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SMART WORKING

THE IMPACT OF NEW WAYS OF WORKING ON LEADERSHIP. A LITERATURE REVIEW

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To my family,
To my friends

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Il candidato dichiara che il presente lavoro è originale e non è già stato sottoposto, in tutto o in parte, per il conseguimento di un titolo accademico in altre Università italiane o straniere.

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INTRODUCTION & SUMMARY

THE PURPOSE OF MY DISSERTATION - The purpose of my dissertation is to study the effects of new flexible ways of working in organizations and workers, leaders in particular. Whether you define in different part of the world *Smart*, *Agile* or *Flexible work*, this phenomenon is increasing its popularity in both public and scientific debate, because of the attractivity of the benefits that these models intend to provide. The implicit premise is that flexible work lead to an increase of productivity and individual satisfaction, since workers could manage autonomously when and where to work and could find the optimal match of business objectives with personal life needs.

This would have been possible as a consequence of the continuous innovation of digital technologies which has led to the fall of certain physical barriers and it has immediately opened the doors to debate work arrangements and organizational issues. Additionally, we are in front of an unprecedent multigenerational workforce with different capabilities and approaches to the abovementioned technology, thus it is required to actual and future leaders to be aware of and manage these changes in the workforce.

CHAPTER 1 – SMART WORKING: A NEW WORKING MODEL – In the first chapter, it is discussed the concept of *Smart Working* and the comparison to the existing and previous models of work. Firstly, it is discussed the existence of *Smart Working* and whether this is could be defined as a new model of work or if it could be explained with already existing schemes. To the definition of the concept concurred three perspectives: academical, business and legal. It is found in the academic literature debate that *Smart Working* is a quite recent topic, if we consider it as whole work system, but single elements as

flexibility, autonomy, trust and collaboration were largely treated. Despite the high risk of biased evaluations, it is valued also the contribution of business consultants and ICT companies, because of their active role in defining, influencing, forming and selling flexible solutions for work. Some attention is given also to the efforts of legislators in defining the legal boundaries in which flexible ways of working could take place, confirming that it is recognised from the society as a relevant issue. To conclude this review of definitions, it is presented the BBB model to put together the elements of *Smart Working*. Even if it not unanimously considered as in contrast with existing work models, it is confirmed that new flexible ways of working are playing a key role in the transition from the Industrial to the Information Era.

CHAPTER 2 – ICT IN FLEXIBLE WORK – One of the analysed elements of Smart Working is the technology, which is facing an extensive innovation phase that is affecting all the aspects of life, especially work. The aim of this chapter is to restrain the analysis to those digital technologies that regard flexible ways of working and to study which opportunities and limitations are provided by the adoption and implementation of ICT in work. Therefore, it is provided an analysis of existing type of tools and related contributions to work and collaboration. Also, some findings are reported about the existence of differences in *digital fluency* between workers and the changes on control systems of work, with consequently shift from *time* to *attention* control.

CHAPTER 3 – MULTIGENERATIONAL WORKFORCE – In the third chapter we addressed the topic of generation, intended as "people within a delineated population who experience the same significant events within a given period of time" (Pilcher, 1994). Despite the simplicity of the concept and objectivity of age differences, it is firstly questioned the existence and validity of generation as a way to categorize workers' attitudes and make considerations about the characteristics of workers. The majority of analysed sources agree on attributing to generations different values, expectations, and behavioural traits and on the presence of a common need of more flexibility with different levels between cohorts. Also, there is consensus on the existence of differences on confidence to technology between younger and elder workers and its strategic value.

CHAPTER 4 – EMERGING CHALLENGES FOR LEADERSHIP – In the last chapter, the contributions of the previous chapters on ITC and generations are gathered in the perspective of leaders. Leadership is treated with a holistic approach that takes into account not only individual capabilities but also context variables and the role of followers. It is debated how leadership in flexible work organizations needs to combine elements from different styles leadership, as the E-technology and Complexity leadership. Finally, it is highlighted how future leaders need to improve social and soft skills rather than technical competencies to face the challenges of managing a multigenerational workforce in a context where digital technologies are changing the shape of work.

1. CHAPTER

SMART WORKING: A NEW WORKING MODEL

1.1 Introduction

In 1911, Friedrich Taylor put together his efficiency methods and studies about work inside the book *The principles of Scientific Management*, defining the industrial organization system and setting the basis of industrial engineering. The underlying intention was to criticize the main thought that workers know how to manage their work on their own, and to support his theory of system over men, the author synthetized four principles of Scientific approach as follow: *first*, the development of a science of a true science, *second*, the scientific selection of the workman, *third*, his/her scientific education and development, *fourth*, intimate friendly cooperation between management and men (Taylor, 1911) .

The aim of this monograph was to address three critical questions:

- wherein scientific management differ from ordinary management;
- why better results are expected from scientific management;
- given the importance of having the right head of the company, does the choice of what kind of management adopt must be left completely to leaders or not.

In 2001, this book has been nominated as *the most influential of the century in management subject by the Academy of Management*, and they sustain that the observations of Taylor were so strong that they renewed the work organizations and became the paradigm of work in the Industrial Era.

Today, we are living in what academic literature define as the Information Era, where Information Technologies are deeply changing the way we work.

Recently, the words *Smart Working* has started to appear inside the scientific debate referring to an organization model that consists on the systematic combination of several existing systems as mobile work, telecommuting, telework and other flexible solutions. One hundred years after the publication of Taylor's book, we took that questions and we can find that they are still actual for the analysis of Smart Working. What are the differences with normal management? Why are expected better results from adopting these new ways of working? Does the choice must rely on leaders or should be shared with employees?

The aim of this chapter is to define Smart Working from three different perspectives, scientific theory, management practice and legal norms and investigate how the SW model is related to previously existing models and how it could answer to the abovementioned questions.

The first paragraph introduce how the Smart Working is defined in scientific literature, and which are the drivers of the adoption of Smart Working. Then, the second paragraph describes definitions provided by IT companies and consultants. Companies as Microsoft, Plantronics, Cisco, and other players in the ICT sector, decided to provide new options among where, when, and how to accomplish tasks clearly with the purpose to increase their business, playing anyway a key role in developing and interpreting new ways of working. Taylor himself started from its practical experience as engineer and could be defined as a predecessor of modern business consultants who wanted to investigate how to increase efficiency and performance. The third paragraph highlights how some countries in Europe are trying to set legal standards and protections about new ways of working and how these legal and political initiatives contribute to the definition of these managerial phenomenon. Finally, we adopt the BBB model to sum up the main features of SW for a better identification and comparison of differences and similarities with the Scientific Management innovations, and more generally which are the innovations, if any, to the world of work.

1.2 Defining Smart Working from the scientific Literature

The words *Smart Working,* in the meaning of managerial model or philosophy, began to appear in the scientific literature in the last decade. It is necessary to clarify as premise that there is not a specific paper that is commonly recognised as the inspiring funda-

mental source on this topic for two reasons: from a lexical point of view there is a variety of terms that refer to similar concepts in different countries and from the academic debate point of view because the discussion on single aspects has started long time before. For example, diffusion of technologies, work-life balance, work overload, autonomy and flexibility have been studies separately since the eighties, but it is in the last decade that we found the first scientific contribution of models that consider these elements inside a single system.

In the studies of Ahuja et al. (2007), we found the first considerations about the adoption of model of work for virtual workers that live different experience of autonomy depending on the characteristics of work environment and that have to balance the previously mentioned aspects of flexibility, work-life balance and work overload. Another step is provided by other researchers who stated that *formalised teleworking schemes* are better than informal practice, because they found that formal models of work offer significantly higher level of flexibility, autonomy, and control, plus they guarantee a substantial justice in the distribution of work between co-workers and teleworkers (Fogarty, Scott, & Williams, 2011).

In this thesis we adopt the current definition provided by the scholars of the Osservatorio Smart Working of Politecnico di Milano, who are qualified and cited in Italy and Europe and consider Smart Working (SW) as *a set of modern and not-conventional organisational models that are characterised by high flexibility in the choice of the working spaces, time and tools, and that provides all employees of an organisation with the best working conditions to accomplish their tasks* (Gastaldi, Corso et al., 2014).

In these definitions there are four drivers that lead the managerial change toward SW: Autonomy, Trust, Collaboration/Communication and Flexibility.

Autonomy

In this new way of working, the free choice where to work, when and how, is replacing the traditional direct control by managers with offices that allow to see if the employees are sit or located at their station. Autonomy is measured by the level of independence in organizing your own work. Obviously, it is strictly related to an increased amount of responsibility due to the shift of decision power that is now put in the hands of the worker rather than its boss, but still leaders have to be fully involved in a coordination process

and they have to change performance evaluation process to more result-oriented perspective (Lake, 2015).

Trust

To introduce SW, it is necessary that top management and employees share certain values, common goals and live their work relationship inside fiduciary boundaries. An effective metaphor of the trust element in given by Frans Van Rooy[1] that defines Trust and Control as communicating vessels, a zero-sum game where the higher is the control level the lower the trust between people.

According to Covey (2006), Trust could lead to success to business and all aspects of life, and he identifies 5 types of trust:

- Self-Trust: you have to trust yourself and build your credibility, if you want to be trusted by others.
- Relationship Trust: you have to build a consistent behaviour. In this case, it works as a guarantee for managers that employees will respect tasks and deadlines.
- Organizational Trust: leaders have to align the organization to structures, systems, and symbols of reciprocal trust.
- Market Trust: it is the trust that other companies have in your company, basically your reputation in the market.
- Societal Trust: it is trust gained when you contribute actively to your community and stakeholders.

Collaboration

When you adopt SW, there are changes in Collaboration and Communication between employees and between managers and employees work in both vertical and horizontal directions. All the people have to be involved in this cultural change, because the way you communicate the goals to reach influence the performance of employees, and the performance of employees in return influence the goals and strategy like the application of SW itself (Clapperton & Vanhoutte, 2014). Nowadays, in most of the companies, it is necessary to set everything is necessary to work in Team and build a positive interrelation between members in order to accomplish tasks (Olaisen & Revang, 2017).

[1] Performance Consulting, quoted in (Hartog et al., 2015)

According to Olaisen, now digital teams have the possibility to build social ties even without physical interactions thanks to technology platforms. So, the collaboration is losing some boundaries given by the physical elements like as workplaces, which could now be redesigned in order to provide the best conditions.

Flexibility

Flexibility is defined as the capability to answer properly to different challenges in a competitive business environment. A flexible company can adapt its organizational practices in response to exogenous non-temporary changes. Flexibility could be analysed with four different lenses according to Golden and Powell model (2000): *temporal*, so short, medium or long term horizons, *range* foreseen and unforeseen circumstances, *intention*, offensive or defensive and *focus*, internal or external, depending on the target of the departments.

From the research of Neirotti, Raguseo, and Paolucci on this topic with an analysis on data gathered from almost three-hundreds small-medium Italian companies it was found that flexibility in work is chosen depending on two related conditions of firstly competitive and every-day more complex environments and secondly ICT usage and opportunities (2017). Hence, there are different kind of flexibility in the way you work if you have the possibility to choose the time, the place, and the tools you use, they highlights four drivers of flexible work: for cheaper input costs, operational drivers, for strategic drivers, and then for individual motivations (Neirotti et al., 2017)

All these variables have an impact on how you can account and be controlled on what you produce and that has a direct effect on leadership and hierarchy (Stanko & Beckman, 2015). There is an impact on the managerial culture because of the less direct control from supervisors. Whether you adopt external temporary workforce, overtime hours, job enlargement or enrichment, workforce, and the freedom of an open mind to new ways of working are the key resources in flexible business strategies, otherwise, in absence of flexibility, SW is stuck in a rigid formula (Lake, 2015).

1.3 Defining Smart Working from consultancy and companies' perspective

The contribution provided by ICT and Consultancy companies is crucial in the definition of Smart Working and New Ways of Working. As for Taylor almost one century

ago as a consultant, the effort of these companies is motivated for sure by the economic interests in providing new business services and their business activity could be an element of bias in the white papers they wrote. Anyway, as a matter of fact they are not only observers of the evolution of work models, but they are directly influencing these changes with new technologies and services in the strive to increase their market share. For these reasons there are many definitions that come from non-scientific literature which are very precise in describing what Smart Working is or what could be in the future, and it is interesting to consider also these sources for an extensive comprehension.

Microsoft

One of the key elements is the potential permanent connectivity of the information worker, and Microsoft, which is one of the first mover from the nineties in the digital work tools sector, reports his illuminating considerations about which challenges are arsing "*In a new world of work where collaboration, business intelligence and prioritizing scarce time and attention are critical factors of success*".

Moreover, information workers need new tools to effectively plug and play from a work system that could "*impose additional burdens of complexity on workers who already feel the pressure of ubiquitous access and ever-rising expectations of productivity*" (Microsoft, 2005).

The contribution of Microsoft is about information and intercommunications workers and it is premature than a Smart Working definition, but it centred the fact that empowering workers "*means more than just giving them more software and more training. It means making it easier for them to bring their unique talents, experience, and judgment to bear in situations where they can make an impact. It means making collaboration with colleagues down the corridor or around the world as natural as working alone. It means making access to information secure, ubiquitous and unobtrusive*" (Microsoft, 2005). So, it does not provide some specific elements or a model of work, but it gives us some coordinates about the challenges that technology brings to collaboration and to constant availability.

Cisco

Another world-recognised IT company, Cisco, is putting some effort in define how word of work is changing. It starts from the premises that the technology has led the in-

dustrial age to a final step. But all these innovations in the last twenty years affected the work shapes of the already existing work models in an evolutionary way. What is happening now is not evolutionary, but instead it is a paradigm shift under the name of Smart Working.

The definition provided by Cisco states that "*Smart Work is an act of production performed independent of time and place. In its ultimate form, the "office" no longer exists and traditional work conventions such as work hours are irrelevant. Smart Work is results-oriented: it is often social and collaborative, and the result of a networked way of operating, with exchange, collaboration, and co-creation processes optimizing work and its output*" (Boorsma & Mitchell, 2011). Therefore, we can identify in this case some more specific references to time and place, to a result-oriented approach and to human resources management.

Plantronics

Another similar definition come from Plantronics, for which "*Smart Working is a business-focused approach to flexible working that delivers more efficiency and effectiveness in work organisation, service delivery and organisational agility, as well as benefits for working people. Key features are management by results, a trust-based culture, high levels of autonomy, flexibility in the time and location of work, new tools and work environments, reduced reliance on physical resources and openness to continuing change*" (Lake, 2015). In this case, we have the declination of time and place with autonomy and flexibility, and moreover there is the element of trust placed as.

Clapperton & Vanhoutte

SW is not "*about getting rid of office*" but "*is getting rid of having only one option*". Moreover, they define SW as an opportunity that could improve the conditions of both firms and individuals, if there are three enabling conditions: reciprocal trust between people, spaces set for different professional needs and technology must be a resource and not a limit.

"*From the outset we had defined 'smarter working' as letting people work where and when as they wished as long as it delivered the right results, saved costs and respected the planet. Space, technology and people management worked together intensely to make the business more effective*." (Clapperton & Vanhoutte, 2014).

According to the authors of the SW Manifesto, the definition makes clear that SW is not only a matter of physical and office layout, but there is also a fundamental element of complete freedom to choose your work methods and autonomy in managing all the aspects.

CIPD

A definition of Agile Working, synonym of SW in many countries, is provided by the Agile Future Forum which consider it *"as a set of practices that allow businesses to establish an optimal workforce and provide the benefits of a greater match between the resources and the demand for services, increased productivity, and improved talent attraction and retention*" (CIPD, 2014). They also provide four dimensions to develop and comprehend the concept: time, location, role, and source. In this case, what in the Clapperton's definition was described as 'people management' is now identified in two different dimensions, the role which regard the object of the job and the source which regards who is the worker, so the subject of the job.

The Smart Working Book

In the opinion of the Digital Workplace and Innovation Manager of Mediolanum[2], SW is the Application of digital, social, and behavioural disciplines to activate a "New Way of Working" based on knowledge sharing, collaboration, and transparency, with an horizontalization of hierarchies and a high level of trust. Increase performance and strengthen the WL balance are the goals of SW. Remove time control, in favour of multidisciplinary skilled team, and workplaces goal-oriented rather than structure oriented.

Moreover, for the Program Manager of the Dutch Foreign Minister, SW represents a change of paradigm applicable to all the work flows/processes. It is enabled by tools that make the work more flexible e renovate managerial roles. Hence, the new kind of leadership requires more involvement of employers.[3]

The authors of this book these definitions could be reconciled with four levers: management culture, new management roles, digital collaboration and the renovation of offices as a place of meeting rather than the sum of single desk seats. (Hartog, Solimene, & Tufani, 2015).

[2] Demetrio Migliorati, Digital Workplace and Innovation Manager, Mediolanum.
[3] Hermien van Triest, Program Manager smart working of Dutch Foreign Minister

Smart Working Handbook

In the Smart Working Handbook (Lake, 2015) we find another model which provide a structure to analyse the progress and maturity of the adoption of SW. There are 4 levels:

- Isolated Initiatives: they are the first steps toward flexible working, enhanced mobility, and work-life balance.
- Basic Flexibility: in addition to previous intermittent initiatives, flexibility is supported by some policies, but it is still set as an exception to normal work and depends on the choices of workers or managers.
- Advancing Flexibility: it is the result of a strategic approach that provide enabling policies, technologies, and workplaces. Agile working is now promoted, but it is still in cohabitation with more traditional practices and it could apply differently depending on roles.
- Smart Working: it is based on a strategic vision and presents flexibility as normality. It shows all the elements of virtual collaboration and mobility and it has changed culture finding its equilibrium in with activity-based settings.

Defining Smart Working from legal perspective

Formerly, we have clustered some definitions of SW, but there is a lexical assortment of terms which refers to the SW: *Flexible Working, Telework, Agile Working, Activity Based Working, Mobile Working, New Ways of Working* and *Work 4.0* (Osservatorio Smart Working, 2018). This happens because of the wide variety of labour legislation and cultures of work around the world and because Smart Working initiatives could be mostly new or implement already existing labour legislation.

The EU Parliament in the resolution of 13 September 2016 on creating labour market conditions favourable for work-life balance clearly supports *Smart Working* as "an approach to organising work through a combination of flexibility, autonomy and collaboration, which does not necessarily require the worker to be present in the workplace or in any pre-defined place and enables them to manage their own working hours, while nevertheless ensuring consistency with the maximum daily and weekly working hours laid down by law and collective agreements; underlines, therefore, the potential of smart working for a better work-life balance, in particular for parents returning to or entering the labour market after maternity or parental leave; rejects, however, a shift from a cul-

ture of presence to a culture of permanent availability" (European Parliament, 2016). Every country is facing these phenomena in its own way, due to different cultural elements, different levels of digitalization and technological confidence and work legislation

UK is the first country to have started some sort of regulation of this phenomenon in 2014 under the terms of *flexible working*. With Flexible Working Regulation, after 26 weeks of work, you acquire the right to adopt some flexible work modes for instance work at home, part time, flexible hours, or job (desk) sharing. In 2016 with similar terms, Netherlands approved Flexible Working Act.

France approved in august 2017 the *Loi Travail* to allow *telework* agreements inside the existing employment contract and it could be defined with individual negotiations between employees and employer. This law makes clear that when you work in these modes you are totally comparable to traditional ways of working, also for health and safety responsibilities.

The Italian legislator made an interpretation of SW inside the Jobs Act of 2016 as a subgroup of subordinated job with flexible characteristics, defined with the words *Agile working (Lavoro agile).* Other countries have used Agile Working as definition to outline the freedom to choose time, places, but also workers themselves for a certain job.

1.4 BBB model

To sum up the researches on this topic, actually the variety of legal or lexical definitions are well-concentrated inside a more general definition of New Ways of Working which *are practices in which employees are able to work independent of time, place and organization, supported by a flexible work environment which is facilitated by information technologies*"(De Leede & Heuver, 2016). These NWOW are grounded in models of application, according to De Kok, Koops, & Helms, (2014), and one of the most famous models is the BBB, Bricks, Bytes, and Behavior model of Clapperton and Vanhoutte presented in the Smart Working Manifesto (2014). The elements are presented in a different order, following the suggestion of Hartog and others (2015) who stated that the first step required is the cultural and behavioural change, which is the most important of the SW application. The second step is the choice of the technology to use and only once you have clarified the first two steps you can rearrange the spaces layout.

1.4.1 Behaviour

The first element regards HR policies, which have to provide all the necessary to work in a flexible way. Precisely, it consists in moving to a result-oriented management and working, in organizing activities to develop trust and define the autonomy boundaries, in creating processes to reach satisfaction and manage work-life balance and finally in building a renovated culture and motivation (De Kok et al., 2014). With these changes, the top management lose the exclusive control function over personnel and processes and it has to become an inspiring coach of its employees recognised by trust.

According to Gastaldi and other researchers (2014), there are different kind of smart workers which interpret these changes with different meanings. Inconsistent smart workers intend these changes only as cutting costs, analogical smart workers add a combination of rationalization and creativity, digital smart workers are involved in building collaboration and sense of community and in the end complete smart workers integrate the previous aspects with the focus on work-life balance and flexibility. The main findings of their study give us an important fact: there are complementarities between the different elements of many model of configuration of SW, and to effectively introduce SW you need at least two elements and always the HR-behavioural component. (Gastaldi et al., 2014)

There are different models provided by books, companies, and consultants about how to apply SW principles and reach this configuration of work, but the common bottom line is the change of culture toward a result-oriented system. In this process of change, the right goals could give motivation and stimulate productivity when you are under pressure. In addition to the fundamental goal of profit and capital remuneration, there are other qualitative and quantitative goals that could be put together and the way you measure them is crucial for the balance of SW. The most common methods are Management by Objectives (MBO), Key Performance Indicators (KPI) and Objective and Key Results (OKR).

First definition of MBO comes from Peter Drucker (1955) who states that this evaluation method of the performance is made on the results obtained compared to the previously defined objectives, in other words, it does not consider the competencies of the workers. The objectives could be of two kinds, SMART or NUM. The first acronym stands for Specific, Measurable, Acceptable, Realistic and Time-bound and the second

stands for Not Uniquely Measured and shares with the first concept the S-A-R characteristics, but it is meant for those things which are new or strictly related to some competencies of the evaluated task like training, researching and development processes.

KPI are a group of measures that a company could adopt to compare output and performances with the objectives. They could be quantitative or qualitative and they could be freely elaborated, but they must respect some characteristics to be effective. They have to be applicable to the existing business processes and it should point to the improvement. The range of application is widespread in different business sectors for example marketing and sales, manufacturing, professional services, system operations and supply chain management.

OKR were instead first used by Intel and became popular in many worldwide recognized companies like Google, LinkedIn, and Uber for their simplicity, which on the other side require a philosophical change. On important and broader objective for the company is set with mid-long-term horizon and therefore for the different divisions of the company. The Key results are defined consequently from the broader objectives and they have short-term horizons, often with trimestral or semesterly cycles, and have to be clear, transparent, and measurable. For the employees who work in a specific division it has to be clear both the KR of its task and the greater objective.

1.4.2 Bytes

The World Economic Forum in 2016 recognises “Mobile internet and cloud technology” as the most important driver of change and as an opportunity to increase workforce productivity (World Economic Forum, 2016). The beginning of this trend is not so recent, Microsoft started in the nineties and identifies in its white paper in 2005 the prelude of this new way of working “everytime and everywhere”. Unified Communication and Social Cloud Computing could support the interactions between colleagues and flexible ways of work, thanks to the mobile devices that allow to share information. Nowadays, with the popularity and extensiveness of devices the concept of Bring Your Own Device (BYOD) in consolidating (Buchanan, Kelley, & Hatch, 2016).

Technological changes in the access to information are critical, because the all these new tools are reducing the barriers between hierarchies and between the limits of company’s data assets and know-how and the individual assets and know-how. So, with the

opportunities provided by technologies come also cyber and digital threats for both the company and the workers.

1.4.3 Bricks

Last aspect is the physical dimension, especially the interior design of the offices. All the spaces need a redefinition to help people work with all the above-mentioned smart elements. Where you work it is not important anymore, as long as you reach your goals. Traditional fixed desks now could be replaced by home, coworking offices, open spaces or, in opposite direction, small offices with reduced spaces due to archives digitalization.

According to Knoll (2010) it is important the visual connectivity that allows a reciprocal control and connection. The higher are the panels or barriers, the higher the focus, while instead the lower are the barriers, the higher the collaboration Moreover, the contribution goes in detail with the Horizontal Workspace Integration, where the spaces are organized depending on the kind of task that has to be performed and workers move from one station to the others, and the Vertical Workspace Integration, where the stations are integrated with technologies and could be modified and adapted by the worker.

1.5 Conclusion

To answer to the questions mentioned in the introduction, the differences with actual management is that the purpose of these New Ways of Working is antithetical than Scientific Management of Industrial Revolution. Smart Working approaches in the Knowledge Era are meant to give back to employees a part of the autonomy in manage their own work, this time with continuous interactions with managers and systems allowed by the unprecedent development of technologies. If in Taylor the system became predominant on people, with Smart Working people took back a piece on relevance and autonomy in work system, and because of that, the choice to adopt these arrangements should rely on leaders, but for a successful result it must be set in collaboration with the employees.

There are many arguments in favour to the idea that the shift to Smart Working architype is already happening and that companies need to continuously look for balancing business targets and employees' expectations (Boorsma & Mitchell, 2011). Technology

is omnipresent in cloud, platforms, infrastructures, and management is living a process of hybridization due to the influence of other areas, for instance psychology, neuroscience, architecture, and gaming. There is a rising need to be competitive in attracting the new employees of a generation which is everyday more connected and in search of new work methods and macro-economic factors like the economic crisis, urbanization, and climate change has affected also social structures and provide new challenges for works (Birkinshaw, Hamel, & Mol, 2008). The debate on the topic is ongoing and the detractors of the Smart Working are presenting many negatives side effects that could represent a barrier to change. It could replace traditional control mechanisms of work and could rise labour costs due to new request of resources and services, in addition to the initial enabling investments.

Despite the effort of legal systems to adapt and answer to labour evolution that we have discussed, the main underlying question is if Smart Working represents a revolution. Given that a revolution happens when the reality cannot be explained or interpreted anymore by the existing paradigm, in the world of work many aspects, like technological tools and expectations of workers, are significantly and quickly changing to new equilibria but as a solid incremental evolution, rather than a revolution. Therefore, in the next chapter we will focus on the technological dimension, Bytes, of work as it is a variable that was decisive to define disruptive changes in history.

2. CHAPTER

THE ROLE OF ICTS IN FLEXIBLE WORK

2.1 Introduction

Nature, the world-recognised multidisciplinary science journal, in October 2017 dedicated its special issue volume 550 to "*The Future of work"* and how work is changing its shapes. What does induce one of the oldest and most famous journals of science to explore the world of work? The answer is that new digital technologies are having considerable impact on workers of all subjects and disciplines, and in that case, scientists were exploring how their working environment is changing. According to the World Economic Forum in its *Future of Jobs Report* (2016), the majority of students in primary schools will have a job that doesn't exist today and nowadays workers feel that the two most relevant drivers of change are "*Changing work environments and flexible working arrangements*" as the top trend by far among the Demographic and Socio-Economic drivers of change, and "*Mobile internet and cloud technology*" among technological drivers, given that "*new technologies are enabling workplace innovations such as remote working, co-working spaces and teleconferencing* (World Economic Forum, 2016).

In the first chapter the behavioural component of Smart Working is reported as the most important, but this second chapter is dedicated to the "bytes" element of technology in order to restrict the focus of the analysis to the field of works interested by new digital technologies, in particular the phenomenon is present in Information and Communication Technologies of service sectors.

In the *first paragraph*, it is described how the literature classified different new tools and is questioned which role ICT is playing and developing in supporting flexible work.

The aim of the *second paragraph* is to study managerial implications and potentially relations between IT and productivity and commitment are explored. In the information era, the workplace is changing rapidly because of the technological progress, global competition, and customers' expectations, so the flexibility became one of the key elements of the competitive advantages of a company, and it is addressed how it also brings infrastructural risks of IT security and behavioural risks of underworking. Hence, it is analysed how to reach a competitive level of productivity it was necessary to monitor how people work and to control the physical and temporal dimensions of work, with a focus on the process rather than the output.

Finally, in the *third paragraph* comes from one of the most thought-provoking paper of the recent years, "The future of employment" from the Oxford Martin School (Frey & Osborne, 2017), in which is addressed the question of how digitalisation and computerisation could affect employment and jobs. How technologies are influencing directly and indirectly jobs and some characteristics and rising needs of digital profile of employees are described.

2.2 Tools

In the last decades, the list of disruptive innovative technologies in different sectors has grown tremendously and will dominate future workforce as: Augmented workforce with Artificial Intelligence, Machine Learning and Robotics, or Virtual and Augmented Reality, Digital Twins, Cloud, Mobile, Big Data and Analytics, Internet of Things and Security platforms (Schwartz and others, Deloitte Insights, 2017).

In this wide range of technologies in which managers are interested, only few of them play a role in supporting Smart Working models and according to Corso, Gastaldi, & Martini (2013), the technologies that are relevant in flexible new ways of working could be arranged in four areas:

- Social Network & Community (SN&C): support in managing and creating relationships between individuals through tools promoting discussion, the exchange of ideas and involvement in networks of extended acquaintances, including those beyond company borders (blogs, forums, social network tools, expert research, advanced user profiles, etc.);

- Unified Communication & Collaboration (UC&C): support in managing each type of communication and collaboration, both within and outside the company, uniformly and independently of the media adopted to transmit contents (web, landlines, mobile, TV) through specific infrastructures and tools (audio/web/videoconferencing, instant messaging, VoIP, etc.);
- Enterprise Content Management (ECM): support in managing contents and documents within and outside an organization through tools that improve accuracy, accessibility, and integrity (Web content management, document management, record management, enterprise search, etc.);
- Adaptive Enterprise Architecture (AEA): support of process flexibility and reconfigurability consistent with strategic organizational changes using advanced and flexible process management tools and technologies (BPM – Business Process Management), the construction and management of application architecture services (SOA – Service Oriented Architecture and mash-up) and the use of application services delivered by third parties (SaaS– Software as a Service).

SNC Social Networking and Community

The speed of communication and information sharing is one of the most important factors of business productivity and Social Computing represents one of the most suitable approaches, because it enables employees to add new contents and facilitate the collaboration of groups.

Social networks, blogs, forum and sharing platforms are the virtual places where people gain knowledge through sharing, interacting. In order to reach a successful implementation, it is fundamental that the initial strive comes from corporate side rather than the IT managers. The employees are increasing power in the definition of the collaboration patterns, because these social technologies are user-driven by nature.

Differently from emails, where there are some uncertainties about the right audience and the people to involve or that have been involved in the discussion, with social media you organize the threads inside the communities. There is a communication flow and the membership and permissions are managed by the admins who supervise the life of the community. Social media do not completely replace email of course, but they answer better to the needs of groups coordination.

To adopt social media, companies have to decide if they want to develop their own social intranet system or if they want to adopt external platforms. The most immediate reasons to set social media tools inside corporations is to improve the climate of the company and the feeling of belonging, to improve collaboration between colleagues and to improve customer services. The cost benefits are indirect and consequences of the improvement of the organizational structure that allows people to be more adaptive to make decisions and complete task at the proper time. Researchers highlighted that the main obstacles to take initiatives about social media, is the low level of awareness of people and the indirect form of the economic benefits. Most of the times they are adopted not to gain economic benefits at first, but with a supportive function when there are strategic changes (Corso et al., 2013).

UCC Unified Computer Collaboration

There is a global trend in companies to organize the communication channels in a unified way in order to increase productivity and to allow to use the right means of communication in the right moment and place. All the actions in this direction define the *Unified Communication and Collaboration* tools. Few examples of these tools are PC, desktop, laptop, smartphone and other mobile devices which permit to share visual and audio contents or live communications (Boorsma & Mitchell, 2011):

CDW1 (2011) 6 archetypes of UCC:

- *Presence*. Provide info about status and availability of people
- *Instant messaging.* Real time chat on different devices
- *Mobile Voice Access.* To switch from the mobile to fixed devices and viceversa without losing contact.
- *Single Number Reach and Single Voicemail.* To redirect to calls to the mobile device that is active in that moment and the second to unify different channels in the main one.
- *Unified inbox.* Similar to the previous one, it is applied to the mailing and system.

- *Conferencing* e *Collaboration Applications.* These are the tools that are meant to replace the physical meetings, they allow visual contact and online instant sharing of audio/video contents and screens. Despite different geographical locations of offices, both temporary or stable, it is possible to plan a meeting with all the benefits of see in each other faces on the screen. The possibilities are growing, there are some systems that adopt avatar to provide visible elements of digital presence.

The UCC started from the traditional static tools like fax, SMS, vocal messages, and emails and reached better conditions due to the combination and sometimes substitution with new real-time tools as social chats, videoconference, online IP calls. It is not the sum of single products, but an entire system that works together, and has to be designed professionally to not drop in costly overlaps of communication.

UCC is the answer to the rising need of collaboration support, efficiency, and cost reduction. It also reduces the impact on time schedule of commuting and business travels, even if the cost of the initial investment to set a UCC organization is a barrier to the introduction (Corso et al., 2013).

The majority of CIO have developed a workplace strategy, but the choice of adopting UCC investments rely more on IT managers or technical needs rather than functional needs highlighted by the employees who use these tools (Schallenmueller, 2016).

Only a minority of the large companies values the profiling activity of users, because it is assumed that all the employees have the same technical needs and for that reason workplace strategies are technology-driven rather than users-driven.

ECM Enterprise Content Management and AEA Adaptive Enterprise Architecture

The adoption of new collaboration technologies brings inside the company the issue of how its knowledge is managed. The Enterprise Content Management Systems are meant to facilitate the centralization and retrievability of information and documents (Corso et al., 2013).

The access to company knowledge has to be regulated with specific systems and the most common are the Single Sign-On, search bar, virtualization of setups and differentiation of digital environments depending on the role of the employees. Many CIO use a gradual implementation, usually recognized as the Adaptive Enterprise Architecture,

developing step by step following the model chosen between Cloud Computing or Virtual Desktops:

- absence: zero instruments
- experimentation: only few instruments to test
- emerging development: SNC and UCC are used in stand-alone mode or partially integrated
- uniform development: more instruments are fully integrated with each other and used in different context
- strategic development: in addition to the reciprocal integration of instruments, they are integrated also with other non-digital processes and business applications

Cloud computing is the tool that allow you to get access to internet on-demand applications with direct connection to the data center or cloud server of the company, from wherever you want and whenever you want in presence of internet connection (Raguseo, Gastaldi, & Neirotti, 2016). Cloud Computing has 5 characteristics: to be self-service on-demand, ubiquitous access to web connection, flexibility, enable sharing of data, measurable.

It could be classified by the services offered or by models of implementation. There are three kind of service offer:

- *Software as a Service (SaaS)*: you have access to applications in cloud from different clients through a browser interface, so without control on the cloud infrastructure.
- *Platform as a Service (PaaS)*: again, you have no control con cloud infrastructure, but you can modify the settings on your client environment.
- *Infrastructure as a Service (IaaS)*: there is the possibility to expand the storage or increase the power of the cloud and manage these changes from the client, so there is a direct control on the infrastructure, except for the essential elements of the cloud infrastructure.

The models of implementation are *Private Cloud, Public Cloud, Community Cloud* and *Hybrid Cloud*, representing a bridge between IT and business strategies (Huth & Cebula, 2011).

An alternative tool to Cloud Computing is Desktop Virtualization which consists in a tool that transfer the software part from the PC hardware to a data center to which you

can access from other devices (need to quote). In this case, the IT department has better control over clients and permits flexible working. Other positive effects in addition to the cost reduction on hardware instruments is the increase of security and control (Boorsma & Mitchell, 2011).

2.3 Controls

The potential increase of productivity, due to the flexibility enabled by technologies, has also managerial consequences, which could nullify the benefits if they are not previously considered. In a physical workplace, managers can use a direct control and set boundaries to clearly separate work from non-work activities, but what happens if employees could work anytime, anywhere? How could managers be sure that they spent the right amount of time working in front of the computers?

Stanko and Beckman made researches among the boundary controls and tried to focus on some of these questions and even more, they went deep in what is really relevant to control in a context where you can easily have access to work, but at the same time to distractions. Hence, they provide elements to support the thought that management has to focus more on *attention*, rather than the *time* spent on working (2014).

Another issue is represented by the separation line between work and free-time. The access to technologies is a door with dual role, bringing work accessibility when people are at home and at the same time providing access to personal life relations while people are at work. Most employees interviewed refer that they use technologies in this mixed manner (Cisco, 2008).

The development of technology itself was enriched by the cross-contamination between social and enterprise tools. At the present time, people are using everyday social networks and social media for private life and when they do that, they are building business capabilities at the same time. The use of Skype and Facetime for video-calls, the concepts of group or community in Facebook are reinterpreted in Yammer and Slack, to mentions few of the many applications that have hybrid usage in both professional and personal context.

Digital security

The introduction of new technologies that allow to work outside physical walls of the company, brings the company's data security issue at our attention. At the source of

these tools, companies can restrict access only from business devices or limiting the access from the office, but there is a trade-off to manage between digital security and flexibility when we are in front of a working environment that collect all the means of communications in the same place, phones, instant messaging and conferencing (Microsoft & GMA, 2011). To secure the access and use of company's information there are different levels of security to set:

- Protection of Systems, with a responsible usage of previously approved applications and software. Also, security tools as antivirus and firewall are required to face threats and also be aware of malware, phishing, and other attacks breaches.
- Protection of devices, with physical and digital measures. It means pay attention to frequently update passwords and not sharing working and non-working activities on the same device.
- Protection of data, with both careful behaviours and using and VPN if connected from other places. One prerequisite for this kind of protection is the identity awareness to restrict access only to specific information, related to the activity of the user, and not of the entire company (Cisco, 2008).

It is important to build security awareness with specific training of employees and security policies must be defined in accordance with management and IT departments, otherwise the risks related could put in danger the business and represent a barrier to the introduction of flexible ways of working, but with the proper training these risks could be significantly constrained (Nicklin, Cerasoli, & Dydyn, 2016).

Monitoring productivity

In the technology-enabled work context, the boundaries are not made only for digital safety, but controls of tracking work and restricting potential distractions focus on whether employees are working or not, while situational controls keep track of what, when and how employees work with pop ups, monitoring and contextualization of interactions and tasks. According to the research of Stanko and Beckman (2015), the two kind of controls work together in tandem. Even in a strongly controlled organization like the Navy, in which the hierarchies and physical boundaries exist by definition, there are continuous changes and rising issues of how to keep the employees focused on their

job: online tracking, proactive methods to set priorities and notifications that remind you to pay attention.

The correlation between investments in IT and productivity has found confirmation in the empirical analysis of many researchers in the last thirty years, confirming is a positive correlation, the higher the investment, the higher the productivity. According to the analysis of empirical literature provided by Cardona, Kretschmer, & Strobel (2013), the amounts of capital invested at beginning of those studies were too small to give reliable results on large scale, but then an increasing number of studies confirmed this correlation.

Moreover, recent researches confirmed that the correlation with productivity it is not only bounded to one single element, like technology in this case, but has to be analysed in all-inclusive investments regarding the three dimensions of the Smart Working model (Raguseo et al., 2016)

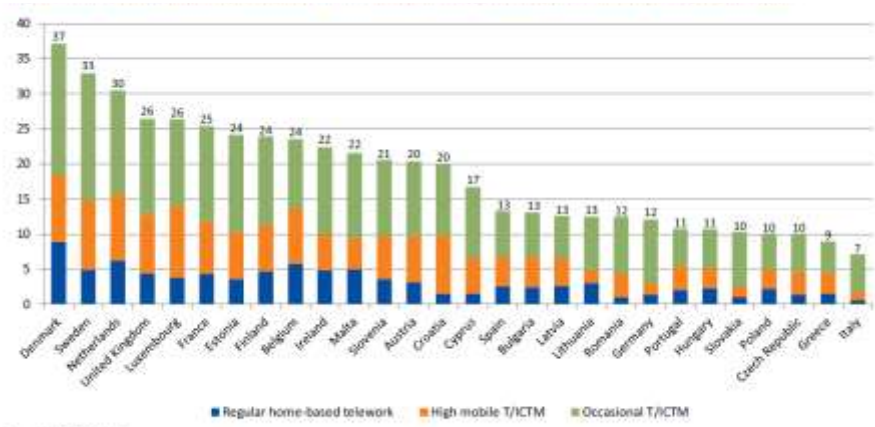
According to Nicklin, Cerasoli, & Dydyn (2016), the increase of productivity comes together with other benefits in different shapes, for instance better morale, reduction of absenteeism, reduction of wasting times of commuting and meeting, no need of relocation, work-life balance and less-stress. Anyway, there are also potential downsides, like overlaps of work and non-work time, intensification and longer working hours (Eurofound and the International Labour Office, 2017). In this moment there is not yet a measure of those intangible qualitative benefits or disadvantages, but the large majority of the employees involved in a digital workplace agree on valuing the opportunities provided by technologies in a positive way (Buchanan et al., 2016).

2.4 IT effect on employees

The scope of this paragraph is to highlight how the implementation of technologies described in the previous paragraph has impacted on employees and is crucial for business development. The European Working Conditions Survey completed in 2015 provide a quick overview of how much technology is pervasive in employees life of the 28 European countries, limited to the telework and communication technologies. This survey represents one of the most completed collection of data inside and outside Europe about new information and communication technologies, despite the fact that it has to deal with a proxy definition of Telework/ICT-mobile work (T/ICTM). Regardless of the fact

that the impact of technologies on work is finding a growing consensus, there are still many different definitions depending on the mix of place, time, and intensity of usage of ICT on work. The main findings reported in *Figure 1* are that T/ICTM impact from 2% to 40% of employees, around 17% in EU28 area, with foreseeable differences based on country, occupation, sector, and the frequency with which employees engage in this type of work. Some tendencies confirmed on this research help us to better address workers characteristics, for instance: occasional use of T/ICTM is greater than regular, it is more common among managers and professional, but is increasing also in administrative and sales workers, and to conclude with gender perspective it is more frequent for men overall, even if home-work T/ICTM is more adopted by women (Eurofound and the International Labour Office, 2017).

Figure 1 Percentage of employees doing T/ICTM in the EU28



Source: EWCS 2015

Emerging needs

The introduction or strong implementation of digital technologies in a company, and the consequences in social changes derived from it, was assimilated from some researchers to the evolution of the Web to Web 2.0, in which people started to interact with the social platforms (Corso, Martini, & Pesoli, 2008). Similarly, McAfee named this phenomenon *Enterprise 2.0*, using the same concepts of web for the organizational patterns of a company, where employees are enabled to connect and collaborate (McAfee, 2006).

The set of models and technological tools, that can be associated under the name Enterprise 2.0, are the answer to some emerging needs (Corso et al., 2013):

- Open belonging: employees feel to be part of a broader network and not only to the single company they work for.

- Social networking: people want to build and preserve their network.
- Knowledge networks: network is not only relational, but also a strategic asset to get and share information.
- Emergent collaboration: to face a stronger and more dynamic competition, people must respond quickly and cooperate in new flexible ways.
- Adaptive reconfigurability: people must develop new skill of adaptability inside companies that need to change policies and strategy
- Global mobility: the amount of time spent in mobility or distant from the traditional fixed workplace is growing, and new technologies permit to be connected and keep working more easily where and when you can or want, depending on the level of flexibility allowed by the company.

Digital fluency

Now we move the focus on individuals and how digital natives entering the workforce differ in their expectations of work and work practices, as well as how these differences might influence the future workplace. Nowadays, the number on digital natives entering the workforce is increasing and at the same time technology is changing and influencing our lives in different evolving ways (Colbert, Yee, & George, 2016). According to Prensky, "*digital natives*" are those who are born or grown as native speaker of "*digital language of computers, video games and the Internet*" (2001). Their counterparts are the "*digital immigrants*", so the people who have learned in their maturity to use digital tools and because of that they maintain certain behaviours typical of non-digital tasks, for example printing emails, or reading manuals rather than learning by using. This situation could rise a lot of issues in presence of teachers (digital immigrants) who have to explain digital topics to students who are more updated. In details, the author highlight how digital natives are more inclined to fast information and multi-task activities, attracted to network and in constant research of quick gratification and rewards, like the video games environment. Other authors define all these characteristics of digital natives and the ability to reach objectives through technology as a natural tool as "*digital fluency*" (Briggs & Makice, 2012).

Service sectors innovation

In service sectors, following a more traditional approach, ICT is considered as an important resource to improve and make processes in service delivery more efficient, and in case of some disruptive innovations they could open new market opportunities. From another perspective, ICT has a transformative role, and combined with other resources like knowledge and professional skills could innovate services and could generate itself new kind of services. For example, many sectors have faced ICT innovations recently in travel, health-services, retail to mentions just a few. One example provided by Barrett is the introduction of robot in pharmacy operations, and the presence of a robot induce to reconfigure the identity, skills and status related to the professionals of the sectors (Barrett, Davidson, Prabhu, & Vargo, 2015).

Some researchers argue that thanks to the world-wide diffusion of mobile operating systems, social media and clouds services, the service industries have now many opportunities to use these massive information and infrastructures to develop new complementary products and services. We could borrow from the service industries some elements that put in evidence the shift provided by technology which could be compared to a shift in work methods. In the entertainment sector, the traditional way to view a movie involve the act of going to the physical place where the movie is projected.

The experience of this service is linked to people, sounds, screens, and theatres, while watching a movie at home for example with streaming platform as Netflix is a completely different experience. Entertainment movie services have evolved from technical perspectives with colours, sounds and tools and at the same time they have widened the range of services associated with difference way to get access and experience movies from both reserved places like cinemas and now homes with new technologies. In a similar way, also the ways of working are facing technical changes that could extend the possibilities to accomplish work (Colbert et al., 2016).

2.5 Conclusion

The purpose of the analysis of characteristics of technologies is to better comprehend the evolution of the world of work, especially in nowadays with some decades of unprecedented continuous innovations of means of work in all the sectors. We restricted

the focus on the service sector, which is the one involved in the discussion about how digitalisation affect New Ways of flexible Working.

The main reflections derived from the study of tools and their effects on workers are that they enable opportunities to strengthen relationships and communication. At the same time, they open the doors to some issues like how critical assets as data and know-how of companies are managed and shared with employees. Moreover, there is a potential increase of power of IT managers and employees, due to the nature of many platforms where the single user plays a key role in implementing and setting its own collaboration system with a disintermediation at the expense of managers.

These issues led our attention to the side of technical and managerial means of companies have to set in order to protect themselves from digital threats and also from working inefficiencies that could rise from an inappropriate use of technologies to work. Managers need to be aware and prepared to control over digital workers and it is highlighted from the literature the importance to focus on attention rather than time, in order to reduce the discrepancies between theoretical time spent working and real effectiveness.

Then, the question of how digitalisation is affecting employment and jobs, addressed from the employees' point of view, bring us to the awareness that new opportunities enabled by technologies are becoming needs that has to be considered by companies with models of emerging collaboration.

Finally, it is underlined that the *digital fluency* and self-confidence with technologies are becoming discriminant inside generations that have approached technologies in different periods, and these different approaches to technologies in work methods could be seen also in experiencing innovations service sector. In the next chapter we will address the behavioural component of Smart Working considering also those generational differences approaching technologies.

3. CHAPTER

MULTIGENERATIONAL WORKFORCE

3.1 Introduction

In 2016, the PEW Research Institute has estimated that Millennials have become the largest generations in the US workforce with more than a third of the entire workforce, exceeding members of Generations X. Moreover, the projections appoint in 2019 the overtaking of Millennials to Baby Boomers as the largest adult living generation.

Why do we focus on generations? It is the first time in history that due to demographic and social reasons we are in front of five generations in the workforce at the same time. In the past, usually three or four generations were in the workforce together and apparently with less differences than actual generations. This issue has recently stimulated a large debate across academia and business actors, regarding which are potential implications and how to manage them.

The aim of this chapter is to investigate if generations could be a good category to understand workers' behaviours, needs, and attitudes and if it could help us to predict future developments, so the *first paragraph* presents how academic literature has analysed generations and how this concept has been debated as a way to categorize workers.

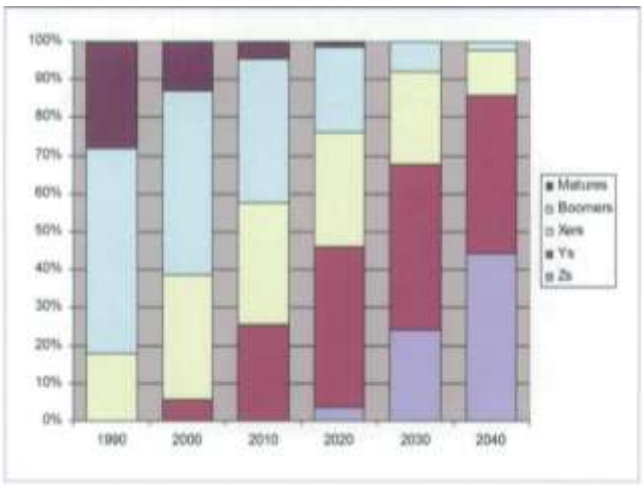
In the previous chapter we have mentioned the concepts of digital native and digital immigrants, regarding which is the level of confidence that people have with new technologies. For this reason, in the *second paragraph* we have addressed how generations approach technologies. The premise is that the approach to technologies is influenced by age and being a member of a certain generation, and, as a consequence of that, new generations could have some competitive advantages as workers in a world where technology is thriving.

Finally, in the *third paragraph* we have focused on which are the values and expectations of generations, highlighting differences and commonalities that managers and companies have to consider making diversity and advantage rather than a barrier to success.

3.2 Generations in the workforce

The notion of generations is familiar to everyone, but what does it refer to precisely? A generation is a group of people that are born approximately in the same time and share some common experiences and assist to historical events and live historical phase that influence life approach. (Pilcher, 1994). Each cohort refers to about two decades and we are in front of an unprecedented situation of 5 generations in the workforce at the same time: last members of the Silent (or Matures) Generation are leaving, Baby Boomers has just lost the primacy as number of workers, Generation X, Millennials or generation Y that has just become the largest in the workforce and finally the Generation Z that has just started to work in the recent years as we can see in *Figure 2*. In the literature there is convergence to the adoption of US cohorts as measure (Lyons & Kuron, 2014), despite there are many prospects to focus on generations in different countries, so we took the chronological coordinates estimated by the Pew Research Center: Silent Generation born between 1928–1945, Boom Generation born between 1946– 1964, Generation X born between 1965–1980, Millennial Generation born between 1981 to roughly 1996 and then Generation Z born after 1996.

Figure 2 Actual and projected percentages of members of each generation in the workforce



Source: De Meuse (2010)

3.2.1 Generation definition

One of the most relevant books on this topic is "*Generations: The History of America's Future"* which was written by Howe and Strauss in 1991, providing a review of US history with the lens of generations and introducing the fundaments of their *Fourth Turning Theory* of a periodic generation cycle: every twenty year a new generation is born with four archetypical features of *Prophet-Idealist*, *Nomad-Reactive*, *Hero-Civic* and *Artist-Adaptive* cohorts. Every eighty years four generations live their time and with recurring crisis the cycle begins again with four phases of *High*, *Awakening*, *Unraveling* and *Crisis*. Everyone is part of a generation formed by the significant events and protagonists of their time, as we can see summarized in *Figure 3*, and people grow from childhood to elderhood preserving more commonalities with people of the same generation rather than people at a certain age (Howe & Strauss, 2007):

- Silent Generation (Artist-Adaptive) lived the direct and indirect effects of Great Depression and World War II, they saw the growth of mass media.
- Boom Generation (Prophet-Idealist) has experienced the post-war prosperity and new civil rights movements.
- Generation X (Nomad-Reactive) has grown with the last moments of Boomers prosperity and new economic depression in the eighties.
- Millennial Generation (Hero-Civic) is born in the era of globalisation and great innovation and diffusion of information and communication technologies
- Generation Z ((Artist-Adaptive) has just started entering in the workforce and data from surveys has just been gathered in the last years (Deloitte, 2018).

Aside from historical and sociological developments, we can observe some important threads, for example that to better predict the behaviours of people in the future we have to focus on how they behave today rather than how actually older people work.

Figure 3 What makes your generation distinct? Top five responses from each generation

Top five responses from each generation			
Silent	**Baby Boomers**	**Generation X**	**Millennials**
World War II/Depression 14%	Work ethic 17%	Technology use 12%	Technology use 24%
Smarter 13%	Respectful 14%	Work ethic 11%	Music/Pop culture 11%
Honest 12%	Values/Morals 8%	Conservative/Traditional 7%	Liberal/Tolerant 7%
Work ethic 10%	Baby Boomers 6%	Smarter 6%	Smarter 6%
Values/Morals 10%	Smarter 5%	Respectful 5%	Clothes 5%

Source: Pew Research Center (2014)

3.2.2 Literature debate on generations

Despite the large attention that generations have reached in the academic literature, they are not universally recognised as valid to analyse workers and useful for managers. There are two themes of discussion on literature: firstly, whether generations exist and are confirmed empirically, or they are only theoretical concepts that facilitate discussion but is not useful for practical implications; secondly, given the validity of generations cohorts, the debate is on whether generations present differences or similarities on some aspects.

The concept of cohorts became very attractive in business journals, especially in marketing field, because it is a simple way to categorize people with a mix of objective and supposed characteristics for an efficient segmentation. Furthermore, this concept is so powerful and as simple and clear that in the public debate generations is a notion given for sure and is contagious also for the academic world. In the last decades the topic has faced a continuously increasing attention with a lot of effort in trying to find empirical backing to some of the features that gravitate around the definitions (Noble & Schewe, 2003).

One attempt to provide empirical support of generations was made by Noble and Schewe, who tried to study if groups like generations could be formed around common values or historical life events or context, with around four hundred voluntary respondents to questionnaires. Despite the lack of positive results, they emphasised the need to continue the research on that direction for a topic that was spreading everywhere. The popularity of the topic is not the only reason that motivate the need of focus, but also the forecasts on workforce composition are showing that workers of different ages, atti-

tudes and values. In the work of Costanza we found a strong critique against the categorization of workers through generations, which in their view is the result of stereotypes and easy-to-accept observations and prejudices. They argued that lack of empirical evidence of differences between generations suggest focusing on other differences. Most of the problems rise from the definition of generations which is based on three different factors, *age*, *period* of and *cohort*, which are strongly intercorrelated. To avoid those distortion, it is suggested suggest to move the analysis on individual factors as organizational commitment, job satisfaction, motivation, values, and others that could be related to individual personalities and have found empirical confirmation (Costanza & Finkelstein, 2015).

In the review of Lyons and Kuron (2014) emerge that most of the recent studies are descriptive and do not succeed in deepening the theoretical arguments and under statistical tests generation is confirmed as a workplace variable, but many times scares or inconsistent to be used in relationship to other important work-related variables. The direction showed for further research is to not consider generation only as simple difference between workers, but to enlarge the spectre of analysis to sub-groups and how they participate in forming generation identity, potential generational conflicts and how the perceptions of generational differences impact on behaviors and other work variables (Lyons & Kuron, 2014). The challenge is much more strategic than expected by academics and employers, because from some studies highlight that to be successful in the future, organizations must develop the capabilities to manage a cross-generational workforce with hybrid skills (Helyer & Lee, 2012).

Generations are one of the strongest forces of change in history (Howe & Strauss, 2007), but another risk that was found is to limit the analysis to stereotyping definition of generations, while every cohorts has brought some new elements. The suggestion of Myers & Sadaghiani (2010), is to focus on holistic approach to how each generation contribute to team's and companies' performance, communication, behaviours and relationships and in reverse, which are the behaviours that they each generation will change in response to the interactions. Moreover, which are there some behaviours that will be dominant in a transversal way or each generation will succeed to the other preserving their initial shapes? The question is still unanswered and researchers are interested in

predicting Millennials adaptation or conservative approach to co-workers' relationship (Myers & Sadaghiani, 2010).

3.3 Different generational approaches to technologies

In previous chapter we have addressed the topic of ICT in work context, and now we continue to examine multigenerational workforce regarding approaches to technology. Every new generation growth with higher technological skills than the previous one, this proficiency shift happened between Silent generations and Boomers, later with Gen X, then with Millennials and it supposed to happen also with Gen Z (Deal, Altman, & Rogelberg, 2010). The thing that is becoming an issue is that with this growth rates in ICT sectors and the pervasiveness of technology in all aspects of life, including education for younger generations and social relationships for all, this shift is not linear and it has never been a generation so more technologically competent than its employer than Millennials (Schallenmueller, 2016).

3.3.1 Build identity and learning with IT

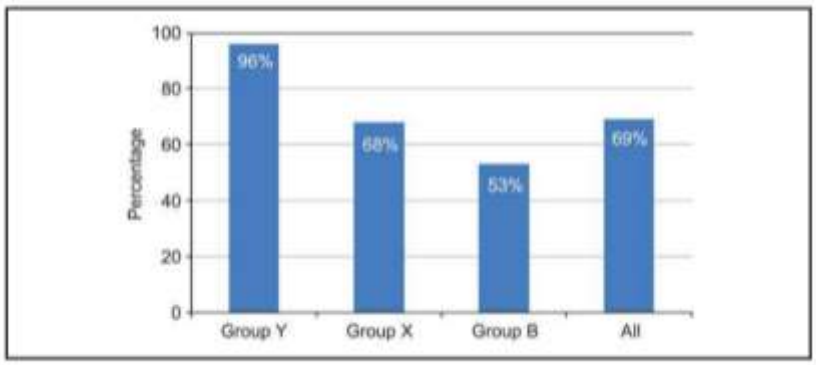
According to the studies of Autry and Berg, the confidence and mastery with digital language is creating a barrier between generations not only in daily routines, but also in learning processes. The results of their analysis show that younger generations prefer learning settings with technology and this affect the relationship between trainers and learners, because in order to reach a successful training it is required a common ground and alignment of instructional strategies for the former and learning styles for the latter. Moreover, it is developed the study on how brains react differently to information gathering depending on the exposure to digital contents during life and for previous generations as Baby Boomers there was a more *linear systematic approach* rather than a *rapid bombardment* of multimedia for Millennials generation. The adaptive capacity of brain makes people who have gained knowledge of digital devices more confident with new other similar innovations and with higher level of acceptance to innovations (Autry & Berge, 2011).

This technological confidence finds confirmations also other studies, where it is defined as "*sixth sense"* that Millennials have and use as "*fully integrated means of interacting with the world"* (Hershatter & Epstein, 2010), inside and outsides the boundaries of the

organizations, whether this means an opportunity or a limit. The 44% of teenager are always connected, and this fact have consequences on attention, behaviours, creativity and overload (Ipsos MediaCT & Wikia, 2013). In the work equilibrium these attitudes have consequences too, and with the benefits of flexibility and new tools, come also the backsides and costs of managing information and work-life balance. Omnipresent technology allows us to have always the distractions we desire. There are no more empty moments where people can reflect and build self-awareness (Colbert et al., 2016).

The consequences are not only in the personal growth and process of building identity, but also on the preferences in training process at work. One element that is underestimated is the educational role played by the online games, in which people have the chance to face tasks and continuously learn from mistakes, trial and error in some sort of learn-by-gaming process (Colbert et al., 2016). Moreover, this mechanism could be of interest form companies in designing training processes. For example, the research in the specific rail sector made by Becker and other researchers analysed the managerial challenge to match the training preferences of workers of different age and e-learning opportunities. It was found that with a good balance of experienced workers preferences and younger apprentice learners, there are positive results on retention. This element of difference was confirmed also in the studies of Autry (2011), who made a survey on preferences in technology training to 258 people categorized in three generations group as we can see in *Figure 4*, with 52 Boomers in group B, 127 Gen X in group X and 79 Millennials in group Y*:*

Figure 4 Percentage of individuals who favour technology in training



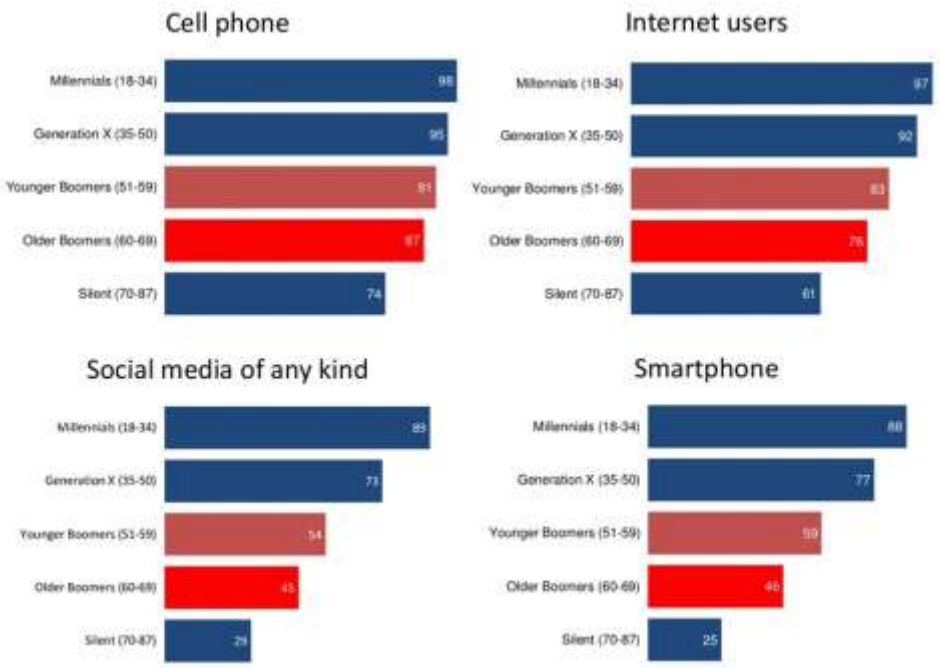
Source: Autry A. (2011)

But when the employees think that companies are not using the technological methods like e-learning at their full potential, the expectations are not met and as a consequence of that, it comes the issue of retention (Becker, Fleming, & Keijsers, 2012).

3.3.2 Utilization of IT

The utilization of technology is one of the most apparent differences between generations, in particular between Millennials and the previous, about which we found validation in the research of Hershatter and Epstein (2010). We have already discussed the digital immersion they experience as *digital natives*, they provide other elements of comparison with other generations, like content creation and engaged interaction. In 2010, more than 60% of Millennials were producing digital contents on their personal social platforms against 10% of other generations, while now the differences are much lowered, because also other generations are getting used to interact with digital social platforms, even if from the data gathered by the Pew Research Center in 2016 (Lee & Perrin, 2016) it is still possible to see that the percentages of information and communication technologies are lower the higher is the age in *Figure 5*.

Figure 5 Technology Adoption by Baby Boomers (and everybody else)



Source: Lee & Perrin (2016)

3.4 Generational values and expectations

Starting from the definitions at the beginning of this chapter, we now summarize the shapes of characteristic value of generations recognized in the literature:

- *Silent Generation* look for stability in life and strive to have a clear professional path to follow and companies and institutions to be loyal to (Srinivasan, 2012), in other words they are described as conservative and disciplined (Howe & Strauss, 2007; Cekada, 2012).
- *Boom Generation* are described as optimistic people with strong work ethic and expectation to be rewarded for hard work (Cennamo & Gardner, 2008), but also with side-effects of being time-stressed and money-oriented (Howe & Strauss, 2007).
- *Generation X* faced the crisis of traditional family values and are considered cynical and individualistic (Lyons & Kuron, 2014), more focused on personal career than organizations, looking for work-life balance and flexibility (Hole, Zhong, Schwartz, & Clugston, 2010).
- *Millennial Generation*, its members are represented as socially conscious and narcissistic with high career expectations (Twenge, Campbell, Hoffman, & Lance, 2010), and moreover they faced diversity in the workplace more than every other previous generation.
- *Generation Z* actually is presenting similar characteristics to Millennials with some differences with a higher entrepreneurial attitude and effort in find their own identity, these aspects became more evident with other characteristics like being techno-geeks and desire to learn on their own (Chillakuri & Mahanandia, 2018).

3.4.1 Multigenerational differences in values

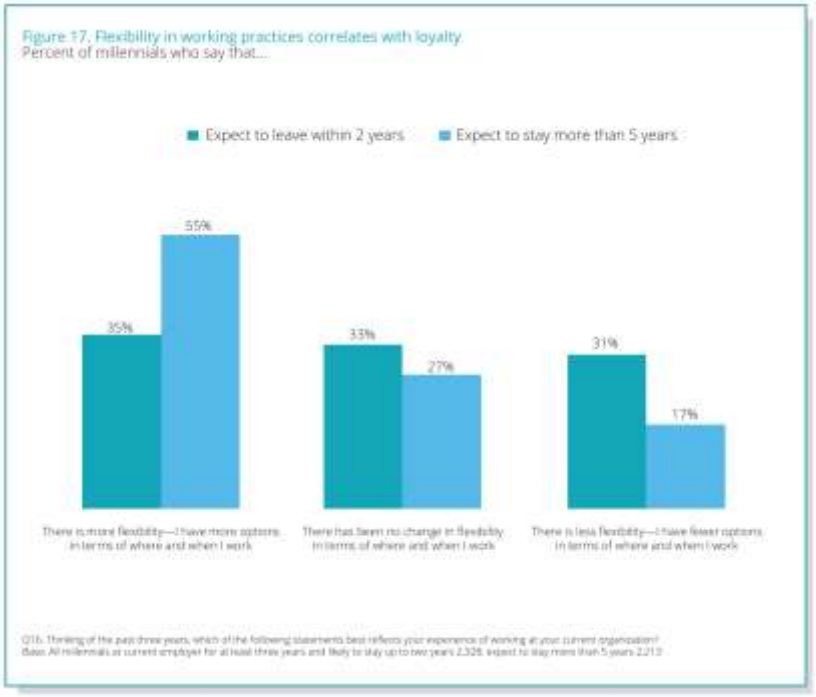
One element that differentiate Gen X from Millennials is that the former have created their conditions and working systems to address the rising challenges provided by business and technology, while the latter rely more on existing organizations and structures, like if their creativity is more on contents rather than structures (Hershatter & Epstein, 2010).

Cennamo and Gardner (2008) addressed other cross-generational threads with an interview of almost 600 hundred people in New Zealand, finding that Millennials value *status* and *freedom work* more than previous generations, while Boomers have better fit in

person-organization relation. The faced some difficulties in clear data to understand if there are correlation to career stage, life stage or simple generational differences, nonetheless, they found some differences but fewer than expected, and they recommend that companies acknowledge differences and commonalities to enhance a communication that clearly define priorities to their employees.

According to a report written by PWC in collaboration with some universities, companies must include more flexibility at work, which is a driver desired from both Millennials and other generation to face duties, like for example excessive work demands that interfere with work-life balance. In *figure 6* we could see from the Deloitte Millennial Survey (2018), that flexibility is correlated to loyalty.

Figure 6 Flexibility in working practices correlates with loyalty



Source: Deloitte Millennial Survey (2018)

What differentiate Millennials from the other is the need of frequent feedback, rewards and recognition of work, while other stick to more traditional economic benefits and professional development (*PwC's NextGen: A global generational study*, 2013).

Some shapes of Millennials are present and sometimes more relevant for Generation Z. Despite the research on this cohort it is only at the beginning, it is already clear that also this generation is *techno-geek* and have a stronger desire to learn and define itself autonomously (Chillakuri & Mahanandia, 2018).

3.4.2 Optimism and expectation

Despite in times of recession, like the recent economic crisis in 2008, the level of optimism and expectations of Millennials decreased only in regard to work-life balance and social dimension, while professional and career expectations remain quite high, confirming that this is a natural trait of this generation (de Hauw & de Vos, 2010). The consequences for management are that there the resources invested in recruiting and HR activities must increase to attract and, more important, maintain the best workforce as possible, through job enrichment or enlargement, and training programmes.

Another element is provided by Twenge and Campbell (2008), that found that Millennials are characterized by psychological traits of high self-esteem on the bright side and of anxiety on the negative side that could lead to potential *unrealistically higher* and different expectations from what companies are set to answer. This brings up a challenge about how to react to those issues, if adopting a more accommodating approach with praise programs for example or inversely with counter-pressure approach (Twenge & Campbell, 2008).

3.5 Conclusion

After these recollection of existing debate on generations, we can affirm that the majority of researchers approve the existence of generations but there is not consensus on whether people could be managed with specific treatment for each generation. The effort to prove that they are correlated in a certain way to behavioural aspects has led to controversial results and there are many methodological critiques about results that are too much descriptive and not fully supported by empirical evidence and some aspects could be addressed correctly only on individual level. Moreover, the settlement about the boundaries within one group and the other are too much theoretical to solve in particular the need to manage people born in those years in transition between on group and the other, but despite these limits all the researchers agree on the need of companies, in particular of HR managers, to acknowledge macro-trends and be prepared to manage diversity, generational or not.

One trend that is confirmed by the analysed sources is that that confidence with technology is strategically relevant and a potential competitive advantage for younger em-

ployees compared to older, but more in general for who is techno-friendly compared to who is less.

Another element that has found confirmation is the increasing need of flexibility across all generations, but with higher lever in younger generations. This expectation is not only a tendency, but it could be a discriminant for job satisfaction and retention if not successfully managed. To sum up, there is a rising challenge for leaders to manage diversity and hire, train and motivate new entries in the workforce, which could become productive as never before if carefully treated with multiple approach and avoiding stereotypes.

4. CHAPTER

EMERGING CHALLENGES FOR LEADERSHIP

4.1 Introduction

In 2016 at the World Economic Forum in Davos, Marc Benioff, founder of *salesforce.com*, stated that "*We are in a leadership crisis. We are not in a technology crisis; we are in a technology revolution. We are going to see technology shifts and changes on a scale that we have never seen on this planet.*" This speech highlights some elements that we have discussed in previous chapters about the historical shift of paradigm form Industrial Era to Knowledge Era and how digital technology is changing many aspects of life, especially work. We have raised many questions for leaders whether they are ready to face the abovementioned challenges or not.

The aim of these chapter is to analyse the existing kinds of leadership in light of the emerging needs we have previously addressed: firstly, the request of new flexible ways of are working to remain competitive, secondly the difference of technological capabilities and lastly the differences of expectations of workers.

In the first paragraph we present a summary of the existing styles of leadership and we evaluate which are the kind of leaderships that better answer to the complexity of a changing business environment.

In the second paragraph, we want to find an answer to what are the relevant trends and needs that leaders must recognize to successfully address new challenges, focusing on the aspects that we have previously mentioned in the analysis of technology and generations, this time from leaders' perspective.

4.2 Leadership styles

We have previously analysed the potential benefits of new ways of working and technology and the consequent benefits for employees, but this thing has also changed the power relationships between employer and employees with a shift of power from managers to employees. Nonetheless, we can see from *figure 7* that it is perceived from the majority of workers the importance of an adequate leadership and the relevance of the topic is confirmed also by the *Global Human Capital Trends* report made by Deloitte (Schwartz et al., 2017) *:*

Figure 7 Leadership: rating "important" or "very important"

Source: Deloitte Insights (2017)

4.2.1 Leadership in literature

To address the topic of leadership, we adopted one theoretical framework that Avolio, Walumbwa and Weber (2009) have adopted in their literature review. Traditional approaches to leadership tend to consider few elements at the same time, only leaders, leaders and follower or leaders, and group, while they found that leadership is becoming more holistic, considering the followership as part of the topic and with three emerging trends that are interesting for this dissertations: firstly, E-leadership is growing in consensus as a topic due to technological influence on leadership, secondly it is possible to

assist to some model of distribution and sharing of leadership and finally there are some studies on leadership as a complex emergent dynamic in organization.

According to Avolio (2009), the kinds of leadership that have populated the debate in the recent decades are:

- *Authentic leadership* refers to "transparent and ethical leader behaviour that encourages openness in sharing information needed to make decisions while accepting followers' inputs"
- *Shared leadership* is related to "an emergent state where team members collectively lead each other"
- *Transformational leadership* consists in transformation and inspiration of followers through leaders' behaviour "to perform beyond expectations while transcending self- interest for the good of the organization"
- *Transactional leadership* is a kind of leadership "largely based on the exchange of rewards contingent on performance"
- *New-genre leadership* emphasize "charismatic leader behaviour, visionary, inspiring, ideological and moral values, as well as transformational leadership such as individualized attention, and intellectual stimulation"
- *Cognitive Leadership* is a "broad range of approaches to leadership emphasizing how leaders and followers think and process information"
- *Ethical Leadership* provide the "demonstration of normatively appropriate conduct through personal actions and interpersonal relationships, and the promotion of such conduct to followers"
- *E-leadership* is "leadership where individuals or groups are geographically dispersed, and interactions are mediated by technology"

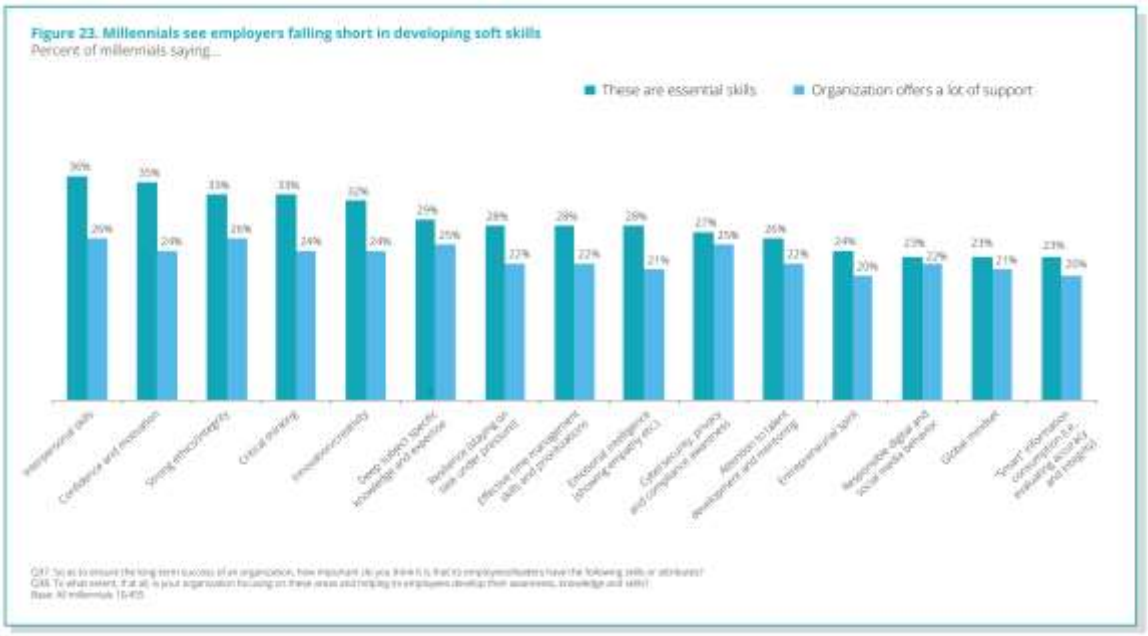
E-Leadership, is the one that it is more suggested in case of adoption of new ways of flexible work because it answers precisely to the need of flexibility in determining where and when work (De Leede & Heuver, 2016). Also, the research of Uhl-Bien, Marion and McKelvey (2007) suggest the theorization of new model of Complexity Leadership more suitable for a knowledge economy, taking inspiration from the assumption of Complexity Science that put social and behaviour factor together in a dynamic interactive environment similar to Complex Adaptive Systems that are grounded in physics studies. This new model starts from the acknowledgement that leadership has

become more complex due to the interaction of multiple factors and it is not a simple question of individual and personal characteristics. The key elements of this model are the *learning*, *creative* and *adaptive* capacity, and the three kind of leaderships related are the *adaptive*, *administrative* and *enabling* leaderships, which are functional to the interrelation between organizations and complex adaptive systems.

4.3 Leadership priorities in New Ways of Working

The researches of De Leede and Heuver (2016) have confirmed that both New Ways of Working and Leadership competencies have a strong influence on organizational commitment, even if independently from each other. Moreover, they focused on the different aspects of *empowerment*, *trust* and *steering on output* and have found that when people feel empowered and valuated the commitment increase whether they have flexible ways of working or not. From the studies of Lyons & Kuron (2014) we get the confirmation that in multigenerational companies it is preferred a leadership focused on relationships based on trustworthiness and reliability rather than personal competences and foresight. In particular, Millennials and Gen Z are looking for leaders that provide a collaborative work environment and individual fulfilment rather than a strict task approach. In *Figure 8*, the need of these soft skills is confirmed and evident also from the data collected in the last Survey on Millennials made by Deloitte (2018) that they are valued as essential.

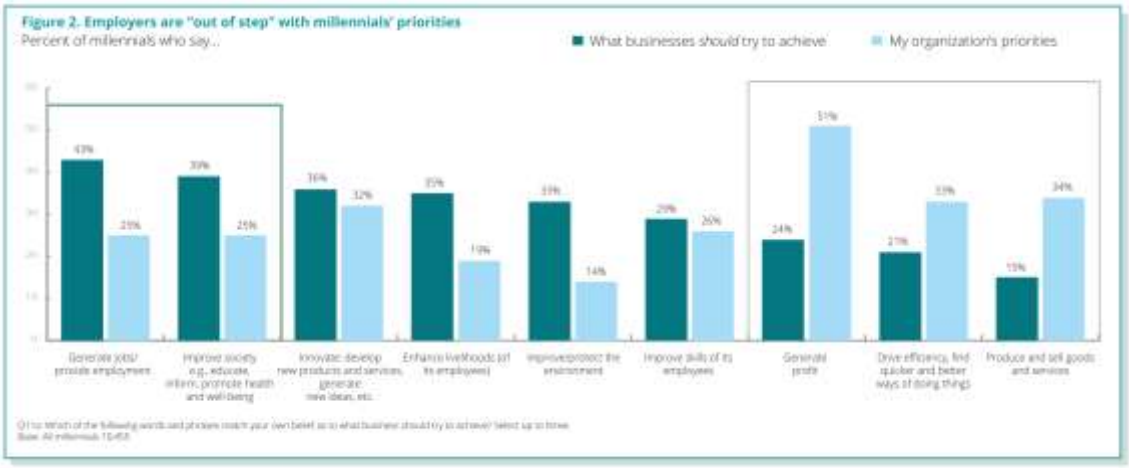
Figure 8 Millennials see employees falling short in developing soft skills



Source: Deloitte Millennial Survey (2018)

It is suggested from Stewart and other researchers (2017) to adopt other managerial approach using other leverage as *duty*, *drive* and *reward*, reframing organizations to welcome and integrate new generations with consequent benefits for overall productivity. Different generational approaches were found also in relation to commitment to organization and the workplace culture in other researches, with Millennials that are the only group that do not match this two elements with other generations (Stewart, Oliver, Cravens, & Oishi, 2017). From the Deloitte Millennial Survey (2018) we get another *Figure 9* where there is an evident mismatch between younger generations and actual organizations priorities, at least in perception. This gap between employers and millennials priorities has to ring as an alarm bell, in light of what we have discussed in terms of loyalty and retention of younger generations.

Figure 9 Employers are "out of step" with millennials' priorities



Source: Deloitte Millennial Survey (2018)

The shift from industrial age to knowledge economy has brought changes that could have exhausted actual leaders. In the education sector Flanagan and Jacobsen (2003) have analysed how teachers and principals have faced the pressure of change for supporting innovations a new technologies inside their job. It was clear from the beginning that they felt unprepared and required specific investments in training in order to satisfy the expectations. One of the most interesting contribution was appointed by Hershatter and Epstein (2010) that reported the case of *reverse mentoring* where technologically confident Millennials were paired to senior managers Boomers leading to multiple benefits with mutual connection and evaluation. This is an example of a collaborative environment where differences in the workforce became an opportunity and could be enlightening, even if it raised other questions whether these cases were contingent and limited to distant generations. According to Srinivasan (2012), the turning point is when leaders succeed in making workers aware of the fact the everybody contribute in a different way and that the organization has to make the better use of that, and this is a trademark of the quality of the leadership.

4.4 Conclusions

From the analysis of existing kind of leadership, we took the contributions of two leadership approaches in order to form a comprehensive profile of the leadership that has to face the adoption of flexible New Ways of Working. The first element is given by E-leadership, which is the one that fits better in context of interactions mediated by tech-

nologies as Smart Working allows and requires everytime people work in different places. The second input is provided by the analysis on Complex Leadership, which is the answer to a dynamic economic environment which is continuously changing and becoming so complex to require adaptation capabilities and organizations that are responsive.

Then we have addressed the questions of which skills leaders must have to accomplish their role, in managing situation like the technological gap between workers and the lack of digital knowledge of leaders themselves, and we found confirmation that relational and soft skills are the best and most expected qualities to answer to rising challenges. Motivation, workplace culture, and retention of best employees have emerged as top issues for business leaders who could bring to companies a competitive advantage if they set a supportive work environment.

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LITERATURE REVIEW ON SMART WORKING: AN OVERVIEW

6.1 Methods

To study the relationship between *Smart Working* and *Leadership* it was useful and sometimes necessary to enlarge the range of analysis to the two topics of *Technologies* and *Generations*, which are very popular in the scientific debate of the last two decades.
From those articles that analyse one or more of the four topics, 43 have been chosen, 27 conceptual and 16 empirical, mainly from managerial journals, but also with significant managerial contributions from other research fields.
The research of articles was made with the following queries in three different research sites: Scopus, ResearchGate and Google Scholar.

Queries:
SMART + WORK
FLEXIBLE + WORK
LEADERSHIP + GENERATIONS
WORKFORCE + MANAGEMENT
ICT + WORK
DIGITAL/TECHNOLOGY + GENERATIONS
DIGITAL/TECHNOLOGY + GENERATIONS

6.2 Results of the Literature Review

First author name and Year	Journal/ Publisher	Title	Type of paper	Case/ Sample size/ Methodology	Organizations studied	Theoretical background	Aspects analyzed	Main findings	Further Research/Originality
Ahuja, M. K. (2007)	MIS Quarterly: Management Information Systems	IT Road Warriors: Balancing Work-Family Conflict, Job Autonomy, and Work Overload to Mitigate Turnover Intentions	Empirical	174 employees Questionnaire	Companies in the computer and software services industry	Moore's (2000) work on turnover intention	Work-family conflict. Job autonomy.	Work-family confrict is a source of stress. Context influence turnover.	Commitment and work exhaustion may have effect on turnover intention. Differential effects of role conflict and role ambiguity.
Autry, Alex J. (2011)	Industrial and Commercial Training	Digital natives and digital immigrants: Getting to know each other	Conceptual	Review of literature. Authors experience.			Digital natives and immigrants.	New digital language is evolving. Communication barriers.	Anlysis of learning advantage/disadvantage between generations.
Avolio, B. J (2009)	Annual review of psychology	Leadership: Current theories, research, and future directions	Conceptual	Review of literature.		Ledership theories		Holistic view of leadership. E-Leadership. Complexity Leadership.	Mixed-methods designs in future research.
Barrett, M. (2015)	MIS Quarterly: Management Information Systems	Service innovation in the digital age: Key contributions and future directions	Conceptual	Reviewing key insights from the service innovation literature.	Service industries and professions	Den Hertog (2000) four dimensions of service industries. Market driven SI. Three-phase SI with technology.	Service concept. Client interface. Intra-org service delivery system. Interorg service delivery system. Technology.	Service-Dominant Logic. Framework to Service Innovation Practice. Perspective to Service Innovation Research.	How Service Innovation theory informs and may be applied in the design of services, of service systems, and of service ecosystems. Consider more broadly (and consistently) where and how our field may contribute to societal improvements through our research on service innovation. Studying service innovation in a digital era in emerging countries.
Becker, K. (2012)	Education and Training	E-learning: Ageing workforce versus technology-savvy generation	Conceptual	5 case organizations	Autralian rail industries		Use of e-learning. Engage different generations.	E-learning not used at full potential. Expectations not satisfied.	Industry approach to provide suggestion to manage different generations.
Birkinshaw, J. (2008)	Academy of Management Review	Management innovation	Conceptual	Review of literature		Intraorganizationl evolutionary perspective	Institutional, fashion, cultural and rational perspective.	Model of management innovation with motivation, implementation, theorizaiton and labelling factors.	
Cardona, M. (2013)	Information Economics and Policy	ICT and productivity: Conclusions from the empirical literature	Conceptual	Review of empirical literature			ICT and productivity	Positive, significant and increasing effect of ICT on productivity.	Possible esternalities

First author name and Year	Journal/ Publisher	Title	Type of paper	Case/ Sample size/ Methodology	Organizations studied	Theoretical background	Aspects analyzed	Main findings	Further Research/Originality
Cekada, T. (2012)	Professional Safety	Training a multigenerational workforce	Conceptual	Major generalization of each generations. training approaches			4 generations working at the same time. Key challenges: technology, communication, immediacy, leadership skills. Training approaches.	The Baby Boomers more than 30 years in the workplace, younger generations bring technological expertise, enthusiasm and energy.	Recognizing and adapting to these traits can prevent a conflict between worker groups while enhancing communication and collaboration and leading to enhanced success in the training environment.
Cennamo, L. (2008)	Journal of Managerial Psychology	Generational differences in work values, outcomes and person-organisation values fit	Empirical	504 Auckland employees different industries online questionnaire.	Law firms. Media corporations. Construction industry. Pharmaceutical distribution. Information technology firms.		The BB, X, Y had differences in work values but fewer than expected. Younger prefer contract with freedom, status and social involvement. Promote strong organisational values statement, and combining good recruiting and assessment techniques, may reduce turnover and recruitment costs.	The youngest groups placed more importance on status and freedom work values than the oldest group. Baby Boomers reported better person-organisation values fit with extrinsic values and status values than Generation X and Generation Y but there were no other generational differences in fit. Where individual and organisational values showed poor fit there were reduced job satisfaction and organisational commitment, and increased intentions to turnover across all three generational groups.	The paper presents evidence that person-organisation values fit is important for all generational groups and popular notions about generational differences should not be over-generalised
Chillakuri, B. (2018)	Human Resource Management International Digest	Generation Z entering the workforce: the need for sustainable strategies in maximizing their talent	Conceptual				Independent in nature. Entrepreneurial drive.	Generations Z is techo-geek and want to learn on its own.	One of the first attempt address Generations Z.

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Colbert, A. (2016)	Academy of Management Journal	The digital workforce and the workplace of the future	Conceptual				Digital Fluency, Managing by Design, Service-Dominant logic. Copetencies. Identity development and Interpersonal Relating.	Digital technologies as platforms. Information, attention and Decision-Making (behavior, creativity, overload, well-being). How digital natives entering in the workforce have different expectations and influence.	The degree to which leadership skills developed online transfer to work How digitally mediated communication may influence communication, relationship quality, and empathy, especially in the workplace. Conflicts that may arise as these groups collaborate. How to design jobs in ways that best leverage digital fluency and to explore how variance in digital fluency impacts
Corso, M. (2013)	Communications in Computer and Information Science	The role of ICT in the new (virtual) working space an empirical investigation on enterprise 2.0	Empirical	52 case studies. Online community (Enterprise20.it) to refine research.	Medium-large Italian companies (manufacturing, banking, PA, assurance, pharmaceutical, services)		Social Network and Community. Unified Communication and Collaboration. Enterprise Content Management. Adaptive Enterprise Architecture. Maturity Levels for the Areas: *absence, experimentation, emerging development, uniform development, strategic development.*	Embryonic model (40%): few experimental services or the services are not integrated with each other Focused mod (36%): integrated/strategic development, one area; Composite model (21%): 2 areas elevated development Complete model (3%): most of the areas are characterized by an advanced level of unified and strategic development	Extensive empirical investigation of the phenome- non during three years and proposes a framework to interpret the E2.0.
Corso, M. (2008)	Int. J. Knowledge and Learning	Enterprise 2.0: what models are emerging? The results from a 70 case-based research	Empirical	70 case studies			Enterprise 2.0 emerging models	New organisation models based on open involvement, emergent collaboration, knowledge sharing, internal/ external social network development and exploitation. Answer to new needs.	The objective for management theory is to provide empirically grounded and actionable knowledge for companies to design and implement new ICT-enabled working environments able to extend the boundaries of their knowledge creation to their mobile workers, customers and suppliers.

First author name and Year	Journal/ Publisher	Title	Type of paper	Case/ Sample size/ Methodology	Organizations studied	Theoretical background	Aspects analyzed	Main findings	Further Research/Originality
Costanza, D. (2012)	Journal of Business and Psychology	Generationally based differences in the workplace: Is there a there?	Empirical	19,961 tot subjects. (20 studies allowing for 18 generational Pairwise comparisons across four generations)			Generational differences on three work-related criteria: job satisfaction, organizational commitment, and intent to turnover	Results indicates that the relationships between generational membership and work-related outcomes are moderate to small, essentially zero in many cases. Meaningful differences among generations probably do not exist on the work-related variables examined and appear to exist are related to factors other than generational membership	Given these results, targeted organizational interventions addressing generational differences may not be effective. This is the first known quantitative review of research on generational differences in the workplace
Costanza, D. (2015)	Industrial and Organizational Psychology	Generationally based differences in the workplace: Is there a there there?	Conceptual				Risks in using generations in organizational decisions. Myths and stereotypes.	Little solid empirical evidence supporting generationally based differences and almost no theory behind why such differences should even exist.	
De Hauw, S. (2010)	Journal of Managerial Psychology	Millennials' career perspective and psychological contract expectations: Does the recession lead to lowered expectations?	Empirical	Two matched samples of Millennials graduating in 2006 (n = 787) and 2009 (n = 825) Results may be subject to common method variance.		Psychological -contract perspective	Questionnaire regarding their psychological contract expectations, career strategy, and optimism about the labor market in completely different socioeconomic contexts	Recession is related to lower levels of optimism. Expectations regarding job content, training, career development, and financial rewards remain high, suggesting that these expectations are largely embedded within the generation.	Managers need to focus their limited resources during times of recession on meeting Millennials' high expectations regarding their development and careers.

First author name and Year	Journal/ Publisher	Title	Type of paper	Case/ Sample size/ Methodology	Organizations studied	Theoretical background	Aspects analyzed	Main findings	Further Research/Originality
De Kok, A. (2014)	Pacific Asia Conference on Information Sys-tems Proceed-ings	Assessing the new way of working: Bricks, Bytes and Behaviour	Conceptual	Review of 148 literature sources		Bricks, Bytes, Bheaviors	New Ways of Working	Telework and NWOW led to a multi-level analysis model with 13 themes clustered under the three above dimensions of NWOW. 77 topics were defined to provide a broad analysis of all aspects concerning NWOW	The NWOW Analysis Monitor will serve as a measuring instrument for future quantitative research on the effects of the implementation of NWOW on the organisation and its performance. This research could support or reject the positive relationship that is claimed in practitioner literature on the effects of the adoption of NWOW on employee satisfaction and work-life balance.
De Leede, J. (2016)	Advanced Se-ries in Manage-ment	New ways of work-ing and leadership: An empirical study in the service industry	Empirical	296 employees	Dutch financial institutions	Activity-based working. Home-based working.		The study is among the first to prove the relationship between NWW and organizational commitment and more importantly, it is one of the first providing empirical evidence on different leadership behaviors in explaining the organizational outcome of NWW	Contributes to the existing theory on NWW by focusing on the influence of empowerment, trust and steering on output as leadership competencies in the relationship between NWW and organiza- tional commitment.
De Meuse K. (2010)	People and Strategy	A Second Look at Generational Differences in the Workforce. Implications for HR and Talent Management	Conceptual	Search in Business Source Premier			Career Management. Organizational Loyalty. Motivation, Work Values and Attitudes.	These differences generally are not supported by the empirical research we examined. The literature was fairly sparse with well-designed and scientifically grounded studies, and most of those studies focused on specific work-related variables (such as organizational commitment or personality variables).	

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Deal, J. (2010)	Journal of Business and Psychology	Millennials at Work: What We Know and What We need to Do (If Anything)	Conceptual				Work attitudes, long-term health outcomes, personality factors	Beliefs about younger generation entering in the workforce has remained stable over the years (40). Attitudes: less centrality, altruistic values, higher job satisfaction. Small changes. Context as an influence factor (first job expectations different between 2006 and 2009). Culture: industry or nationality, Millennials is a western concept.	More focused on organizations which think that they are facing generation issues and analyze without the assumption that is for certain a generation issue. Inclusiveness is better in approaching different generations.
Festing, M. (2014)	Journal of World Business	Generational challenges to talent management: A framework for talent retention based on the psychological-contract perspective	Conceptual			Social exchange theory. Psychological contract perspective	Individual perspective vs generational/ cohort	In contexts where a war for talent prevails, the strong interest of Generations X and Y in training, development, and career advancement makes highly engaged and extensive TM activities even more crucial for retaining talented individuals than is the case for the so-called Baby Boomers.	In this case, TM has a different impact on the psychological contract of members from various generations, and we therefore truly question a talent strategy that treats all talent the same, without including variations based on generational cohorts or potentially even other diversity groupings (gender, cultural, or minority). Context-Organizational-Individual deep research is required.
Flanagan, L. (2003)	Journal of Educational Administration	Technology leadership for the twenty-first century principal	Conceptual		Education		Technology leadership for school principal and dean.	ICT implementation is seen as part of a deeper school reform movement. The need for ongoing leadership professional development to do with technology has major implications for graduate programs, system level programs, and the provision of mentorship opportunities.	Research is needed to understand the evolving role, competencies and dispositions towards technology and learning that principals require in order to be effective technology leaders, and how these are best developed and supported in practice.

First author name and Year	Journal/ Publisher	Title	Type of paper	Case/ Sample size/ Methodology	Organizations studied	Theoretical background	Aspects analyzed	Main findings	Further Research/Originality
Fogarty, H. (2011)	New Technology, Work and Employment	The half-empty office: dilemmas in managing locational flexibility	Conceptual	Case study of company with over 250 employees	London-based publishing group		Formal and informal teleworking	Regularisation of expectations in relation to remote working seems more important than its frequency, especially to retain a minimum level of 'presence'.	
Frey, C. (2017)	Technological Forecasting and Social Change	The future of employment: How susceptible are jobs to computerisation?	Empirical	702 detailed occupations		Coputerizations	Probability of computerisation of jobs. Number of jobs at risk.	According to our estimates around 47% of total US employment is in the high risk category. These findings are consistent with recent technological developments documented in the literature.	Substantial share ofemployment in service occupations are highly susceptible to computerisation.
Golden, W. (2000)	Omega	Towards a definition of flexibility: In search of the holy grail?	Conceptual	Review of literature			Flexibility and information technology	Flexibility is defined as `the capacity to adapt' across four dimensions; temporal, range, intention and focus.	The four measurements of flexiblity are efficiency, responsiveness, versatility and robustness, measure the temporal and range dimensions of flexibility. The other two dimensions of fexibility, intention and focus, are defned within the context of the variable being studied.
Helyer, R. (2012)	Education and Training	The twenty-first century multiple generation workforce: Overlaps and differences but also challenges and benefits	Conceptual	Review of literature			Multiple generations workforce	As the composition of the workplace shifts, examining the inter- relationship between groups of workers of different ages/profiles who have different skills, attitudes, expectations and learning styles is vital	Little has been published on how generations might usefully work together, especially the idea of adapting the skills and maximising on the overlaps of different generational profiles. The exploration of the hybrid graduate is also a new area for academic research.

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Hershatter, A. (2010)	Journal of Business and Psychology	Millennials and the World of Work: An Organization and Management Perspective	Conceptual	Review of current research of Millennials workplace. Several short business case studies		Institutional values	Technology. Digital Immersion, Content Creation and Engaged Interaction. Organizations: Millennial Meritocracy and Supporting Structures. Careers: Feedback and Clarity, Work and Life, Employer Relationships, and Institutional Loyalty	Millennials rely on existing institutions. Incorporation of technology, not only access info and resources, but also to think and function in a world that, to them, has always beenwithout boundaries. Authenticity and institutional values because they are counting on working within organizations to drive change. Millennials want to amass the skills, knowledge, and credentials that will assist them in fulfilling both their personal and societal goals.	
Howe (2007)	Harvard Business Review	The Next 20 Years: How Customer and Workforce Attitudes Will Evolve	Conceptual				American Six generations Prophet, Nomad, Hero and Artist.	Generations as one of the most powerful forces in history To anticipate what 40-year-old will be like 20 years from now, don't look at today's 40-year-old, look at today 20 = more similar in the same generations	
Lyons, S. (2014)	Journal of Organizational Behavior	Generational differences in the workplace: A review of the evidence and directions for future research	Conceptual				Work-related variables, including personality, work values, work attitudes, leadership, teamwork, work–life balance and career patterns.	The results of time-lag, cross-temporal meta-analytic and cross-sectional studies provide sufficient "proof of concept" for generation as a workplace variable. Social force in rather than as a demographic variable.	Sufficient impetus to continue researching generation as a work phenomenon but do not suggest a straightforward relationship between birth cohort and other variables.

First author name and Year	Journal/ Publisher	Title	Type of paper	Case/ Sample size/ Methodology	Organizations studied	Theoretical background	Aspects analyzed	Main findings	Further Research/Originality
Martin C. (2005)	Industrial and Commercial Training	From high maintenance to high productivity: What managers need to know about Generation Y	Conceptual	(General review) RainmakerThinking Inc.'s ongoing workplace interviews with hundreds of Generation Yers and managers.				Like Gen X siblings, Generation Yers are independent, with entrepreneurial responsibility, demand immediate feedback, need accomplishment. They thrive on challenging work and creative expression, love freedom and flexibility, and hate micromanagement. 14 expectations of managers that define the type of professional relationships they want to be.	Generation Y is just beginning to gain pull in the workplace as full-time workers. Ongoing research is needed to see how our initial conceptions of them as high school and university students plays out as they mature in their professional lives.
McAfee, A. (2006)	IEEE Engineering Management Review	Enterprise 2.0: The dawn of emergent collaboration	Conceptual				Corporate intrantet tools	Leaders have to play a delicate role, and one that changes over time, if they want Enterprise 2.0 technologies to succeed. They have to at first encourage and stimulate use of the new tools.	Enterprise 2.0 technologies have the potential to usher in a new era by making both the practices of knowledge work and its outputs more visible.

First author name and Year	Journal/ Publisher	Title	Type of paper	Case/ Sample size/ Methodology	Organizations studied	Theoretical background	Aspects analyzed	Main findings	Further Research/Originality
Myers K. (2010)	Journal of Business and Psychology	Millennials in the Workplace: A Communication Perspective on Millennials' Organizational Relationships and Performance	Conceptual				Millennials, Communication, and Membership Negotiation. Expectations, Communication, and Team Relationships. Communication/ Information Technologies Communication, and Adversity. Achievement Orientations, Parental Communication, and Leadership Aspirations.	1. Millennials are likely to be acutely affected by globalization, communication and information technologies, economics, and socialization by very involved parents. 2. Different perspectives about the world marketplace, supervisor - subordinate relationships, cultural diversity, performance of tasks, and ways that communication and information technologies can increase organizational performance productivity	Organizational members modified their communication to manage conflict between the cohorts? How Millennials are affected by interaction with supervisors and coworkers. Will they adapt as they gain experience, and as a result of interaction with their Boomer and Generation X colleagues? Or, will they retain their positive qualities, remaining optimistic, team oriented, and committed to balancing personal and work life? Especially important, what are the effects of coworkers' relationships with Millennials on team performance and organizational productivity?
Neirotti, P. (2017)	Journal of Enterprise Information Management	Flexible work practices and the firm's need for external orientation: An empirical study of SMEs	Empirical	Survey on 304 Italian SMEs	Piemonte: Firms with between 10 and 500 employees.			Flexible work in SMEs is chosen for different reasons associated to different conditions in the competitive environments and in ICT usage where SMEs operate. In general, SMEs use flexible work when they are more capable of improving their external orientation toward suppliers, customers, and the entrance in new markets with ICT. This duality is more likely in the competitive environments where external orientation and information processing are more needed, namely, environments that are uncertain and complex for product and breadth of the geographical complexity (scope) covered	Future studies should disentangle more in depth the ways these characterizations are related to different ICT usages. Flexible work as an organizational mechanism used to cope with uncertain and complex environments where more external orientation is needed

First author name and Year	Journal/ Publisher	Title	Type of paper	Case/ Sample size/ Methodology	Organizations studied	Theoretical background	Aspects analyzed	Main findings	Further Research/Originality
Noble, S. (2010)	Journal of Business Research	Cohort segmentation: An exploration of its validity	Empirical	373 voluntary participants. Age from 17 to 80			Cohort group values and definition. Consumer side, not employees.	The results showed that 45% of participants could be correctly classified into their cohort grouping and that external life events were related to these groupings; however, the results raise questions about the existence of consumer cohorts.	To examine the central relationship in the cohort concept—whether values can predict cohort groupings. To determine if consumers within cohort groupings cite similar external events as influential to them.
Olaisen, J. (2017)	International Journal of Information Management	Working smarter and greener: Collaborative knowledge sharing invirtual global project teams	Empirical	4 Scandinavian virtual global project teams with 42 team members. Longitude study in 2014-16 based upon 168 individual reports and 16 in-depth top leader interviews				1. Working smarter: using technology platforms trust and knowledge collaboration. Work in a global project team high-performance. 3. Working greener with solutions and innovations. Travel less using the possibilities given by social technology platforms. The fourteams reduced the number of trips by 50–70%.	
Prensky, M. (2001)	On the Horizon (MCB University Press, Vol. 9 No. 5, October 2001)	Digital Natives, Digital Immigrants pt.1	Conceptual				Digital Immigrant instructors, who speak an outdated language (that of the pre-digital age), are struggling to teach a population that speaks an entirely new language	First, our methodology. But it does mean going faster, less step-by step, more in parallel, with more random access, among other things. Second, our content. It seems to me that after the digital “singularity” there are now two kinds of content: “Legacy” content (to borrow the computer term for old systems) and “Future” content.	Gaming: In the end the professors and their staff came through brilliantly, but because of the large mind-shift required it took them twice as long as we had expected. As they saw the approach working, though, the new “Digital Native” methodology became their model for more and more teaching – both in and out of games – and their development speed increased dramatically.

First author name and Year	Journal/ Publisher	Title	Type of paper	Case/ Sample size/ Methodology	Organizations studied	Theoretical background	Aspects analyzed	Main findings	Further Research/Originality
Raguseo, E. (2016)	Evidence-based HRM	Smart work: Supporting employees' flexibility through ICT, HR practices and office layout	Empirical	Survey to 100 HR directors of medium and large Italian organisations + four embedded case studies based on 49 semi-structured interviews			Smart Working High flexibility choice of the working spaces Time and tools. Whether firms adopts SW models. Complementarities between the elements lead to SW model contingent variables matters in the implementation	Four models: inconsistent, analogical, digital and complete SW. Enabling digital technologies, in transformations of the organizational policies and in workspace settings. Complementarities between the elements that characterize a SW model and that at least two elements are developed in each SW model.	The paper unpacks the elements that can generate SW e nvironments by deepening the complementarities that can be exploited among information and communication technologies (ICT), work-place and work practice innovation, and by evaluating their development on employees' performance.
Srinivasan, V. (2012)	IIMB Manage-ment Review	Multi generations in the workforce: Build-ing collaboration	Conceptual	Review of literature		Generational studies	Multigenerational workforce. Collaboration beteween generations	Impact on leadership styles and managerial practices. Reverse mentoring, retiree casual programme.	
Stanko, T.(2015)	Academy of Management Journal	Watching You Watching Me: Boundary Control and Capturing Attention in the Context of Ubiquitous Technology Use	Empirical	73 interviews - US Navy different levels	Army, military organizations		Boundary control (tracking, cultivating, restricting attention) Situational controls (pop-up + monitoring, contextualization, and deflection)	What boundary control must focus on to be effective: not time, but instead attention. The concept of situational controls that builds on this new definition. Develop a model that demonstrates how situational controls work in tandem by tracking, cultivating, and restricting individuals' attention in an ongoing process.	A Model of Organizational Moves and Individual Responses in the Struggle for Organizational Control.

First author name and Year	Journal/ Publisher	Title	Type of paper	Case/ Sample size/ Methodology	Organizations studied	Theoretical background	Aspects analyzed	Main findings	Further Research/Originality
Stewartm J. (2017)	Business Horizons	Managing millennials: Embracing generational differences	Empirical (1798 sample interviews)	4 generations			Millenial positive workplace culture and organizational commitment		1. it may be particularly interesting to study an organization that has less control over physical space. 2. new software then analyzes the digital behavior that it has tracked and, if deemed 2. new software then analyzes the digital behavior that it has tracked and, if deemed necessary, sends an email to the individual with a reminder of what work the individual should be focusing on, these new approaches have to be explored and also the limitations of these efforts.
Twenge J. (2008)	Journal of Managerial Psychology	Generational differences in psychological traits and their impact on the workplace	Empirical (General Review empirically based)	The data are gathered from research reports using psychological scales over the last eight decades, primarily those using college student samples.			The database includes 1.4 million people who completed personality, attitude, or behavior scales between the 1930s and the present. This method gathers the average scores of young samples who completed a psychological scale (e.g. the State-Trait Anxiety Inventory, the Narcissistic Personality Inventory).	Generation Me (sometimes called Gen Y or Millennials) demonstrates higher self-esteem, narcissism, anxiety, and depression; lower need for social approval; more external locus of control; and women with more agentic traits.	

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Twenge J. (2010)	Journal of Management	Generational differences in work values: Leisure and extrinsic values increasing, social and intrinsic values decreasing	Empirical	Sample of U.S. high school seniors in 1976, 1991, and 2006 (N = 16,507) representing Baby Boomers, Generation X (GenX), and Generation Me (GenMe, also known as GenY, or Millennials).				Contrary to popular press reports, GenMe does not favor altruistic work values (e.g., helping, societal worth) more than previous generations. Social values (e.g., making friends) and intrinsic values (e.g., an interesting, results-oriented job) were rated lower by GenMe than by Boomers. These findings have practical implications for the recruitment and management of the emerging workforce.	
Uhl-Bien, M. (2007)	Leadership Quarterly	Complexity Leadership Theory: Shifting leadership from the industrial age to the knowledge era	Conceptual			Leadership models. Bureacratic paradigm.	Leadership roles.	Complexity Leadership Theory, a leadership paradigm that focuses on enabling the learning, creative, and adaptive capacity of complex adaptive systems (CAS) within a context of knowledge-producing organizations	Complexity Leadership Theory offers a new way of perceiving leadership—a theoretical framework for approaching the study of leadership that moves beyond the managerial logics of the Industrial Age to meet the new leadership requirements of the Knowledge Era