry: a multiple stakeholder analysis on strategic alignment, Twenty-third Americas Conference on Information Systems, Boston, 2017*), *so far, studies on the digitalization in the banking industry have mostly focused on the strategic level or on the customer perspective. On the strategic level, studies analyze and discuss the impact of digitalization on business strategies and business models (Schmidt and Drews 2016). On the customer level, studies from research and practice seek to describe and explain customer behavior in selecting and adopting new technologies and services (Aladwani 2001; Bain & Company 2014; Pousttchi and Schurig 2004; Pozza and Texier 2014; Roland Berger and Visa 2015). In addition to these two perspectives, banks should also consider the internal organization and the organization of the changing workforce as relevant input for assessing the current state of digitalization (Ross, J. W., Sebstian, I., and Fonstad, N. O. 2015. “Define your Digital Strategy - Now,” CISR Research Briefing (XV:6); Venkatraman et al. 1993). The alignment of business strategy, internal organization of the changine workforce and IT as well as customer requirements will become increasingly difficult (Bygstad 2015).*

Indeed, modern digitization, network and information & communications technologies are permanently changing the way that intangible services and information goods are supplied. They also enables processes to be structured more efficiently, synergies to be leveraged and productivity to be boosted.

This requires adjusting and adapting the traditional organizational structures and also new personnel equipped with proper management qualification and skills is deemed necessary to improve the efficiency of the whole organization: indeed, the latter cannot ground its competitiveness and innovation capability only on the use of modern technologies and IoT devices and platforms (Butera 2017) as the complementarity of changes and adjustments linked to the organizational structures and the upgrade of the skills of the workforce are unseverable dimensions. Without deploying extensive personnel and financial resources such an adjustment is impossible.

Studies have revelades that, as in the other sectors, especially within manufacturing, modern data analysis methods and all-encompassing digital structural change in the business segments of the banks will affect the less knowledge-intensive areas together with the easily standardisable and automated financial services (*T. F. Dapp Fintech – The digital revolution in the financial sector. Algorithm based banking with the human touch, Deutsche Bank, 2014*). However, the impact of technologies on the broad spectrum of professional profiles and skills is still widely unknown. Still, a number of digital vulnerabilities have been detected by current studies.

Firstly, Digitisation will lead to reductions in branch space and personnel in the long

Term. Of course a more digitised infrastructure within a banking group also has a longterm effect on staff and the existing branch network. Thanks to the modern information and communication technologies (ICT) as well as the merger of diverse distribution and communication channels, many services can be standardised. This paves the way for synergies which permit higher productivity and, at the same time, lower transaction costs. This leads to an increasing automation of non-knowledge-intensive services. As a consequence, less qualified staff can increasingly be replaced by future technologies and modern analysis methods. As a logical consequence and as a result of a cost-benefit analysis, traditional banks will in the medium to long term make staff reductions in the area of non-knowledge-intensive financial services as well as thinning out their branch network and reducing the branch space on a region by-region basis. There are, however, several drivers responsible for this development. At the macroeconomic level, for example, market consolidations in the financial sector resulting from the structural change in some cases also lead to market exits of entire banks. However, if it is taken into account that the financial crisis almost completely spanned this period, the decline turns out to be relatively moderate on average. The reasons are from a macroeconomic point of view primarily the financial crisis as well as from a business point of view the high fixed costs incurred in operating branches. This can lead to idle capacity costs if employees no longer work at full capacity due to digital distribution channels or self-service terminals installed at many locations (*Köhler, M. and Lang, G. (2008). Trends im Retail-Banking: Die Bankfiliale der Zukunft – Ergebnisse einer Umfrage unter Finanzexperten. Zentrum für Europäische Wirtschaftsforschung. ZEW. Dokumentation Nr. 08-01. Mannheim*). Especially the terminals in the lobbies of many bank branches have contributed to the steady decline in direct contact with the customer. Experts expect this trend to continue. Thus, a restructuring of the branch network with a number of large branch offices (flagship stores) and smaller satellite branches could lead to a 25% reduction in the number of the locations in the medium term (*Vater, D. et al. (2012). Retail-Banking: Die digitale Herausforderung. Bain & Company. Munich, Zurich*). An associated consolidation of the IT infrastructure will enable synergies to be realised and costs to be reduced appreciably.

Secondly, new qualification requirements for personnel are highly required and need to be developed. As anticipated in previous paragraphs, digitisation will also have an influence on the qualifications required of personnel. For instance, new professions, training programmes and academic chairs will be created because many developments and effects of the internet on the financial industry are still largely unexplored. New occupational categories will be created (e.g. data analysis specialists or algorithm specialists). With the growing demand for big data methods newcomers with backgrounds in statistics, mathematics, IT, data analysis or artificial intelligence and robotics have good prospects of finding a lucrative job because they can deploy their skills in a variety of sectors. In order to effectively deploy modern technologies and data analysis methods trained (data analysis) personnel as well as appropriate or newly focused management skills will be required. While the prospects for the less skilled will tend to deteriorate in a digitised work environment it will also become more challenging for highly skilled personnel and decision makers. For them the change will mean that their training will have to be broader and more interdisciplinary in order to handle the complex issues and to swiftly make the right decisions based on the many sources of information (*T. F. Dapp Fintech – The digital revolution in the financial sector. Algorithm based banking with the human touch, Deutsche Bank, 2014*).

The need for new professionals able to develop new business and, above all, to manage the huge databases available to companies is stressed also in the article by S. Bottino, *La quarta rivoluzione industriale e il marcato del lavoro, Bancaria 9/* 2018), according to which the bank industry should get the most out of their resources by creating the conditions for a retraining of the staff present in the company.

With reference to the effects on employment deriving from the introduction of new technologies, the article reports that there is common believing across several bank managers that an intervention on the company organization will soon be indispensable, in order to make it more flexible. Furthermore, a closer connection between the back office and the front office is required in order to manage employment reductions without significant social impacts, providing for a gradual phasing-out system.

In conclusion, there is no doubt that new and specific professional skills able to cope with the news on the technological front are required. In this context, the link between companies, schools and universities must be strong through the creation of partnerships aimed at building the necessary skills, especially for young people. It is therefore necessary to strengthen the connection between the world of work, universities and research centers. In almost every reality in Europe there is a concrete effort to offer internships or other contact modalities, aimed at creating a closer connection between education and the world of work. The goal is to create new functional skills for their enhancement within the company organization. Therefore new skills are developed, which are not only the prerogative of economists, but which concern engineers, physicists, mathematicians, and which are aimed, among other things, at managing this large amount of data and possible related products.

**3.3 Challenges ahead: changing management practices and female employment**

Although studies on the impacts of digitalization on gender are still residual, it may be thought that digitalization will promote changes on the theme of “women and work”, so that some scholars consider technology as the only tool for women's empowerment (Costantini F., *Donne, impresa e digital divide*, 2012 in Brollo M., Serafin S. (A cura di), *Donne, politica e Istituzioni: le imprese delle donne*, Forum, Udine p. 209-250). “Women and Work" is currently a much debated topic both in academia and policy implementation as a result of its practical implications, changes in family structure and consequently in society, but also for the gender discrimination that remain in the Workplace. This issue has taken on considerable importance, especially in recent years, because women in all European countries, although with significant variations, have started to work outside the domestic context.

Considering the current situation, looking at the data provided annually by Eurostat, it can be seen that in 2017 women were more employed in some European countries than in others. In particular, the country with the highest female employment rate was Iceland (84.5) immediately followed by Sweden (79.8). At the very bottom there were Greece (48) and Italy (52.5). It should be noted that the female employment rate in some countries is still far from the female employment rate of 60% that was decided to reach in 2010 at the Lisbon Council in 2000.

**Figure 1:** Female employment rate, 2017

Source: Database Eurostat, 2017.

We need to compare the female employment rate with the male one to understand if there are any differences. Looking at Eurostat data for 2017, we can see that in all European countries the male employment rate was higher than the female. Italy and Greece were the countries with the largest gender gaps (19.8; 19.7), while Lithuania, Sweden and Norway were the countries with the smallest differences between genders. In addition to the different participation of men and women at the work there is an other question. Indeed in all european countries, men occupy higher positions than women. This phenomenon has been defined “glass ceiling” by Carol Hymowitz and Timothy D. Schellhardt in an article published in "The Wall Street Journal" in 1986 (*Hymowitz C. e Schellhardt T. D., in «The Wall Street Journal», 1986, cit. in Albertini, 2011*). This metaphor, used in the common language and very popular in the academic context, exemplify the invisible but impenetrable barrier that in the workplace prevents women to hold positions of particular responsibility. According to a recent Eurostat study "The life of women and men in Europe" in 2017, 34% of managers in Europe were women and 66% were men. The highest percentage of women managers is in Latvia (46%), followed by other countries where the percentage of women is around 30-40% (for example: Poland, Slovenia, Hungary, Lithuania, Bulgary, Sweden, Estonia, United Kingdom, Ireland and Portugal). There were also countries where the percentage of women managers is less than 30%. Luxembourg was the country with the lowest percentage (19%). Reyneri E. (*Sociologia del mercato del lavoro I. Il mercato del lavoro tra famiglia e welfare*, 2011, Il Mulino, Bologna.) argues that for women advancing career is more difficult than for men because careers continue to require high investment of time and strong geographical mobility and these demands are scarcely reconciled with the roles of mother, wife and worker.

Figure 2: Gender composition of managers in Europe, 2017

Source: database Eurostat, 2017

In Europe another widespread problem is that women earn less than men. This data is obtained by calculating difference between average gross hourly earnings of male and female employees (as % of male gross earnings). According to the Eurostat report "The life of women and men in Europe" in 2017 and the global wage report elaborated by ILO gender pay gaps represent a social injustices again (Eurostat, 2018: https://ec.europa.eu/eurostat/cache/infographs/womenmen/bloc-2c.html?lang=en).

The data show that in Europe women earned less than men but this gender pay gap varies from country to country. “The largest gender pay gaps were observed in Estonia (25.3 %), Czechia (21.8 %), Germany (21.5 %), the United Kingdom (21.0 %) and Austria (20.1 %). On the other hand, the smallest differences in earnings between women and men were found in Romania (5.2 %), Italy (5.3 %), Luxembourg (5.5 %), Belgium (6.1 %) and Poland (7.2 %) (Ilo (International Labour Office), *Global Wage Report 2018/19: What lies behind gender pay gaps*)”. In the same Eurostat report we can read that “the profession with the largest differences in hourly earnings (23 % lower earnings for women than for men) were managers. The smallest differences were observed for clerical support workers (office clerks, secretaries etc.) and service and sales workers (both 8 % lower), two of the professions with the lowest salaries (Eurostat, 2018: https://ec.europa.eu/eurostat/cache/infographs/womenmen/bloc-2d.html?lang=en.)”.

These gender discriminations remain in the labour market even statistics have amply demonstrated that women have a better level of education than men (Eurostat, 2018, *[The life of women and men in Europe](https://ec.europa.eu/eurostat/cache/infographs/womenmen/index.html?lang=en)* in 2017). Many scholars have questioned the possible causes of the wide gender gaps that we have been discussing so far. According to many of them (Zajczyk, Borlini, 2010; King, Ortenbland, Ladge, 2018) and according to some analysis ([Istat 2015](https://www.istat.it/it/files/2015/12/come-cambia-la-vita-delle-donne.pdf); Magda, Cukrowska-Torzewska, 2018;) motherhood is one of the factors that prevents women from reaching management layers and the boards of directors. More scholars (Brollo M., Filì V., *Le donne tra il desiderio del figlio e la certezza del lavoro*, 2008, in Brollo M., Serafin S. (A cura di) (2008), *Donne, politica e istituzioni. Tra desiderio e certezza*, p. 67.) of different disciplines (Sociology, demography and law) have underlined the existence of a strong connection between motherhood and women’s work.

This connection can be whether positive or negative. The link is positive when having a job and a secure earnings increase the desire to have children, on the contrary the bond is negative when having children is an important inhibiting factor for the continuation of the work for women.

The causes of this negative connection are often identified in the incorrect division of childbearing and family and housework responsabilities between the gender and its organisation. This thesis is supported by the numerous data provided annually by Eurostat, which underline that, especially in the countries of Southern Europe, domestic work is still completely made by women.

In this respect, there are numerous studies which have shown that in Europe firm and organization do not tend to invest in women's careers both when they are already mothers and when they are not. In the latter case, employers fear that family responsibility may arise in the near future.

According to D’ascenzo, (2011) an other reason may be women's difficulty in accessing the social company network, which is usally male-dominated. Indeed, these networks are defined as "old boy networks".

Finally, scholars have identified additional factors that would be the cause of the glass ceiling: male chauvinism in the workplace, work organization follows a male model (hours, presence in the workplace) [Behson, 2002], the style of male leadeship also used by women managers (“*think leader- think male* [Fedi, Colombo, Bertola, Rollero, 2017]), self-exclusion by women, but also employment in part-time jobs.

In order to achieve an equal gender presence in the workplace, different countries have activated policies that are mostly direct only to the female.

For example the introduction of gender quotas in many countries, first of all in Norway in 2008. This policy was also adopted in Italy with Law no. 120/2011 (Golfo-Mosca). Recent studies (Smith N., [*Gender quotas for women on boards of directors improve female share on boards but firm performance effects are mixed*](https://wol.iza.org/uploads/articles/461/pdfs/gender-quotas-on-boards-of-directors.pdf), 2018, in Iza World of Labor, December 2018.), especially in Norway, but also in other European countries, do not clearly demonstrate the positive impact generated on business performance. Some studies show positive impacts, others negative and others still neutral.

In addition to the gender quotas, different labour policies for working mothers have been developed. In Italy, for example, the “Riforma Biagi”, delegated law no. 30/2003 and legislative decree no. 276/2003 introduced flexible working time contracts to favour women's work.

Gender studies in banks and finance are very recent and they study the impact that some policies have had on gender composition at the boards of director and at the management level.

In recent years numerous scholars [Adams and Mehran, 2012; Pathan and Faff, 2013; Berger, Kick, Schaeck, 2014; Garcia-Meca, Garcia-Sanchez, Martinez-Ferrero, 2015; Owen, Temesvary, 2018] have studied the boards’ gender composition in the banking industry. Specifically they have studied the impact of boards’ gender composition on bank performance. Their findings ambivalent results, because some of them found a positive impact on performance, others discovered a negative impact and finally a group of scholars detected little to no impact. In 2018 Owen and Temesvary, who studied the impact of boards’ gender composition on banks, came to different conclusions from previous scholars.

They “identify threshold results, which indicate that the relationship between bank performance and board gender diversity changes directions once banks increase gender diversity on their boards from low to higher levels (Owen A. L., Temesvary J., *The performance effects of gender diversity on bank boards, in Journal of Banking and Finance*, 2018, 90, p. 62)”. Their results suggests “that banks’ continued voluntary expansion of board gender diversity is likely to bring overall performance benefits for well-capitalized (well-managed) banks (Owen A. L., Temesvary J., *The performance effects of gender diversity on bank boards, in Journal of Banking and Finance*, 2018, 90, p. 62)” and then their analysis appears that “the benefits of board gender diversity are higher when there is more than one woman on the board – so banks with no women or only one woman on thei boards should seek this greater representation (Owen A. L., Temesvary J., *The performance effects of gender diversity on bank boards, in Journal of Banking and Finance*, 2018, 90, p. 62).

Before we talked about “vertical segregation”, that is the different presence of men and women in the CDA of a company or a firm.

This vertical and hierarchical occupational segregation in the workplace exists also in the banks and in finance and since the early 2000s the problem has been analysed in some scientific articles (Owen A. L., Temesvary J., *The performance effects of gender diversity on bank boards*, in Journal of Banking and Finance, 2018, 90, pp. 50-63.), but also in the newspapers and in the institutional reports. After these analyses and simultaneously the recent interest in the subject some banking institutions, including the WorldBank, have developed a Gender action Plan (Jones B., *‘A More Receptive Crowd than Before’: Explaining the World Bank’s Gender Turn in the 2000s*, in Progress in Development Studies, 2018, 18, 3, pp. 172–188) to increase the presence of women in the workplace but specifically on boards.

For example, a recent article in the Harvard Business Review (King M., Ortenblad M., Ladge J. J., [*What will It Take to Make Finance More Gender-Balanced?*](https://hbr.org/2018/12/what-will-it-take-to-make-finance-more-gender-balanced#comment-section), 2018, in Harvard Business Review) argues that the images conveyed by the media reproduce gender stereotypes. As a matter of fact, only men are represented as those who achieve success in finance, thus discouraging women from doing the same.

The same article also explains how gender equality in finance is not achieved even in Sweden, one of the countries where the participation of women is highest. The authors, interviewing Swedish and US finance professionals, found that young people and customers want more women in finance companies. According to the authors, the presence of women does not represent a career progression but only a status as token woman on the team. Considering these differences in the labour market and the processes of continuous change and evolution underway, such as globalization, demographic changes, digitalization of production processes and service, it is necessary to consider how these changes will impact on the gender component in the workplace. In a world in continuous evolution and with an increasingly heavy impact of technology, it is necessary to think about the future of many professionals and the changes they will experience.

In particular we must ask ourselves what role digitalization can play in gender inequalitiy? Can digitalization promove the female emancipation in the labour market and in the Workplace? How can this be done? Will it help to improve the work-life balance for women?

We live in a society in which technological innovation has made possible to speed up and simplify certain services and production processes; For example, technological developments have made it possible to process an increasing number of data and information automatically.

These changes have generated impacts on the production system, on business models, on the way of working but also on the place from which to work, on the organization of work, on the skills required and on professionality. These innovations have eliminated some tasks, they have created new ones but they have also generated the evolution and change of others professions.

Focusing on banks and finance, in a recent Eurofound document (Tzortzakis, Ioannis, [*LIoyds bank’s digital transformation*](https://www.eurofound.europa.eu/publications/article/2018/lloyds-banks-digital-transformation), 2018, Eurofound.) we can read that banks are investing in digitisation and in staff to improve digital services and with this process there are more jobs losses than jobs created and technologies are drastically reducing the number of bank branches. Apart from these dynamics, which are discussed in another part of the text, we now consider how technologies can help women in the workplace.  As it has been written just above women have higher levels of education than men and among young women and young men the Digital gender divide (access, skills and usage) is contained, it begins to increase among over 45 (Costantini F., *Donne, impresa e digital divide*, 2012 in Brollo M., Serafin S. (A cura di), *Donne, politica e Istituzioni: le imprese delle donne*, Forum, Udine p. 240). Therefore there is a gender issue at generational level.

This problem can be solved by promoting training courses for employees over 45, so that digitalization is not a reason to exclusion them from the labour market. Indeed some banks are promoting training courses to prepare employees for the use of new technologies (Tzortzakis, Ioannis, [*LIoyds bank’s digital transformation*](https://www.eurofound.europa.eu/publications/article/2018/lloyds-banks-digital-transformation), 2018, Eurofound.). Having overcome this gap even for older and existing workers, it can be seen that in contemporary society there are more Cyberellas (women with high professional skills in the scientific and technological research) than Cinderellas (Costantini F., *Donne, impresa e digital divide*, 2012 in Brollo M., Serafin S. (A cura di), *Donne, politica e Istituzioni: le imprese delle donne*, Forum, Udine p. 209-250).

In conclusion, the introduction of innovative technologies in the workplace has changed the interpersonal relationships (with the costumers and with the coworkers) that are mediated by a technological device, and also the relationship with institutions has changed. Therefore the digitalization can lead flexibility in time, place and organisation of work. In the future, the presence of women in the workplace may not be necessary, because would make it easier for women to organise their housework and childcare. For example the customer relationship, which takes up a lot of time in finance, could also be managed remotely. Forms of work such as teleworking and other type of smart working could be used much more. The Internet of Things, which increasingly allows objects, appliances and physical spaces to be connected, should also make it easier for women to work at home. However, not all scholars agree on the effectiveness of these instruments in shaping inequality by gender. For example, Carr (2002) argues that telework remains incompatible with careers because presence in the workplace is essential. While the analysis of Fedi, Colombo, Bertola and Rollero (2017), revealed that smart-working helps women to reconcile work and family responsibilities. Although there are neither research nor empirical evidence supporting these trends, avoiding to think in terms of technological determinism and supporting training for women, we believe that the latters could benefit from digitalization by being more present on boards or becoming managers as well.