

**Università degli Studi di Padova**



**Department of Economics and Management**

Master Program in Entrepreneurship and Innovation

**HYBRID JOBS IN THE DIGITAL ERA**  
**JOB REDESIGN AND THE WORKPLACE OF THE FUTURE**

Supervisor Paolo Gubitta, PhD

Candidate      Francesco Coin

ID Number     2020114

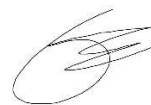
Academic Year 2022/2023



Dichiaro di aver preso visione del “Regolamento antiplagio” approvato dal Consiglio del Dipartimento di Scienze Economiche e Aziendali e, consapevole delle conseguenze derivanti da dichiarazioni mendaci, dichiaro che il presente lavoro non è già stato sottoposto, in tutto o in parte, per il conseguimento di un titolo accademico in altre Università italiane o straniere. Dichiaro inoltre che tutte le fonti utilizzate per la realizzazione del presente lavoro, inclusi i materiali digitali, sono state correttamente citate nel corpo del testo e nella sezione ‘Riferimenti bibliografici’.

I hereby declare that I have read and understood the “Anti-plagiarism rules and regulations” approved by the Council of the Department of Economics and Management and I am aware of the consequences of making false statements. I declare that this piece of work has not been previously submitted – either fully or partially – for fulfilling the requirements of an academic degree, whether in Italy or abroad. Furthermore, I declare that the references used for this work – including the digital materials – have been appropriately cited and acknowledged in the text and in the section ‘References’.

Firma

A handwritten signature in black ink, consisting of a large, stylized initial 'E' followed by several horizontal strokes.

*To my family and  
to all those who do not surrender,  
to all those who dare in life.*



# Table of Contents

|  |           |
|--|-----------|
| <i>Table of Contents</i> .....                                       | 6         |
| <i>Tables &amp; Figures</i> .....                                    | 8         |
| <b>INTRODUCTION &amp; SUMMARY</b> .....                              | <b>9</b>  |
| <b>CHAPTER 1 - HYBRID JOBS IN A DIGITAL WORLD</b> .....              | <b>10</b> |
| <i>INTRODUCTION</i> .....  | 10        |
| 1.1 <i>THE DIGITAL REVOLUTION AND THE KNOWLEDGE ERA</i> .....        | 11        |
| 1.2 <i>DIGITAL FLUENCY</i> .....                                     | 12        |
| 1.3 <i>HYBRID JOBS</i> .....   | 13        |
| 1.4 <i>HYBRIDS JOBS IN THE RENAISSANCE AND MIDDLE AGES</i> .....     | 19        |
| 1.5 <i>FROM TAYLOR-FORD STANDARDIZATION TO HYBRIDIZATION</i> .....   | 20        |
| 1.6 <i>LOW-SKILL AND HIGH-SKILL WORKERS IN THE DIGITAL ERA</i> ..... | 22        |
| 1.7 <i>YOUNG DIGITAL VS. OLD NON-DIGITAL</i> .....                   | 26        |
| 1.8 <i>CONCLUSION</i> .....  | 27        |
| <b>CHAPTER 2 - DIGITALIZATION AT ALL LEVELS</b> .....                | <b>29</b> |
| <i>INTRODUCTION</i> .....  | 29        |
| <i>INDIVIDUAL LEVEL</i> .....  | 30        |
| 2.1 <i>TALENT MANAGEMENT IN SME</i> .....                            | 30        |
| 2.1.1 <i>MNE vs. SME</i> .....                                       | 31        |
| 2.1.2 <i>PERSON-JOB FIT &amp; PERSON-ORGNIZATION FIT</i> .....       | 33        |
| 2.2 <i>WHICH WORKER FITS IN THE DIGITAL ERA?</i> .....               | 35        |
| 2.2.1 <i>PERSONALITY: BIG FIVE MODEL</i> .....                       | 36        |
| 2.2.2 <i>VOCATIONAL INTERESTS: RIASEC MODEL</i> .....                | 38        |
| 2.2.3 <i>MANAGING THE AGE GAP</i> .....                              | 40        |
| <i>ORGANIZATION LEVEL</i> .....                                      | 44        |
| 2.3 <i>MANAGEMENT MODELS IN THE DIGITAL ERA</i> .....                | 44        |
| 2.3.1 <i>LEARNING ORGANISATION MODEL</i> .....                       | 44        |
| 2.3.2 <i>SECI MODEL</i> .....  | 46        |
| 2.3.3 <i>HIGH-VELOCITY EDGE MODEL</i> .....                          | 47        |
| 2.3.4 <i>HOLACRACY MODEL</i> .....                                   | 48        |
| <i>INSTITUTION LEVEL</i> .....                                       | 50        |
| 2.4 <i>INSTITUTIONS DIGITALIZATION</i> .....                         | 50        |
| 2.4.1 <i>EUROPE</i> .....  | 50        |
| 2.4.2 <i>ITALY</i> .....   | 51        |
| 2.4.3 <i>VENETO</i> .....  | 52        |
| 2.4.4 <i>EDUCATION SYSTEM</i> .....                                  | 53        |
| 2.5 <i>CONCLUSIONS</i> .....   | 55        |

|   |           |
|---|-----------|
| <b>CHAPTER 3 - HYBRID JOBS CHALLENGES: VENETO CASE STUDY.....</b> | <b>57</b> |
| <i>INTRODUCTION.....</i>  | <i>57</i> |
| 3.1 <i>METHODOLOGY.....</i>                                       | <i>57</i> |
| 3.1.1 DATA COLLECTION.....  | 58        |
| 3.1.2 CASE-STUDY COMPANY.....                                     | 59        |
| 3.1.3 LIMITATIONS.....  | 60        |
| 3.2 <i>THEORETICAL FRAMEWORK.....</i>                             | <i>60</i> |
| 3.3 <i>RESULTS.....</i>   | <i>63</i> |
| 3.4 <i>CONCLUSION.....</i>  | <i>66</i> |
| <b>CHAPTER 4 – SURFING THE DIGITAL WAVE.....</b>                  | <b>68</b> |
| <i>INTRODUCTION.....</i>  | <i>68</i> |
| 4.1 <i>ANALYSIS OF THE FINDINGS.....</i>                          | <i>68</i> |
| 4.1.1 HYBRID WORKERS AND TRANSVERSAL KNOWLEDGE.....               | 68        |
| 4.1.2 TALENT MANAGEMENT.....                                      | 69        |
| 4.1.3 ORGANIZATIONAL MANAGEMENT.....                              | 71        |
| 4.1.4 INNOVATION AND KNOWLEDGE DIFFUSION.....                     | 71        |
| 4.1.5 ROLE OF INSTITUTIONS.....                                   | 72        |
| 4.2 <i>ROADMAP TO DIGITALIZATION.....</i>                         | <i>74</i> |
| 4.2.1 WORK ARCHITECTS.....  | 76        |
| 4.3 <i>A MODEL FOR INSTITUTIONS: EMILIA ROMAGNA.....</i>          | <i>77</i> |
| 4.4 <i>A MODEL FOR ORGANIZATIONS: LOCCIONI.....</i>               | <i>79</i> |
| 4.5 <i>A MODEL FOR INDIVIDUALS: LIFELONG LEARNING.....</i>        | <i>80</i> |
| 4.6 <i>CONCLUSION.....</i>  | <i>82</i> |
| <b>BIBLIOGRAPHY.....</b>  | <b>85</b> |

# Tables & Figures

Figure 1 Jobs demand projection.....17

Figure 2 Jobs salaries..... 17

Figure 3 Hybrid jobs entry-level positions.....18

Figure 4 Evolution of Management.....22

Figure 5 Human capital dimension 2019 – basic and advanced digital skills.....23

Figure 6 Digital skills in Europe by age and educational level.....24

Figure 7 Management dimensions .....29

Figure 8 Learning Organisation Model .....45

Figure 9 SECI model ..... 47

Figure 10 Holacracy model..... 49

Table 1 Evidence from literature..... 60

Table 2 Case study findings..... 63



# INTRODUCTION & SUMMARY

OBJECTIVE OF THE THESIS – The purpose of this research is to identify the organizational challenges the hybrid jobs produce within Italian SMEs., with focus on the emergence of hybrid jobs in the digital era, the job redesign and the evolution of the workplace in the future. Furthermore, this document investigates the digital fluency of workers of different generations and the organizational challenges posed on the integration of a young digital workforce with an older cohort of workers with limited digital knowledge. This study takes into consideration the new paradigm generated by hybrid jobs within Italian SMEs and proposes strategic actions to overcome the digital gap in order to create a more knowledgeable workforce that can respond in a more agile manner to quickly changing markets and technologies.

After an extensive review of the literature on the evolution of the digital era, the document describes a series of methodologies and approaches implemented by researchers and institutions in order to redesign the organizational structure of modern enterprises. Next the research investigates an Italian SME based in Campodarsego -Padova-, Bano Recycling s.r.l., with the aim of identifying similarities and differences in the process of the organizational restructure required by *Industry 4.0*. Finally, this research paper identifies strategies and actions that could be adopted and implemented in order to upgrade the workforce, redesign the workplace and implement organizational output in the digital era.

The thesis is divided into four chapters that respectively analyse the concept of hybrid jobs and the digital era, evaluate the impact of digitalisation at different levels (individual, organisation, institution), analyse a case study on topics such as hybrid jobs, transversal knowledge, management practices, public institutions support, and, finally, propose a digitalisation roadmap for those Italian SMEs that are moving into the digital.

# CHAPTER 1 - HYBRID JOBS IN A DIGITAL WORLD

## INTRODUCTION

In today's digital world, the concept of work is rapidly evolving, giving rise to a new phenomenon known as hybrid jobs. Hybrid jobs refer to roles that blend diverse skill sets, combining elements of both traditional and digital competencies. These positions have emerged as a result of the increasing integration of technology in various industries and the need for individuals to adapt to shifting work standards.

This chapter describes how the digital revolution has brought a new era of knowledge-driven economies, where information and technology play pivotal roles. This section provides an overview of the digital revolution, its transformative effects on various industries, and the rise of the knowledge economy. Next the concept of digital fluency is evaluated, with consideration of the lexical evolution from “digital literacy” to “digital fluency”, a jargon that better describes the digital skills of individuals in a digital society that is continuously flowing.

The core concept of the chapter is hybrid jobs that is extensively analyzed. This section investigates the concept of hybrid jobs, their characteristics, and the growing demand for individuals who possess diverse skills to bridge the gap between different areas of expertise. Moreover, research is conducted on hybrid jobs in the pre-industrial times, with reference to the Renaissance and the Middle Ages in Italy. Finally, the chapter analyzes the evolution of human work from the Taylor-Ford scientific management model to Industry 4.0 work hybridization, with consideration of the digital gaps in demographics terms and education level.

In conclusion, this chapter provides an overview of the digital revolution and its impact on the workforce, highlighting the importance of digital fluency, the emergence of hybrid jobs, historical perspectives on hybridization, the transition from standardized roles to hybridization, the gap between low-skill and high-skill workers, and the generational divide between young digital natives and older non-digital individuals. By understanding these dynamics, we can navigate the complexities of the digital era and embrace the opportunities it presents.

## 1.1 THE DIGITAL REVOLUTION AND THE KNOWLEDGE ERA

Humanity has entered into the digital era, a time of profound change for society, business and work. Mankind has evolved over millions of years, going from rudimentary stone-made tools to the internet, from the Neolithic revolution to the digital era. Technological evolution has marked the development of human society, from telegraph to smart phones, from human labour to robots. According to the Encyclopedia Britannica (2023), “technology” is defined as “the application of scientific knowledge to the practical aims of human life”. As this definition states, knowledge is the agent that enables humanity to progress, to generate technology and innovation, to advance from the *First Industrial Revolution* in 1760 to the present *Fourth Industrial Revolution* or *Digital Revolution*.

The Digital Revolution is not only changing the way people live, work, and interact but it is transforming the way people perceive themselves. Concepts like privacy and ownership, consumption habits, working routines, career paths, skills development, socialization and networking are all impacted by this (Schwab, 2016). The shift in the very near future will be unlike anything humans have ever encountered in terms of magnitude, scope, and complexity. Water and steam power were utilized in the First Industrial Revolution to automate production. Electricity was employed by the Second Revolution to facilitate mass production. The Third Revolution automated production using electronics and information technologies. In the Fourth Industrial Revolution the distinction between the physical, digital, and biological domains is becoming increasingly muddled as a result of a convergence of technology (Schwab, 2016). Companies must reevaluate how they conduct business due to the inexorable transition from simple digitization (the Third Industrial Revolution) to innovation based on a combination of technologies. Executives and senior leaders must comprehend their shifting environment, question the assumptions of their operating teams, and constantly innovate. Talent will be the key component in the future.

According to Peter Drucker (1994), in the modern economic system, knowledge has taken over as the primary factor of production, surpassing both labour and capital. As a result, numerous low-skilled workers and a growing population of middle-income individuals living in the suburbs are experiencing the effects of restructuring and technological displacement. Meanwhile, a privileged group consisting of knowledge workers, entrepreneurs, and corporate managers are reaping the advantages offered by the high-tech global economy. This shift towards an unequal social order based on knowledge presents a significant challenge.

As a result, the job market will become more divided into "low-skill/low-pay" and "high-skill/high-pay" divisions. The demand for highly qualified people is steadily increasing while that for individuals with less education and lower abilities is falling (Schwab, 2016). Taking into consideration that future employers will value skills more than college credentials, public institutions should also ensure that higher education is still worthwhile or reconsider it entirely and use more cutting-edge approaches to skills training. Vocational training programs with a focus on developing specific skills should be widely available and reasonably priced to move workers up the skill ladder. Additionally, the educational system should teach people skills that machines yet lack such as meta-skills like initiative, cooperation, curiosity, and adaptability (Kasriel, 2019). Today more than ever knowledge is at the core of human evolution, it has become the essence of society, business and work.

## **1.2 DIGITAL FLUENCY**

In modern fast-paced life electronic English, which greatly differs from the conventional English in terms of form and usage, has become short and symbolic. The development of emoticons and other iconic inferences occur in a way that mimics earlier symbolic means of communication. The digital era is creating new jargons such as the Internetese and the Textese, new words are coined, either mixing different languages or modifying existing terminologies (Abdu,2017).

In line with this linguistic evolution, the word "literacy" is being substituted by the term "fluency" for describing the digital knowledge of a person. As a matter of fact, the Oxford English Dictionary defines fluency as "the quality or state of flowing or being fluent; a smooth and easy flow; readiness, smoothness, especially with regard to speech; absence of rigidity". This definition describes a level of dexterity in using language to communicate. Communication is made of the data out-flowing like voice, speech, writing, designing, body language- and data in-flowing like hearing, reading, sight, senses, smell. Mastering these communication features entails a person to be able to recognize humor, catch nuances, and irony. Besides speaking the language accurately and fluently, it requires expertise with its various registers and the culture associated with the language (Ager, 2009).

In line with this description of the term "fluency", digital fluency involves not only the technological ability, but also the creation and communication of complex ideas and meaning, as well as understanding such communications (Resnick, 1998).

Belshaw (2011) suggests that the reason literacy has remained such a stable idea is due to the static or stable technology (paper) upon which the concept was founded. Because "literacy becomes a staging-post on the journey instead of the destination itself," Belshaw believes the term "flow" is favorable.

The National Research Council (NRC, 1999) explains their preference for the word "fluency" over the word "literacy" due to the pace of change. They state that "literacy is too modest a goal in the presence of rapid change, because it lacks the necessary 'staying power.' As the technology changes by leaps and bounds, existing skills become antiquated and there is no migration path to new skills" (NRC, 1999).

Boise State University (BSU, 2015) defines digital fluency as "an evolving aptitude that empowers the individual to effectively and ethically interpret information, discover meaning, design content, construct knowledge, and communicate ideas in a digitally connected world".

Briggs and Makice (2011) explain fluency as "an ability to reliably achieve desired outcomes through use of technology". They also try to describe fluency by what it is not, in other words they say that "a literate person would understand what to do and how to do it but would not be able to articulate the when and why". A person who is digitally fluent would know not only how Twitter works, but also when and why using it is beneficial. Furthermore, Briggs and Makice take into consideration the aspect of context or situation. They say that "digital fluency is an ability to reliably achieve desired outcomes through use of digital technology. This ability is helped or hindered by the situational forces and the digital fluency of others".

### **1.3 HYBRID JOBS**

Hybrid jobs are a combination and integration of technical, managerial, professional, or relational skills with IT and digital skills. It encompasses the ability to effectively communicate through social networks, interact with others using technology as a medium, and navigate work environments where physical and social spaces, as well as corporate and personal time, take on diverse configurations. This concept of hybrid job extends beyond newly conceived activities that emerged with the widespread adoption of digitization. It also applies to traditional occupations that undergo content modifications to align with new value production methods, without necessarily changing their names (Gubitta, 2019).

Job descriptions are evolving to encompass skills that were previously associated with separate positions, which poses a potential risk of eliminating existing roles. A report from Bentley University (2016) examined various job categories, including marketing, HR, data analysis, and examined key jobs and skills within those categories. By analysing data from 24.5 million U.S. company job listings between September 2014 and August 2015, the study revealed that 71% of sought-after skills are needed in two or more job categories. Candidates who possess these cross-category skills will fit better in the future hybrid jobs.

Burning Glass Technologies (BGT, 2019), a company that extensively analyses millions job postings and employee resumes from countless companies, has conducted a research that sheds light on the current situation. The findings indicate that jobs are progressively adopting a more hybrid nature, growing in complexity and requiring four crucial sets of new skills.

These skills can be categorized into four broad areas.

Firstly, it is crucial to build skills in digital tools and technology. As machines increasingly augment our capabilities, being proficient in learning new systems, configuring and customizing tools, and even coding, when necessary, becomes essential. It is crucial to acquire knowledge in building or customizing systems to suit your needs because these skills add unique value.

Secondly, gaining proficiency in analytics and data is highly important. Among the growing skill sets, data analytics, including interpretation, visualization, and communication, stands out as one of the most significant. Jobs with high salaries, such as customer service manager, health care advisor, and sales professional, all require proficiency in analytics and data.

Thirdly, understanding the fundamentals of business and management is crucial. In today's landscape, one out of every three IT jobs requires management and business skills. Additionally, an increasing number of engineering positions now demands business and leadership skills. Overall, jobs involving business management and process experience offer a salary premium. Workers with project management experience earn more compared to those without such expertise.

Lastly, adopting a designer's or creative mindset is increasingly valuable. More than half of IT jobs now require some form of digital design. Technology positions also demand design skills, with a growing trend of job offers requiring design expertise. User interface and other design-related roles are growing at a rate of 35% per year. While machines can automate decisions, analyse data, and provide recommendations, there is a need for human designers to create user experiences, systems, and platforms people interact with on a daily basis (BGT, 2019).

According to Gubitta (2019) the hybridization of work is a phenomenon that can take two different paths. On one hand, established and well-known professions undergo evolution. This evolution occurs through the expansion or contraction of their boundaries, incorporating new activities or relinquishing some, and through the vertical transformation enabled by technology. Technological advancements grant workers greater discretion and control in some cases, while in others, the technology itself assumes thinking and decision-making functions, thereby limiting the worker's manoeuvrability. Additionally, the methods of carrying out and delivering services within these professions may change while retaining the same core content.

On the other hand, digital jobs experience their own evolution by assimilating certain activities traditionally associated with established and well-known professions.

Increasingly, jobs are becoming hybrids, combining skill sets that were traditionally separate, such as marketing and statistical analysis, or design and programming. Certain skills are acting as catalysts for this hybridization, spreading across different roles. Approximately one-quarter of all occupations in the U.S. economy exhibit strong signs of hybridization, and they are consistently the fastest-growing and highest-paying jobs, as well as being resistant to automation. Some of these jobs are entirely new, while others represent updated versions of existing roles. However, they all present distinct challenges for workers, students, employers, and educators.

Since the initial identification of the hybrid trend in 2015, the pace of hybridization has only accelerated. According to a recent investigation on hybrid jobs in Burning Glass' database, it was observed that approximately one out of every eight job postings demonstrates significant hybridization, encompassing over 250 distinct occupations. Projections indicate that hybrid roles will experience twice the growth rate of overall job opportunities. Technology plays a significant role in this trend, although it is not the sole driving force. The integration of soft skills, analysis, and management into technical fields often creates hybrid roles. Hybrid jobs, which typically involve judgment and analysis, are less likely to be automated compared to other positions. Hybridization is driven by skills from five key areas, which include both new and traditional skills applied in innovative ways: Big Data and Analytics, Intersection of Design and Development, Sales and Customer Service, Emerging Digital Technologies, Evolving Compliance and Regulatory Landscape (BGT, 2019).

Certain disruptive skills that can be applied across multiple fields are the true catalysts behind hybridization. Data science and analytics serve as one prime illustration of this phenomenon. As matter of fact, in 2010 the number of job openings for data scientists was incredibly low, just

150, mainly aimed at Ph.D. statisticians. However, as the incidence of the “big data” surged within the business landscape, by 2018 the demand for Data Scientists experienced an astonishing increase of 15032% (BGT, 2019).

Coding exemplifies yet another disruptive skill. The role of Graphic Designers now entails a growing necessity to write HTML. Marketers and business professionals find themselves in need of fundamental SQL skills for database management. This surge in technological advancements has given rise to entirely new job categories, such as UI/UX designers who focus on creating user-friendly technological interfaces.

Anyway, disruptive skills are not always novel abilities. Alongside the integration of technical skills into traditionally non-technical roles, there is a notable surge in the infusion of business skills into previously purely technical positions. Among these, management skills are especially gaining significance in the realm of information technology. In 2013, a quarter of IT job postings sought business leadership skills, which escalated to one in three by 2018 (BGT, 2019).

A significant portion of the job market, specifically 26% of occupations and 12% of job postings, fall into the "very high" or "high" categories of the hybridization scale. This implies that most jobs have yet to undergo significant hybridization. However, it is noteworthy that hybrid jobs constitute the most lucrative and rapidly expanding segments within the job market. According to statistics (Figure 1), job postings for "very high" hybridization roles are predicted to grow by 21% over the next decade, which is twice the growth rate (10%) projected for jobs overall (BGT, 2019).

Although these emerging positions often offer significantly higher pay compared to their more conventional predecessors, the salary advantage of hybrid roles extends even to traditional positions that now demand new skills. According to BGT, the addition of a single skill can often result in salary increments of up to 40% (Figure 2).



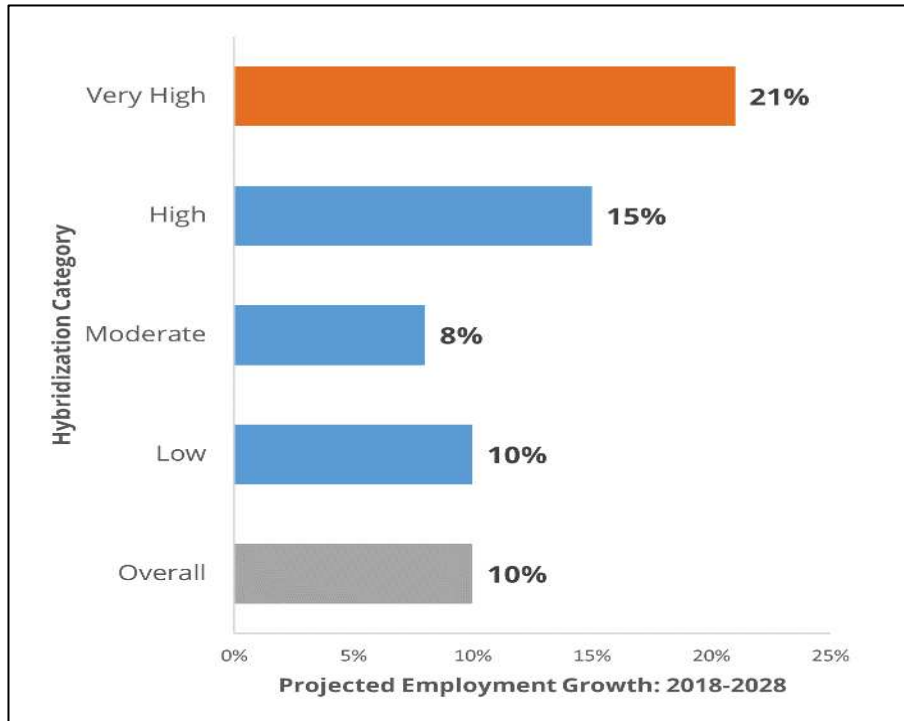


Figure 1 Jobs demand projection

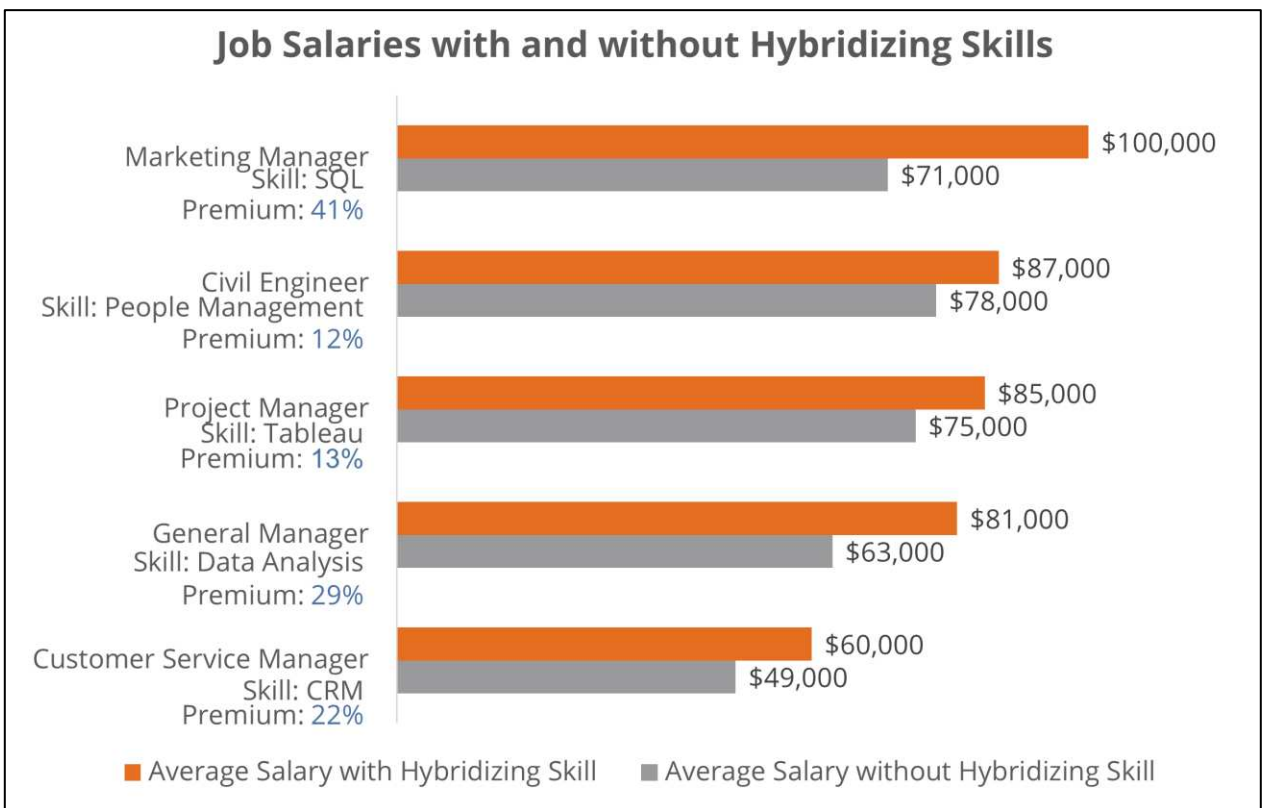


Figure 2 Jobs salaries

Anyway, due to the complexity and specialization of hybrid roles, there are limited entry-level opportunities in these occupations. The hybrid job economy presents a significant challenge for employers, workers, and educators alike, primarily due to the scarcity of entry-level positions in this domain. In the broader job market, entry-level roles accounted for 58% of job postings in 2018. However, highly hybridized roles constituted merely 16% of entry-level opportunities (Figure 3). These positions inherently demand a higher level of sophistication and necessitate the acquisition of advanced skills. A prime example of this is product management, where the diverse requirements make it unlikely for individuals to possess all the necessary capabilities from their academic background alone. This raises questions about how workers can embark on a career in product management if the jobs require prior experience in the field. This challenge is evident in the extended duration that many hybrid roles remain vacant. As illustrated in the chart, these positions tend to have significantly longer periods of unfilled vacancies compared to the market average (BGT, 2019).

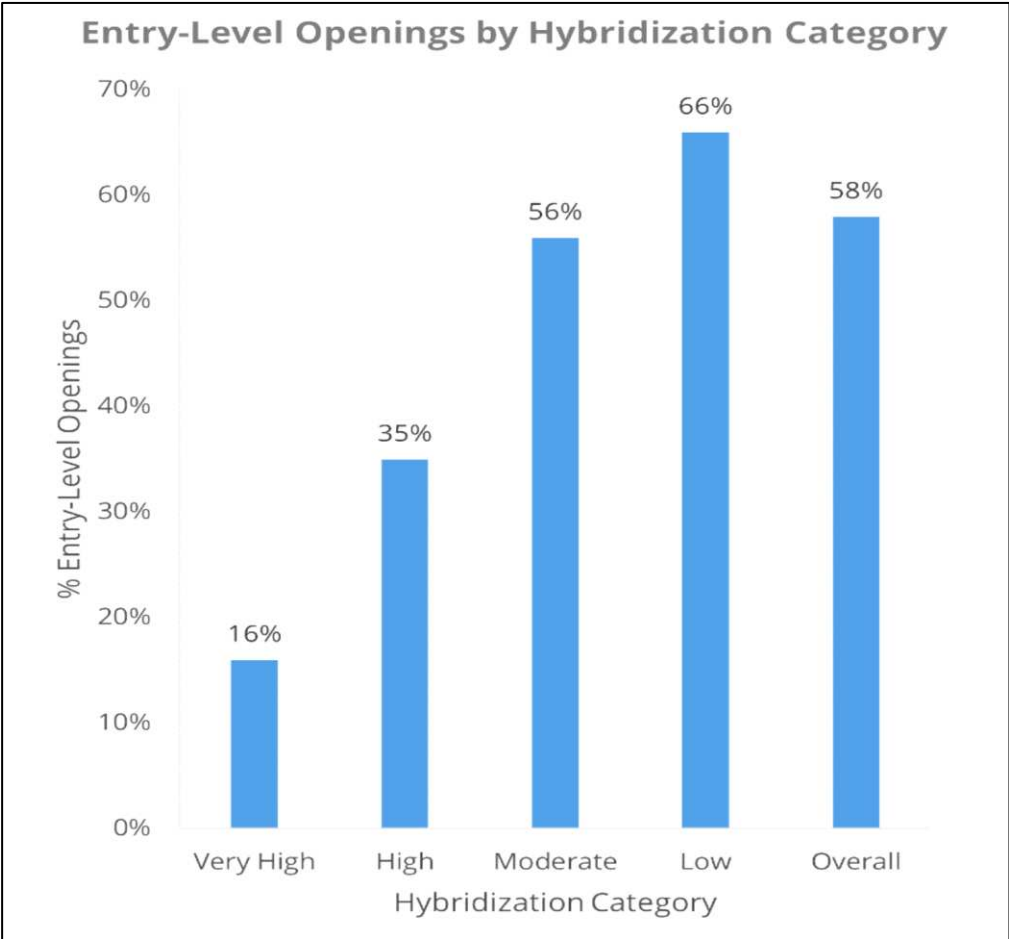


Figure 3 Hybrid jobs entry-level positions

## 1.4 HYBRIDS JOBS IN THE RENAISSANCE AND MIDDLE AGES

Hybrid jobs in Industry 4.0 demand digital knowledge, as we are in the digital era. Anyhow a hybrid job can be any job that require knowledge in different domains, not essentially must be digital skills. Assuming that the very first condition of hybrid jobs is transversal knowledge, it is possible to find that hybrid jobs have existed for many centuries.

During the Renaissance knowledge assumed a central role in the value of creation, finding its place within the laboratories of craftsmen, sculptors, and artists. These spaces served as meeting points where painters, sculptors, and other artists collaborated alongside architects, mathematicians, engineers, anatomists, scientists, and prosperous merchants who had once been patrons. Together, they formed the foundation of Renaissance communities, giving rise to new aesthetic, expressive, and societal values that were both transformative and accessible. This collective endeavour fostered an entrepreneurial spirit, leading to the conception of revolutionary approaches to work, design, production, services, and even the perception of the world.

The workshops in Florence embodied communities of creativity and innovation, where dreams, passions, and projects intertwined with one another. Apprentices, workers, craftsmen, engineers, aspiring artists, and guest artists coexisted as interdependent yet independent individuals. Although their efforts were loosely coordinated by a leading artist known as the "Maestro," the workshop served as the fulcrum. The Maestro not only facilitated the identification of new talents and mediated communications but also mentored younger artists. However, the Maestro did not impose their vision or dictate the work of others in any way (Formica, 2016).

Indeed, Andrea del Verrocchio (1435-1488), known for his expertise in sculpture, painting, and goldsmithing, did not confine his pupils to solely replicating his own favoured pursuits. Within his workshop, young artists were encouraged to explore diverse avenues such as engineering, architecture, and various scientific endeavours. Verrocchio's workshop provided a nurturing environment for a new generation of entrepreneurial artists, fostering the development of eclectic individuals like Leonardo da Vinci (1452-1519), Sandro Botticelli (1445-1510), and Pietro Perugino (1450-1523).

The Renaissance workshop, despite its current association primarily with art, was, in fact, an interdisciplinary environment. It fostered a holistic approach to creativity, contrasting with our modern way of working, where professionals in various fields often operate in isolation from one another. An excellent example of this interdisciplinary mindset during the Renaissance was the

perception of nature as a convergence of art and science, as depicted in Leonardo da Vinci's renowned "Vitruvian Man" (Formica, 2016).

In the Middle-Age craftsmen were the corresponding professionals of today digital hybrid workers. As a matter of fact, goldsmiths held a position of great importance and widespread employment in medieval Europe. They were primarily engaged in creating art pieces commissioned by the wealthy nobility.

In their craft, goldsmiths demonstrated expertise across various mediums, with a particular focus on illuminated manuscripts. Additionally, goldsmiths also crafted a diverse array of other art pieces during this period ranging from holy reliquaries made of gold to personal items used by monarchs such as golden sceptres, crowns, and textiles with golden embellishments. The goldsmiths also showcased their mastery in employing innovative techniques, including enamelling, which allowed for the fusion of glass and precious metals like gold, resulting in vibrant and colourful artworks. Another notable technique employed by medieval goldsmiths was *basse-taille*, enabling them to create low-relief gold patterns that could be filled with enamel.

As skilled artisans, goldsmiths enjoyed high prestige within medieval European society. Their craftsmanship extended beyond gold to include silver, and they occasionally incorporated gemstones into their works. In major cities of medieval Europe, goldsmiths formed guilds that held significant influence and exercised political power. Their prosperity also led to goldsmiths often assuming the role of bankers, as they possessed a ready stock of securely held gold (Medieval Chronicles, 2023).

Craftsmen from the Renaissance and the Middle Ages were in high demand due to their talent and their multiple skills in different domains. As today hybrid workers they were earning much more than other professionals due to their transversal knowledge.

## **1.5 FROM TAYLOR-FORD STANDARDIZATION TO HYBRIDIZATION**

In the early twentieth century Taylor's (1911) scientific management theory emphasized the importance of a centralized organization that clearly separated decision-making and execution tasks. Breaking down work into simpler operations that corresponded to a specific job, was crucial. This allowed for the standardization of individual operations, establishing precise times and methods for each procedure, resulting in high predictability. The utilization of specialized machines capable of performing a limited number of operations without requiring adjustments,

operated by low-skilled workers with minimal training, became fundamental to achieve efficient mass production. In 1913 Ford introduced the assembly line for large-scale car production, marking the advent of the Taylor-Ford model.

Subsequent studies on management procedures shifted the focus from work operations to the individuals performing them, leading to the development of human relations management. This shift recognized that the most significant aspect to investigate was the people themselves. Studies revealed that effective management was influenced by employee relations, as highlighted by Follett (1941). Additionally, research conducted by Mayo (1933) demonstrated that productivity growth was driven by a complex interplay of motives. There was a growing understanding of the organization as a human system, thanks to the contributions of Barnard (1938-1948). Herzberg (1959) conducted research on the factors that influence job satisfaction or dissatisfaction, while McGregor (1960) focused on exploring attitudes toward work. The dissemination of these research findings contributed to the development of the humanistic management model and gave rise to the field of human relations management (Skačkauskienė, 2022).

As human relations management developed and improved, the scope of research gradually shifted from individual employees to groups of employees, then to the entire organization, and eventually to networks of organizations. The organization itself was examined as a complex and dynamic open system, encompassing a multitude of interconnected elements. Attention was directed towards organizational values, organizational structure and strategy (Mintzberg, 1979), the quality of processes, knowledge sharing (Senge, 1990), and critical change and innovation (Christensen, 1997). These areas of study shed light on the dynamics and functioning of organizations within their broader contexts, paving the way for a comprehensive understanding of organizational behaviour and effectiveness (Skačkauskienė, 2022).

Organizations today are encouraged to embrace sustainability by incorporating the principles of sustainable development into their business strategies. This involves considering the needs of stakeholders, respecting the environment, and contributing to a more sustainable society (Ozeliene, 2018). They are also focusing on human resources management systems, particularly educational processes (Urbancová & Vrabcová, 2020) and IT-based managerial tools (Roshchik et al., 2022). Technological advancements such as nanotechnology, renewable energy, self-driving cars, 3D printers, digital media, social networks, virtual communities, smart cities, robotics, and globalization offer opportunities for organizations to grow responsibly in an environmentally sustainable manner. These developments allow organizations to strike a balance

between organizational performance and the needs of people and the environment. This ongoing shift towards sustainability in organizational management can be seen as the emergence of a new school of thought. This school emphasizes research on the impact of organizational operations and outcomes on the environment and people, making responsible management practices a distinguishing characteristic (Skačkauskienė, 2022).

In the era of the fourth industrial revolution, work will be characterized by a multitude of ever-changing roles. These roles will not be solely determined by technological advancements but will be intentionally designed to create meaningful and diverse positions, jobs, and professions. The prevailing paradigm of work in this revolution may be defined as “expanded” trades and professions, capable of encompassing a wide range of activities in terms of content, level, and educational background. Unlike the prescribed tasks of Taylor-Fordism, these roles arise as they are performed, interpreted, and enriched by real individuals within organizations, showcasing their expertise and skills. In the fourth industrial revolution, work will be composed of numerous dynamic roles that continuously evolve and adapt. While these trades and professions will not encompass the entirety of the workforce, they will occupy a central position, much like craftsmen during the Renaissance, service providers in the 18th century, and factory workers during the industrial revolution (Butera, 2018).



**Figure 4 Evolution of Management**

**1.6 LOW-SKILL AND HIGH-SKILL WORKERS IN THE DIGITAL ERA**

In the 2019 a significant portion of the European Union's labour force, specifically 35%, which equates to over 75 million individuals aged between 25 and 64 years old, did not possess basic digital skills or their skills could not be evaluated due to a lack of internet usage within the last three months (Iacono, 2019). It is important to note that there exists substantial variation among States of the EU and Italy is at the bottom of the ranking (Figure 5). As a matter of fact, the Digital Economy and Society Index (DESI), a comprehensive index that consolidates key

indicators measuring Europe's digital performance, illustrates the ranking of Member States in terms of the human capital dimension which encompasses both basic and advanced digital skills. The growth of digitalization in the labour market has led to an increasing demand for digital skills in recent years, and this trend is expected to continue in the future. The 2017 European Digital Skills Survey revealed that more than 90% of jobs in certain categories require specific digital skills. Basic digital skills are commonly required across various occupations, extending beyond desk-based work to roles such as technicians and skilled agricultural workers (European Court of Auditors, 2021).

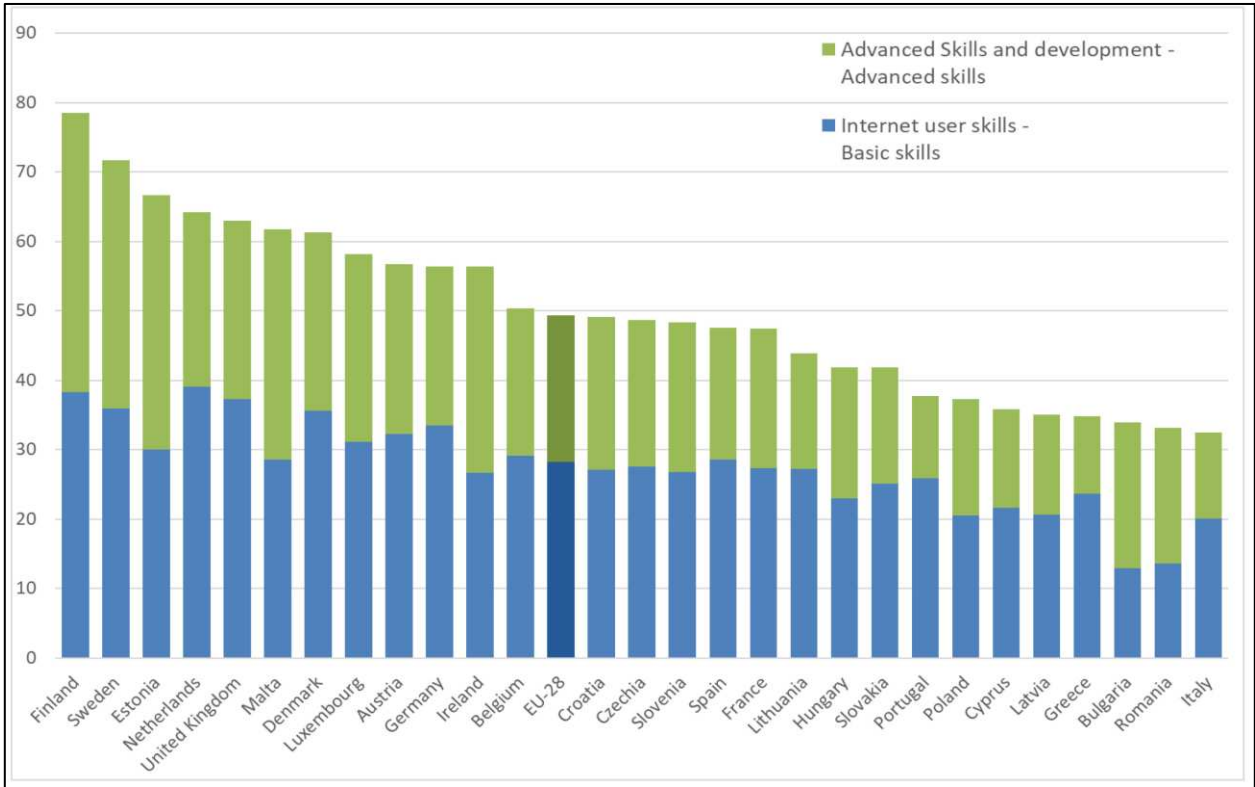


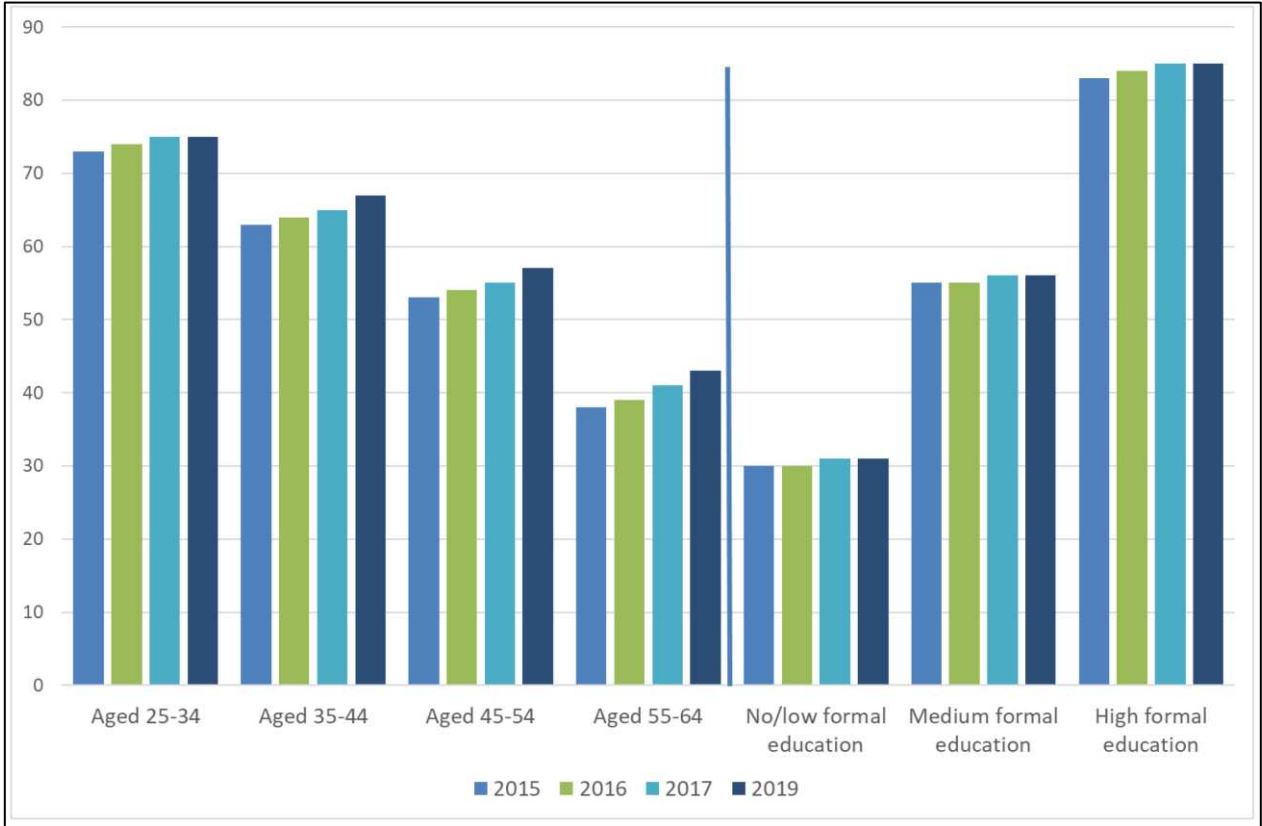
Figure 5 Human capital dimension 2019 – basic and advanced digital skills

Digital skills proficiency is shaped by multiple factors, including the availability of physical infrastructure such as computers and internet connectivity. Studies conducted by the Organization for Economic Co-operation and Development (OECD, 2016) have found that gender differences in digital skills are not particularly pronounced. However, educational attainment and age are significant factors in determining digital skills levels.

In many countries, adults with lower levels of education often lack basic proficiency in information and communication technology (ICT) usage, while those with higher education

qualifications tend to possess more widespread digital skills. This observation is supported by the findings of the OECD (2016) analysis.

Age is another important factor influencing digital skills. Eurostat (2021) data confirms that the ICT skills of individuals over the age of 30 tend to deteriorate progressively. This suggests that there may be a generational gap in digital proficiency (Figure 6).



**Figure 6 Digital skills in Europe by age and educational level**

The digital era has transformed Europe's labour market, affecting low-skilled workers' employment prospects. Digital technologies and automation have disrupted traditional job roles, creating challenges and opportunities. The European Commission's study highlights the demand for digital skills in sectors like marketing, data analysis, and e-commerce. Online platforms such as Upwork and Amazon Mechanical Turk offer flexible work options for low-skilled workers without specialized skills.

To enhance digital skills, initiatives like the European Social Fund invest in training programs, enabling workers to adapt and improve employability. Bridging the digital divide is crucial to



ensure equitable access to digital opportunities. Affordable internet access, digital literacy programs, and supportive policies are needed to empower low-skilled workers in the digital economy. While the digital era poses challenges, it also presents employment prospects and upskilling opportunities. By investing in training initiatives and addressing the digital divide, policymakers can help low-skilled workers thrive in the digital era (European Commission, 2019).

In the digital era, the demand for highly skilled workers with transversal knowledge is on the rise. These individuals possess a diverse set of skills and expertise that allows them to navigate the complex and ever-evolving digital landscape. They are not limited to a specific field or specialization but rather possess a combination of technical, creative, and problem-solving skills that enable them to adapt and thrive in various industries.

One of the key advantages of highly skilled workers with transversal knowledge is their ability to bridge the gap between different disciplines. They possess a broad understanding of technology, data analysis, communication, and project management, which enables them to collaborate effectively with professionals from diverse backgrounds. They are often sought after for their ability to bring fresh perspectives, innovative ideas, and a holistic approach to problem-solving.

In the digital era, where industries are constantly disrupted by technology, highly skilled workers with transversal knowledge play a crucial role in driving innovation and transformation. They are adaptable and quick to learn, allowing them to stay ahead of the curve and embrace emerging technologies and trends. Their ability to think critically, analyse complex information, and make informed decisions is highly valued in today's fast-paced and data-driven environment.

Moreover, highly skilled workers with transversal knowledge are often at the forefront of driving digital transformation within organizations. Their cross-functional expertise allows them to identify opportunities for process optimization, automation, and integration of digital tools and platforms. They act as catalysts for change, helping businesses leverage technology to streamline operations, enhance customer experiences, and stay competitive in the digital marketplace. As industries continue to evolve, the demand for these individuals is expected to grow, highlighting the importance of investing in their development and fostering a culture of lifelong learning (European Court of Auditors, 2021).

## 1.7 YOUNG DIGITAL VS. OLD NON-DIGITAL

The modern workplace is witnessing a significant shift as digital natives, who have grown up immersed in technology, enter the workforce alongside older generations who may not have the same level of digital proficiency.

Young digital generations bring valuable technological skills and innovative thinking to the workplace. Their digital fluency enhances productivity and drive digital transformation. In contrast, older non-digital generations possess a wealth of experience, wisdom, and industry knowledge. Effective workplace relationships can be built by leveraging the diverse skill sets of each group and fostering knowledge exchange, where digital natives share their technological expertise, while older generations offer mentorship and guidance based on their experience (Howe, 2000).

Differences in communication styles can lead to conflicts between the generations. Young digital generations often rely on instant messaging, video conferencing, and digital platforms for collaboration. However, older non-digital generations may prefer face-to-face interactions or more traditional modes of communication. To bridge this gap, it is important to establish clear communication channels, encourage open dialogue, and promote mutual understanding of diverse communication preferences (Raines, 2007).

Younger generations tend to adapt quickly to technological changes and embrace new digital tools. Conversely, older generations may face challenges in adopting and adapting to new technologies. Organizations can support the integration of digital technologies by providing training programs and resources tailored to the needs of older employees. This facilitates a smoother transition and fosters a collaborative environment where both generations can leverage technology effectively (Buettner, 2011).

Older non-digital generations possess a wealth of tacit knowledge accumulated over years of experience. However, this knowledge may be at risk of being lost as they transition out of the workforce. Organizations can create mentorship programs and reverse mentoring initiatives, where young digital generations share their expertise while learning from the experience and knowledge of their older counterparts. This not only preserves valuable knowledge but also promotes a culture of learning and collaboration (Cennamo, 2008).

The coexistence of young digital generations and old non-digital generations in the workplace presents both challenges and opportunities. By recognizing and valuing the unique contributions of each group, organizations can foster a harmonious and inclusive work environment.

Emphasizing open communication, providing training and support, and promoting knowledge exchange can bridge the generational gap, allowing for effective collaboration and the harnessing of collective strengths. Ultimately, embracing the diverse perspectives and skill sets of both young and old generations leads to innovation, growth, and success in the digital age.

## **1.8 CONCLUSION**

This chapter has described the advent of the digital age and the changes that it has brought in society, organizations and individuals. Hybrid jobs in the digital revolution are roles that require transversal knowledge and digital fluency. The increasing digitalisation of the society demands immediate structural changes in organisations and institutions. The digital era requires a new mindset for all individuals, new organisational structures, fresh management models, new policies and constant learning.



# CHAPTER 2 - DIGITALIZATION AT ALL LEVELS

## INTRODUCTION

The digital revolution is redesigning the society and individuals, labour market is changing, hybrid jobs are rising and new managements models are adopted. This chapter evaluates how digitalization has impacted on management and administrative practices at different levels: individual/worker level, organizational level and institutional level.

The individual level refers to all those practices of talent management, staff selection and skills resourcing. In the era of Industry 4.0 and hybrid jobs it is essential to evaluate an employee according to his/her digital fluency, self-efficacy level, personal traits and vocational interests. Additionally, it is essential to analyse how younger managers-older subordinates relationship influences individual and company performances.

Organisation level reports emerging organizational cultures and new management solutions adopted to thrive in fast changing environments. This section evaluates four organizational management models that are based on principles like continuous learning and horizontal organisations.

The last section of this chapter analyses the measures adopted by governing bodies and educational institutions to guide people and businesses into the digital era.

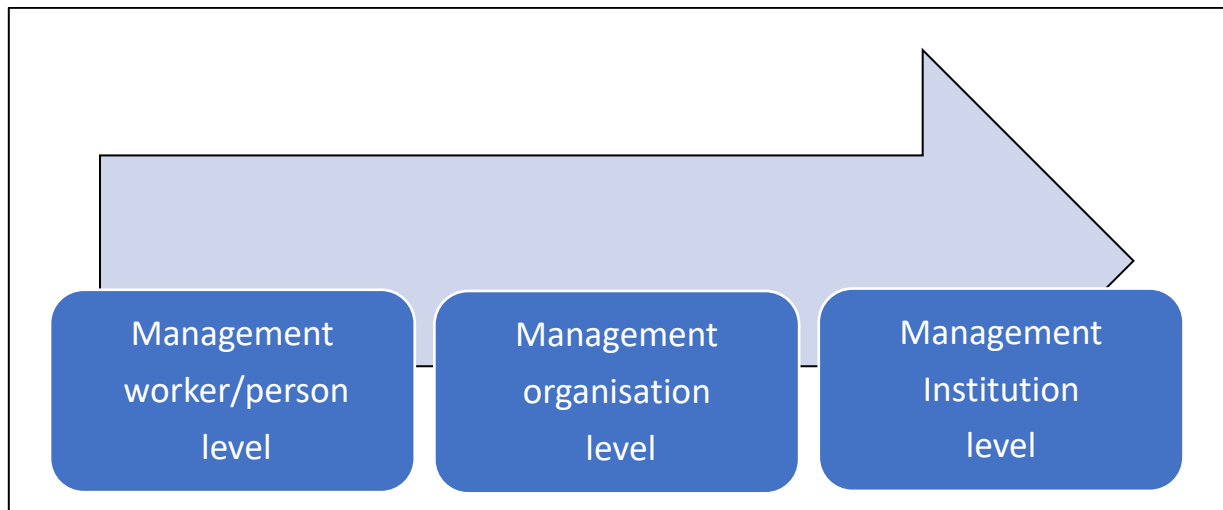


Figure 7 Management dimensions

## **INDIVIDUAL LEVEL**

### **2.1 TALENT MANAGEMENT IN SME**

Talent Management involves anticipating the need for human capital and developing a plan to meet those needs. Researchers have proposed different perspectives on talent management, including substituting it for HRM, ensuring a smooth flow of employees throughout the organization, managing talented individuals, and identifying strategic positions and developing a talent pool to fill them. The concept of strategic roles has been central to talent management in large enterprises, but its applicability to SMEs is limited due to evolving functions, jobs, and hierarchical levels. In SMEs, identifying strategic jobs is less of a focal issue, and the greater centralization of decision-making and limited resources make it challenging for top managers to prioritize talent management activities. Additionally, the extent of inclusivity in talent management differs between large enterprises and SMEs, with SMEs adopting a more inclusive approach that focuses on all employees rather than a select group of high-potential individuals. While the exclusive approach dominates in MNEs, it may undermine the egalitarian culture and teamwork found in SMEs. Therefore, a best fit approach is recommended, aligning talent management practices with the specific context of the organization. However, certain aspects of talent management, such as internal consistency of practices and senior management commitment, are relevant to both SMEs and large enterprises. In SMEs, the involvement of owner-managers in designing and implementing talent management activities becomes crucial, as specialized HR functions may be absent (Krishnan, 2017).

A study conducted by the OECD (2015) revealed that SMEs make up over 99% of the companies in OECD and G20 countries. These SMEs play a crucial role in fostering growth. The criteria for determining the size of an organization to be classified as a SME may vary across countries, but researchers generally use a threshold of 250 or 500 employees. Major international organizations like the EU, World Bank, and United Nations have provided a helpful definition of SMEs based primarily on employment size, which has become the main indicator for identifying this sector (Lind, 2012). According to the US Small Business Administration, in the United States SMEs account for approximately 99% of business enterprises and contribute to 52% of the total employment. Within the EU, two-thirds of all jobs are created by SMEs, and in many European countries, over 80% of employees work for SMEs (OECD, 2007). Similarly, SMEs play a vital

role in the economy of the Asia Pacific region, employing between 30% and 50% of the workforce. The dominance of SMEs underscores their significant strategic position in the global economy, and their potential to create jobs is a central focus of most governments' economic agendas today (Festing, 2007; OECD, 2015).

In recent years, there has been a surge in research focusing on emerging talent management models and best practices within large multinational enterprises (MNEs). However, the concepts and practices of HR and talent management developed for large firms are often applied to small and medium-sized enterprises (SMEs) without critical evaluation. This oversight fails to recognize that SMEs differ fundamentally in their institutional, resource, and economic contexts (Krishnan, 2017).

It is important to acknowledge that the concept of talent management in MNEs cannot be directly replicated in SMEs, and the proposed conceptualization of talent management for large firms needs to be adapted to fit the SME context. SMEs face greater instability in their organizational structures and management processes due to their shorter organizational cycles. As SMEs grow in size and complexity, it becomes more challenging for them to systematically identify key positions and develop a talent pool of high-potential individuals to fill these roles. Furthermore, SMEs exhibit a higher level of informality in their overall approach to human resource management (HRM) and specific HR practices. This informality has been recognized as a source of competitive advantage for (Krishnan, 2017).

### **2.1.1 MNE vs. SME**

Institutional theory proposes that organizations, as social entities, aim to gain approval for their performance within socially constructed environments. Survival of firms depends on obtaining legitimacy and acceptance from various stakeholders, as resources are controlled by multiple entities. This theory emphasizes the influence of the environment on shaping management practices in both large and small and medium-sized enterprises. For instance, larger companies may be subject to different legal standards when implementing formal human resource (HR) practices compared to SMEs. Potential employees assess organizations by comparing their policies, practices, and culture with industry norms. Large organizations often adopt more sophisticated and socially responsive talent management and HR practices to gain legitimacy and stakeholder acceptance. This can impact recruitment success, as job seekers may view

organizations with higher levels of legitimacy as more trustworthy and dependable than those with lower levels of legitimacy (Krishnan, 2017).

SMEs face challenges in terms of legitimacy in the labour market due to limited organizational information available to job seekers. Compared to large organizations, SMEs invest less in making themselves visible in the labour market, making them less familiar to job seekers. Additionally, SMEs are less likely to be part of potential employees' everyday experiences, and job seekers struggle to find reliable information sources about SMEs. On the other hand, multinational enterprises (MNEs) feel greater pressure to maintain organizational legitimacy in the labour market by adopting global best practices, as they compete for talent at regional and global levels.

Research suggests that large and small firms may tap into separate labour markets to meet their talent needs (Krishnan, 2017). Larger firms, which often set industry norms and have more sophisticated practices, may contribute to the formalization of HR practices, including recruitment, as they grow. Conversely, SMEs tend to develop their own unique models that align with their specific contexts. Their creative thinking allows them to explore non-traditional recruitment channels not typically considered by larger organizations, such as hiring semi-retired individuals with valuable knowledge and experience. These individuals may be less concerned about legitimacy and career factors, thus mitigating recruitment challenges in other areas (Krishnan, 2017).

Economic theories suggest that sophisticated human resource practices require reaching acceptable economies of scale due to associated transaction costs. Compared to larger firms, SMEs face cost disadvantages as a result of smaller production volume and a narrower scope of products. While the impact varies among SMEs due to their diversity, their limited market presence exposes them to competitive pressures and emphasizes the need for efficient resource utilization. Strategic HR management literature links high performance or high involvement work practices with firm performance, but implementing such practices incurs direct and indirect costs, which are particularly significant in the context of SMEs (Krishnan, 2017).

To reduce costs and maintain flexibility, SMEs can adopt informal work practices and centralized decision-making control. Implementing formal HR practices is costly for SMEs, and informal practices can serve as cost-effective alternatives. For example, encouraging informal work practices has been found to offset increased costs resulting from the implementation of new



minimum wage policies. Top managers play a dominant role in SMEs, influencing strategic approaches and HRM practices. The informality and centralized control in SMEs provide a higher degree of overall control and allow for flexible deployment of employees as the firm grows. SMEs may face challenges in establishing institutional tie-ups with education institutions, unlike large firms, but they can benefit from using flexible work arrangements and partnerships with government agencies or other companies to lower HR program development costs (Krishnan, 2017).

Resource dependence theory posits that organizations rely on critical external resources, which influence their behaviour. SMEs have fewer resources and greater challenges compared to larger organizations. Limited financial capacity in SMEs makes it difficult to offer competitive compensation and benefits and attract talent from the recruitment pools used by large firms. SMEs also encounter more uncertainty in the labour market due to their lack of market power and concentrated product base. To overcome these resource disadvantages, SMEs can seek to reduce uncertainty by attracting key resources during the firm's formative period. SMEs offer advantages such as a creative environment, better job quality, less bureaucracy, higher flexibility, and a more informal workplace, which can help attract and retain valuable employees. Innovative approaches, including targeting and attracting specialist talents from larger firms, leveraging internet technologies, brand marketing, and institutional linkages, can enhance innovation and growth strategies for resource-constrained SMEs.

In conclusion, SME firms organize their talent management (TM) and HR practices differently and more informally compared to large firms. They also rely on different talent pools. SMEs face unique challenges in attracting talent, but they can employ innovative practices to address these challenges and leverage their contextual attractiveness to develop talent internally (Krishnan, 2017).

### **2.1.2 PERSON-JOB FIT & PERSON-ORGANIZATION FIT**

Since Talent Management in SMEs differs significantly from large firms, it is crucial to explore key conceptual questions regarding who is considered "talent" in SMEs and what criteria are emphasized in their selection process. Besides an inclusive approach, where everyone is considered talent (subject-based approach), SMEs should also adopt an object-based approach to

identifying talent. In fact, the essential characteristics required for someone to be classified as talent or not depend primarily on the stage of organizational development.

The definition of effective performance in SMEs and large firms is likely to differ. While large firms commonly use profitability-based measures as success metrics, smaller firms often prioritize growth as the key performance indicator. Product innovation serves as a significant avenue for growth in SMEs, but the lack of managerial skills necessary for innovation hinders their growth objectives. In small firms, the ability to assimilate new employees, develop their capabilities, and effectively solve problems together is equally important. Due to the strong team ethos and limited room for "hiding" in smaller organizations, every individual must contribute effectively internally (Krishnan, 2017). Consequently, the relationship between managerial quality and firm performance is likely to be stronger in SMEs compared to large firms. The consequences of poor selection decisions are likely to be amplified in SMEs, making it crucial to understand the talent characteristics emphasized in employee selection. Thus, examining the employee selection process becomes a crucial factor in determining the essential characteristics for talent within an SME context.

Traditional research on employee selection has focused on assessing the alignment between job requirements and the attributes of job candidates, such as knowledge, skills, and abilities internally (Krishnan, 2017). The underlying concept is that individuals who meet the job requirements are more likely to achieve higher performance, results, and accomplishments. However, researchers have also explored the fit between organizational culture, goals, and employee values and goals. The expectation is that individuals who align with the broader organizational ethos can effectively contribute and perform well in diverse roles within the organization. These two types of fit are known as Person-Job fit and Person-Organization fit, with performance being more emphasized in the former and potential in the latter. Understanding the balance between performance and potential is crucial in talent management research. Both types of fit have been found to correlate with positive employee attitudes and behaviours, including satisfaction, commitment, citizenship behaviour, and performance (Kristof-Brown et al., 2005). Moreover, in selecting employees, smaller firms tend to place greater importance on the personal characteristics that align with the organizational culture, while larger emphasis is often given to human capital attributes such as education, experience, and skills in small firms. These studies indicate varying perspectives on the significance of Person-Job and Person-Organization fit in the employee selection process of SMEs. While fitting into the organizational

culture may be a primary consideration in the early stages of development, as the firm grows larger, more attention may be given to the skills and abilities of candidates, suggesting that different forms of fit become predominant at different stages of organizational life (Krishnan, 2017).

## **2.2 WHICH WORKER FITS IN THE DIGITAL ERA?**

Today digital society, with accessible information to any internet user, is evolving at unprecedented speed and it is reshaping companies' organizational structure and management practices. The rapid pace of technological advancements and disruptive innovations push organizations to undertake digital transformation processes in order to maintain and enhance their competitive advantage (Martínez-Climent et al., 2019; Trost, 2019). The success of these transformations relies on employees' mindsets, as they can perceive the changes as opportunities for growth or threats to their routine and employment status (Teece et al., 2016; Palmer et al., 2019).

For organizations to thrive in this ever-changing environment, employees need to trust their own abilities to acquire the knowledge and skills necessary to operate the technology (Voogt and Roblin, 2012). Trust in their adaptive abilities becomes crucial in remaining competitive against more agile rivals (Ahmad et al., 2013; Carnevale and Smith, 2013). Among the personality traits, conscientiousness, which remains stable over time and predicts various workplace outcomes, has consistently shown a strong association with individual work performance (Costa and McCrae, 1992; McCrae and Costa, 1987, 2008; Wilmot and Ones, 2019). However, the digital workplace often lacks clear objectives and structured tasks, challenging the traditional notion that conscientiousness alone guarantees high performance (C.G. DeYoung et al., 2007). Modern employees operate in self-organized environments with greater freedom and fewer clear guidelines from supervisors (Hughes et al., 2018). The digital era introduces higher degrees of uncertainty and unstructured challenges, requiring employees to exhibit flexibility and adaptability in finding innovative solutions (Mainemelis et al., 2002).

In such situations, employees who possess confidence, self-efficacy, and the ability to navigate complexity and ambiguity thrive (Hughes et al., 2018). These individuals approach challenges as opportunities for growth and achievement, leveraging their own efforts to overcome obstacles in the digital workplace.

The application of new technologies presents technical challenges that require individuals to actively engage with the technologies and solve problems as they arise. Merely possessing high proficiency in a limited and unchanging set of digital tools is no longer sufficient. With the continuous introduction of novel technologies, employees must trust in their ability to acquire the necessary knowledge and skills to operate these emerging and potentially more sophisticated technologies (Martin, 2008). This trust enables them to respond to new challenges in an agile manner, leading to organizational agility when a large proportion of employees possess this mindset, allowing the organization to effectively navigate and adapt to the modern market.

In essence, it is no longer about being a specialized worker that can solve a specific problem, but rather being a versatile hybrid worker that can tackle a wide range of problems in diverse situations. The key factor influencing how individuals approach unfamiliar and challenging situations is their self-efficacy, which refers to the belief in one's ability to overcome problems through personal effort (Bandura, 1977).

Individuals who have a high level of self-efficacy demonstrate greater expectations of achieving positive outcomes, a heightened ability to identify and capitalize on opportunities, and a strong determination to overcome obstacles in their pursuits (Bandura, 2012; Bandura and Locke, 2003). Moreover, individuals who trust their digital skills are less likely to experience anxiety when using information technology (Bellini et al., 2016). They exhibit a higher degree of persistence and competence in utilizing digital tools and resources (Agarwal et al., 2000; Rohatgi et al., 2016).

Research indicates that individuals who have a specific interest in particular occupations or activities, such as analytical or mechanical domains, are more likely to possess domain-specific self-efficacy in those areas (Lent et al., 1989). Additionally, an individual's personality traits can be indicative of their overall level of self-efficacy.

### **2.2.1 PERSONALITY: BIG FIVE MODEL**

Personality is often assessed using the Big Five model, also known as OCEAN or CANOE model, which consists of five dimensions: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. Openness to experience reflects intellectual curiosity, imagination, and a broad-minded approach. Conscientiousness encompasses traits such as dependability, responsibility, and persistence. Extraversion relates to being outgoing, sociable,

and assertive. Agreeableness captures qualities such as trust, cooperativeness, and kindness. Neuroticism reflects tendencies towards insecurity, anxiety, and emotional instability (Maran et al., 2022).

The Big Five model has gained widespread recognition and is widely accepted in the field of personality research. It has been extensively studied and replicated across various cultures. In addition to its popularity in general personality science, the model has also found utility in organizational research. When it comes to predicting outcomes like work performance, personality traits, alongside cognitive abilities, have been identified as the most significant factors (Barrick and Mount, 2012).

In digital workplaces, the utilization of new digital technologies presents employees with technical challenges and the need to tackle unstructured problems. To effectively navigate these situations, individuals who possess traits such as openness, curiosity, and an active imagination are more likely to approach these challenges proactively. Their innate qualities can drive them to learn and adapt to new information technologies with flexibility, enabling them to cope more effectively with the dynamic and unstructured nature of digital workplaces (D'Zurilla et al., 2011).

While conscientiousness has consistently demonstrated its predictive power for job performance (Dudley et al., 2006; Wilmot and Ones, 2019), it may not necessarily translate to high digital self-efficacy in flexible work environments that lack structure.

Although extraversion is commonly linked to effective leadership, it is improbable that the facilitation of interpersonal interactions through extraversion contributes to the development of digital skills and the acquisition of digital self-efficacy.

While agreeableness is associated with lower turnover rates and fosters collaboration, which is crucial in agile organizations, the nature of digital work often limits direct social engagement due to reduced physical proximity among employees.

As transformation processes can induce stress among employees, particularly when they are unsure about the value of new technologies (Zoltners et al., 2021), individuals with lower levels of neuroticism or higher emotional stability are less susceptible to feeling stressed in uncertain situations. Consequently, they are more likely to demonstrate greater perseverance in tackling novel challenges, exhibit resilience in the face of change and uncertainty, and develop a stronger belief in their ability to utilize new technological solutions.

Recent meta-analytic findings indicate a significant relationship between vocational interests and job performance (Maran et al., 2022). The next section evaluates the RIASEC model (Holland, 1997) that proposes six distinct vocational interest archetypes: realistic, investigative, artistic, social, enterprising, and conventional.

### **2.2.2 VOCATIONAL INTERESTS: RIASEC MODEL**

The RIASEC model presents six distinct vocational interest archetypes (realistic, investigative, artistic, social, enterprising, and conventional), depicted as an equilateral hexagon for visual representation (Holland, 1997).

Research indicates that one's interests can serve as predictors of performance in both work and academic settings. Furthermore, vocational interests are not isolated from an individual's broader personality traits as assessed by the Big Five range. Instead, an individual's personality influences his/her inclination to seek out specific learning experiences that shape vocational interests. Hence, vocational interests are believed to develop in alignment with one's personality. Notably, certain vocational interests exhibit robust associations with specific personality traits. For instance, openness is linked to artistic, investigative, and social interests, conscientiousness is associated with conventional interests, extraversion correlates with enterprising and social interests, and agreeableness is connected to social interests as well. It is important to view personality traits and interests as complementary constructs rather than substitutes (Barrick et al., 2003).

According to the RIASEC model, conventional interest, which involves organizing things according to set rules, is commonly found in administrative or governmental professions (Holland, 1997). However, these characteristics are less prominent in digitalized agile workplaces. Social interest, on the other hand, relates to a strong desire to work with others and is typical in professions related to training, education, or care. While it promotes collaboration, it can also deplete psychological resources needed to overcome technical challenges (Lin et al., 2020). Therefore, an interest in helping may not necessarily predict self-efficacy in using digital technologies. Enterprising interest, characterized by seeking opportunities and associated with entrepreneurship or management, is more focused on self-oriented thinking and motivation to lead. It is closely linked to assertiveness, which may not support the development of technical knowledge or interest. Similarly, artistic interest drives individuals to be creative and innovative,

which is often pursued in arts and crafts professions. However, mastering digital tools requires a more convergent problem-solving approach, while artistic interests tend to favor a divergent mode of thinking (Webb et al., 2017).

On the other hand, the investigative interest ("thinking") is characterized by a strong inclination towards contemplation, reflection, and exploring diverse intellectual avenues to solve a given problem. Individuals with a high level of investigative interest are more inclined to work with ideas rather than physical objects or people. They possess an intrinsic motivation to comprehend the underlying mechanisms of their environment and thrive in situations where they can analyze data to optimize their solutions. In their free time, they often engage in similar activities, such as language learning, chess playing, or taking courses in subjects that pique their interest (Maran et al., 2022). Professions that are well-suited for individuals with a strong investigative interest are those that present complex intellectual challenges, such as research, programming, or mathematics. Their inclination towards mental stimulation can prove advantageous in navigating the demands of a digital workplace and discovering innovative ways to utilize digital tools (Maran et al., 2022).

Individuals with a strong inclination towards realistic interest ("doing") derive satisfaction from engaging with hands-on challenges, exploring various solutions, and learning through practical experience. They are more drawn to objects and tasks rather than people or data. Instead of just contemplating solutions mentally, they prefer to implement and adapt them in real-life situations, demonstrating a high level of persistence. During their leisure time, they often gravitate towards physical sports or engaging in crafts. In contrast to investigative individuals who find equal pleasure in solving theoretical or hypothetical problems, individuals with a predominant realistic interest prefer professions that involve tangible, practical problems requiring practical solutions. Examples of suitable professions include engineering, system administration, or architecture. Given their iterative and persevering problem-solving approach, individuals with a strong inclination towards realistic interest are more likely to utilize relevant technologies and develop confidence in their ability to tackle challenges (Maran et al., 2022).

In conclusion it is possible to assume that both investigative and realistic interests have a positive association with digital self-efficacy, independent of the influence of personality traits.

### **2.2.3 MANAGING THE AGE GAP**

In the digital era, the age gap between young managers and older subordinates has become a relevant topic in organizational dynamics. Organizations that want to embrace the digital revolution must adapt their management culture as the concepts of workplace and labour are rapidly transforming. In the first chapter it was analysed how younger generations are more digital fluent than older generations and how educational level is positively correlated with an individual's digital knowledge. With the rise of technology and digital transformation, younger generations are often at the forefront of digital skills and technological expertise. This has led to a unique dynamic where younger managers are tasked with leading and managing older subordinates who may have more experience and seniority within the organization.

Research has shown that this age gap can create challenges and tensions in the workplace. Younger managers may face resistance from older subordinates who feel threatened by their lack of expertise. On the other hand, younger managers may feel the pressure to prove themselves and to gain the respect and trust of their older subordinates.

In recent years an increasing number of companies are adopting merit-based promotion decisions to prevent the negative impact of age-based discrimination (Kunze, Boehm, & Bruch, 2011) and most companies in industrialized countries have adopted policies that deem age irrelevant in promotion decisions (Castilla, 2008). Indeed, this management approach promotes high levels of company performance by emphasizing merit over seniority (Cadsby, Song, & Tapon, 2007; Dobson, 1988; Lazear, 2000).

However, theories of career timetables (Lawrence, 1984, 1988) and age-related status differences (Hughes, 1945; Vecchio, 1993) suggest that employees who are older than their managers may face negative consequences (Shore et al., 2003). Empirical studies support this notion, indicating that such consequences involve experiencing negative emotions (Cox & Nkomo, 1992) and exhibiting lower levels of performance (Shore et al., 2003). These findings lead to question whether systematically promoting younger employees into supervisory positions over older employees may diminish, rather than enhance, the collective sentiment within a company and its overall performance.

Kunze and Menges (2017) propose that the average age differences between supervisors and older subordinates within companies have an indirect relationship with company performance. Specifically, the larger the age differences between supervisors and older subordinates, the more frequently employees are likely to experience negative emotions. As a result, company



performance is expected to decrease. Kunze and Menges further suggest that this indirect linkage depends on whether subordinates express their emotions toward their supervisors.

The concept of status congruence suggests that age-inverse supervisory relationships impose emotional strain on subordinates (Hughes, 1945; Vecchio, 1993). Age is just one of many indicators of status, including pay, expertise, experience, and hierarchical position. In a congruent status arrangement, the oldest members of a group typically hold the highest positions, receive the highest pay, and possess the most expertise and experience. However, when age does not align with other status indicators, creating incongruence, it can evoke unpleasant and upsetting emotions among group members. Age-inverse supervisory relationships, which disconnect age from hierarchical position and prototypical leadership attributes, generate status incongruence and consequently elicit negative emotions such as resentment and anger (Cox & Nkomo, 1992).

Moreover, age-inverse supervisory relationships directly violate career norms. The theory of age grading (Lawrence, 1984, 1988) draws from social comparison theory (Festinger, 1954) and suggests that individuals assess their career progress by comparing themselves to others of similar age. Older subordinates working under younger supervisors are constantly reminded of their perceived failure to keep up. These recurring and salient social comparison processes can be agonizing, as deviating from the expected career trajectory has a negative impact on individuals and can generate strong emotions such as anxiety and fear (Rosenbaum & Rubin, 1983). Being off schedule in terms of career progression can lead to emotional crises and decreased job satisfaction (Shore et al., 2003).

The resulting status incongruence, violations of career norms, and the negative emotions they evoke are likely to result in unfavourable treatment of older subordinates by their younger supervisors. In addition to conscious and unconscious biases of managers toward older subordinates, research indicates that age-inverse supervisory relationships lead to fewer development opportunities and lower promotability ratings for older subordinates (Shore et al., 2003). Younger supervisors are less likely to communicate with older subordinates compared to those of similar age, and they tend to have less favourable attitudes toward older subordinates (Zenger & Lawrence, 1989; Tsui & O'Reilly, 1989). However, not all consequences of age-inverse supervisory relationships are negative. Some studies suggest that older subordinates working under younger supervisors are more willing to help coworkers and have lower absenteeism rates (Perry et al., 1999). It is worth considering that these positive behaviours may be responses to shared negative emotions rather than purely neutral or positive factors. Helping

behaviours often arise from the experience of shared negative emotions (Rimé, 2007). Additionally, older employees may be motivated to avoid absenteeism due to fear of being passed over or job insecurity.

As the age gap widens, the violation of career norms becomes more pronounced, leading to stronger emotional responses. While older subordinates may still hold hope of catching up to a supervisor who is only a few years younger, substantial age differences indicate a significant challenge in overcoming the deficit. Consequently, the impact on the subordinate becomes more painful and negative as the age difference between the younger supervisor and older subordinate increases (Kunze, 2022).

It is significant to consider how the negative emotions within a company have the potential to spread unless they are suppressed. Previous research in demography and diversity has highlighted that individuals with characteristics that differ from the norm tend to stand out and receive attention throughout an organization (Randel, 2002; Kossek, Marckel, & McHugh, 2002). This notion can be applied to relationships as well, suggesting that relationships that deviate from the norm will be salient and draw attention within an organization. Age-inverse supervisory relationships, being against the norm, are likely to be relatively salient to employees within an organization.

Diversity research has shown that the effects of diverse individuals are often driven by their salience rather than the absolute numbers of such individuals (Randel, 2001). Applying this to age-inverse supervisory relationships, it implies that the effect of these relationships is influenced by the extent to which they violate age norms. The more pronounced the inverse age differences in supervisory relationships, the more salient and influential they will be within the organization (Kunze, 2022). Employees tend to pay particular attention to the performance and emotions of salient individuals (Randel, 2001). If older subordinates express their negative emotions in these relationships, they signal to others that this type of relationship is problematic (Bartel & Saavedra, 2000). Moreover, they may transmit their emotions to others through emotion contagion (Barsade, 2002; Elfenbein, 2014).

The emotional broadcaster theory of social sharing suggests that emotions can spread through large groups, including entire organizations (Harber & Cohen, 2005). The negative emotions arising from age-inverse supervisory relationships are likely to proliferate within the organization, especially when expressed, through secondary and tertiary sharing. Thus, age-inverse supervisory relationships contribute to the overall emotional experiences of employees,

eliciting negative emotions such as anger, fear, and disgust, either directly or through contagion (Kelly & Barsade, 2001).

However, if older subordinates suppress the expression of their negative emotions, they may prevent the spread of age-related negativity across the company. Research with individuals has shown that emotion suppression as a self-regulation strategy can have negative consequences such as depression, health issues, and impaired cognitive performance (Gross, 2002).

There is an association between the average age-inverse differences in supervisory relationships and the negative emotions experienced by employees throughout the company, and this correlation depends on the extent of subordinates' emotion suppression.

The frequency of negative emotions within an organization can have detrimental effects on company performance. The association between the average age-inverse differences in supervisory relationships and the frequency of negative emotions at the organizational level poses a significant threat. Negative emotions hinder collaboration, diminish work motivation, divert attention from productive goal pursuit to coping mechanisms, reduce productivity, and impair overall performance (Kunze, 2022). However, negative emotions are not always detrimental to performance. A meta-analysis highlights that negative group emotions can actually enhance performance if they are caused by factors external to the group or if the group has a one-time meeting. On the other hand, negative group emotions can diminish performance if they stem from group-intrinsic causes or if the group convenes regularly (Knight & Eisenkraft, 2014). Considering this evidence, age-inverse supervisory relationships serve as triggers for negative emotions within the company, and employees who experience these negative emotions work together for extended periods of time. Therefore, frequent occurrence of negative emotions among employees is likely to weaken company performance. A workforce that is attuned to negativity is prone to reduced collective efforts, ultimately resulting in impaired company performance (Kunze, 2022).

In companies with significant age differences between supervisors and older subordinates, employees are more likely to experience negative emotions such as anger, fear, and disgust compared to companies with smaller or no age differences between supervisors and older subordinates. However, the connection between age-inverse supervisory relationships, company performance, and the frequency of negative emotions depends on whether subordinates tend to express or suppress their emotions. The linkage becomes insignificant if subordinates choose to keep their emotions to themselves. Therefore, the average age-inverse difference in supervisory

relationships is positively associated with the frequency of employees' negative emotions, which in turn is negatively associated with company performance. This indirect association holds true for low levels of emotion suppression but not for high levels of emotion suppression among subordinates.

## **ORGANIZATION LEVEL**

### **2.3 MANAGEMENT MODELS IN THE DIGITAL ERA**

The advent of digital, the unstoppable technology evolution and the rise of hybrid jobs have brought a profound change in organization management practices and culture. The fast-changing economic scenarios and continuous innovation force organizations to become more fluid and reactive. Last century management models are inadequate in the digital revolution; the transformations in the labour force and workplace demand dynamic, agile and knowledge-driven management cultures.

In this section there is an evaluation of the most recent managerial models applied in companies that operate in fast changing markets that demand organizations to rapidly react and continuously learn.

#### **2.3.1 LEARNING ORGANISATION MODEL**

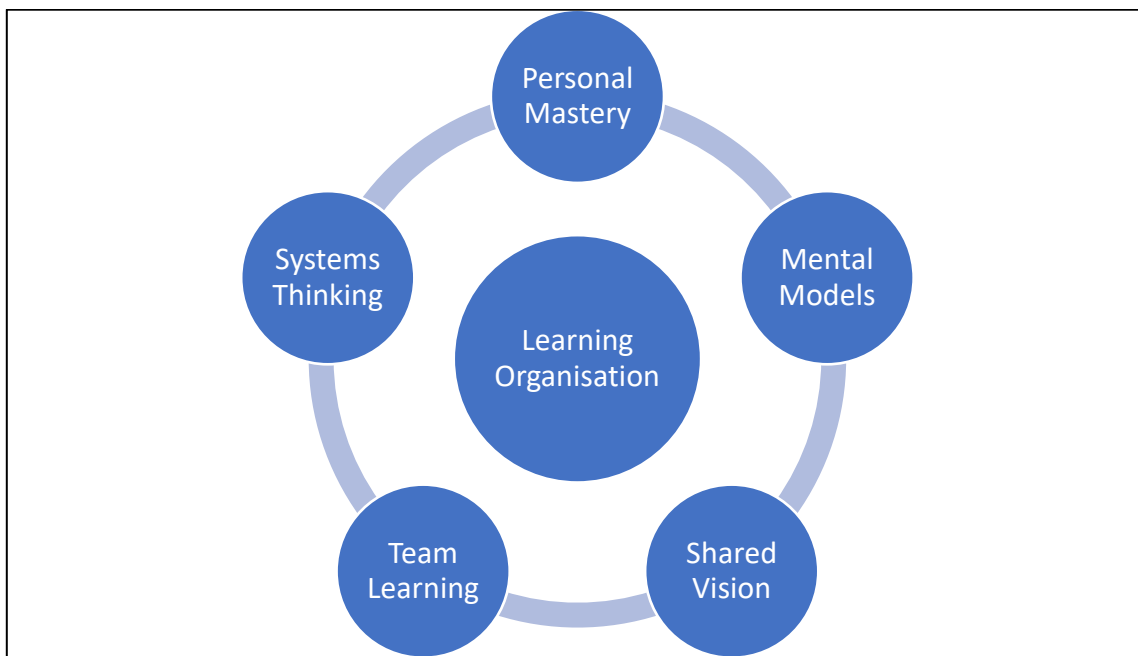
Peter Senge's (2006) concept of the Learning Organization revolutionized organizational development and learning. It emphasizes continuous learning, adaptability, and innovation as crucial elements for thriving in a rapidly changing world. Senge's concept views organizations as interconnected systems, where individuals, teams, and departments are interdependent. A Learning Organization creates a supportive environment for learning and growth at all levels, fostering a collective commitment to improvement.

Senge identified five disciplines essential for building a Learning Organization. First is personal mastery, where individuals continuously strive for personal growth, expanding their skills and competencies. This enables employees to contribute their best to the organization's success. Second is mental models, where organizations challenge existing assumptions and beliefs to embrace new ways of thinking, fostering innovation and change. Third is shared vision,

providing a clear direction that aligns efforts and actions toward common goals, involving all stakeholders to create a sense of ownership and commitment.

The fourth discipline is team learning, emphasizing effective communication, collaboration, and knowledge sharing among team members. By creating a culture of open dialogue and psychological safety, organizations can harness the collective intelligence of their teams for enhanced problem-solving and decision-making. The fifth discipline, systems thinking, is crucial in understanding the interconnectedness and interdependencies within the organization. It encourages a holistic perspective, enabling informed decisions that consider the broader impact on the system as a whole (Luhn, 2017).

By integrating these disciplines into their culture, structures, and practices, organizations can create a Learning Organization that adapts, learns, and thrives in a rapidly changing environment. This concept promotes a proactive and adaptive mindset, enabling organizations to embrace challenges and opportunities. Senge's concept has had a profound impact on how organizations approach learning, development, and organizational effectiveness. It serves as a powerful framework for cultivating a culture of continuous learning, fostering innovation, and achieving sustainable success in today's complex business landscape (Senge, 2006).



**Figure 8 Learning Organisation Model**

### **2.3.2 SECI MODEL**

The SECI model, developed by Ikujiro Nonaka and Hirotaka Takeuchi, is a framework that explains the process of knowledge creation and transfer within organizations. The acronym "SECI" stands for Socialization, Externalization, Combination, and Internalization, representing the four modes of knowledge conversion.

Socialization refers to the sharing of tacit knowledge through direct interaction and shared experiences. It occurs when individuals learn from one another through observation, apprenticeships, and informal conversations. This mode focuses on the transfer of experiential knowledge, which is difficult to articulate but can be learned through social interactions.

Externalization involves the articulation and codification of tacit knowledge into explicit forms. Through this mode, individuals make their tacit knowledge more accessible by expressing it in explicit forms such as documents, diagrams, or models. Externalization allows tacit knowledge to be shared and communicated with others, facilitating the creation of new explicit knowledge.

Combination refers to the process of integrating and organizing explicit knowledge from various sources. This mode involves categorizing, synthesizing, and reconfiguring explicit knowledge to create new knowledge or insights. Activities such as meetings, databases, and reports enable the combination of explicit knowledge, resulting in the generation of new knowledge that can be shared within the organization.

Internalization focuses on the conversion of explicit knowledge into personal tacit knowledge. It occurs when individuals absorb explicit knowledge and make it a part of their own internal knowledge base. Through internalization, explicit knowledge is applied, tested, and refined through individual reflection, experimentation, and practice. This mode allows individuals to internalize explicit knowledge, making it a valuable asset in their tacit knowledge repertoire.

The SECI model describes a continuous cycle of knowledge conversion, highlighting the importance of both tacit and explicit knowledge in the creation and transfer of knowledge within organizations. By understanding and leveraging the SECI model, organizations can facilitate knowledge sharing, innovation, and learning, leading to improved performance and competitive advantage (Adesina, Ocholla, 2019).

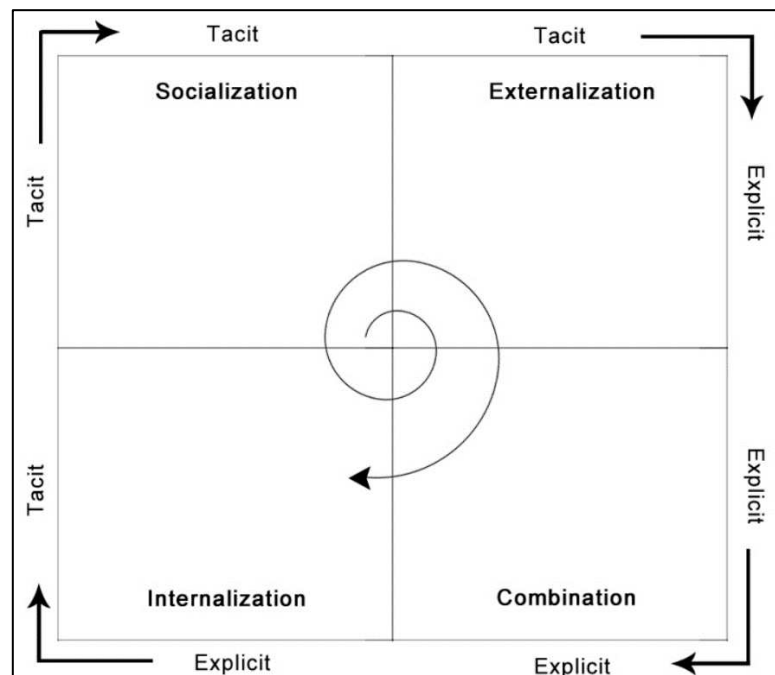


Figure 9 SECI model

### 2.3.3 HIGH-VELOCITY EDGE MODEL

The concept of the High-velocity Edge refers to a strategic approach that enables organizations to achieve and sustain high performance and competitive advantage in rapidly changing markets. Coined by Steven J. Spear (2009) in his book of the same name, the "High-velocity Edge" emphasizes the importance of operational excellence as a driver of success.

According to Spear, organizations that possess the high-velocity edge have the ability to sense and respond quickly to market changes, innovate rapidly, and continuously improve their processes and products. They operate at a level of speed, agility, and effectiveness that allows them to outperform their competitors.

To attain the high-velocity edge, organizations must cultivate a culture of continuous learning, improvement, and employee empowerment. This involves fostering an environment where employees are encouraged to experiment, take risks, and contribute their ideas for innovation and problem-solving. It also requires providing employees with the necessary tools, resources, and support to excel in their roles (Spears, 2009).

Organizations with the high-velocity edge leverage their operational capabilities to drive performance excellence in areas such as product development, customer service, supply chain

management, and quality control. They focus on eliminating waste, streamlining processes, and optimizing their operations to deliver superior value to customers (Spears, 2009).

By embracing the high-velocity edge, organizations position themselves to adapt quickly to market dynamics, seize opportunities, and stay ahead of the competition. They become agile and responsive, capable of continuously delivering superior products and services that meet evolving customer needs.

In today's fast-paced and highly competitive business landscape, the concept of the high-velocity edge serves as a guiding principle for organizations striving for sustained success. It emphasizes the importance of operational excellence, innovation, and continuous improvement as key drivers of competitive advantage in rapidly changing markets.

Overall, the high-velocity edge represents a mindset and strategic approach that propels organizations to excel in speed, agility, and performance, enabling them to outpace their competitors and thrive in dynamic business environments. This model aims at fostering a continuous knowledge hybridization between workers in order to spread knowledge throughout the workforce.

### **2.3.4 HOLACRACY MODEL**

Holacracy is a concept and organizational system developed by Brian J. Robertson (2015) that aims to distribute authority and decision-making throughout an organization. It represents a departure from traditional hierarchical structures by promoting a more flexible and adaptive approach to managing work and empowering employees. Holacracy seeks to create a self-organizing and self-governing environment where employees have the autonomy to make decisions within their roles. It replaces the top-down management approach with a decentralized system of nested circles, each with its own purpose and accountabilities. These circles operate with defined roles and transparent rules, enabling greater clarity and agility in decision-making.

Holacracy emphasizes the dynamic evolution of roles and responsibilities rather than static job descriptions. Through regular meetings called "circles," individuals can negotiate and update their roles to match the changing needs of the organization. This fluidity allows for greater adaptability and responsiveness in a rapidly changing business landscape. Another key aspect of Holacracy is the separation of people and roles. In this system, authority is not tied to individuals

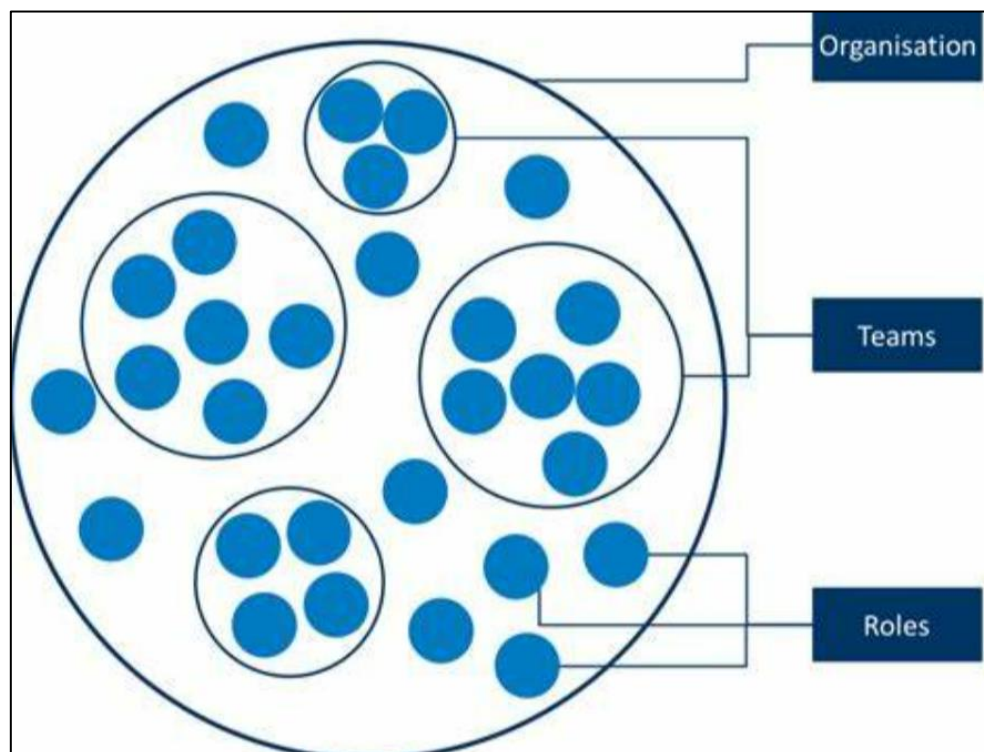


but rather to specific roles and their accountabilities. This distinction reduces personal biases and power dynamics, creating a more equitable and transparent work environment.

Holacracy encourages continuous improvement through a defined process called "tensions." Tensions are recognized as opportunities to identify and address issues or gaps in the organization. By surfacing tensions and finding solutions collaboratively, Holacracy fosters a culture of learning and innovation.

While Holacracy has garnered attention as an alternative management system, it is important to note that it may not be suitable for every organization or industry. Implementing Holacracy requires a significant shift in mindset, structure, and processes. It demands a commitment to transparency, open communication, and shared responsibility (Shell, 2021).

Robertson's concept of Holacracy offers organizations a framework for decentralizing authority, fostering adaptability, and promoting a more distributed decision-making process. By embracing this approach, organizations can tap into the collective knowledge and creativity of their employees, leading to increased engagement, agility, and innovation. This results particularly suitable to organizations that require transversal knowledge from their workforce in order to swiftly adapt to new technologies and changing socio-economic scenarios (Robertson, 2015).



**Figure 10 Holacracy model**

## **INSTITUTION LEVEL**

### **2.4 INSTITUTIONS DIGITALIZATION**

Digitalization and innovation are the driving forces of this revolution that is impacting at all institutional levels. The EU and the State Members are in the process of a digital upgrade at all levels: citizens' digital skills, digital businesses, digital public institutions.

#### **2.4.1 EUROPE**

The Digital Agenda for Europe 2020-2030 (Ratcliff, 2022) focuses on the transformative impact of digital technologies, the importance of digital services and markets, and the EU's technological and geopolitical aspirations. Key priorities for this decade include the development of quantum computing, blockchain strategies, human-centric and trustworthy AI, semiconductors, digital sovereignty, cybersecurity, gigabit connectivity, 5G and 6G networks, European data spaces and infrastructure, and global technology standards. To achieve specific digital targets by 2030, the EU has proposed a digital upgrading in four main areas: digital skill, business digitalization, digital infrastructure, electronic public services (Ratcliff, 2022).

An important project launched by the EU is ESCO -European Skills, Competences, Occupations-, a digital platform that offers a multilingual classification of skills, competences, qualifications and occupations (European Commission, 2022). ESCO functions like a dictionary, that defines, identifies, and categorizes professional occupations and skills pertinent to the European Union labour market, as well as the education and training sector. It establishes clear connections between these occupations and skills, facilitating effective communication between different stakeholders. The ESCO dataset, encompassing occupations and skills, is accessible through an online portal, where users can freely consult and download the information (European Commission, 2022).

ESCO offers a standardized terminology that promotes greater efficiency and integration within the European labour market. By providing a common reference, it enables seamless communication and collaboration between employers, educators, and training providers. It is available in 27 languages and it consists of two main pillars, occupations and skills/competences (European Commission, 2022).

Another project sponsored by the EU is the Digital Education Action Plan (2021-2027), a policy initiative aimed to establish a shared vision of digital education in Europe characterized by high quality, inclusivity, and accessibility. It seeks to assist Member States in adapting their education and training systems to the standards of the digital era (European Commission, 2022).

The Action Plan aims to improve collaboration across Europe in terms of digital education and it seeks to address the challenges and seize the opportunities presented by the COVID-19 pandemic. The presents prospects for the education and training community, including teachers, students, policy makers, academia, and researchers at national, EU, and international levels (European Commission, 2022).

#### **2.4.2 ITALY**

Repubblica Digitale is a national strategic initiative designed to address the digital skills gap among the Italian population, promote digital inclusion, and foster educational initiatives for the effective use of new technologies. Acquiring a sufficient level of digital skills has become a necessary and essential requirement for people.

The need to address various forms of the digital divide has been further emphasized by the changes brought about by the pandemic, which accelerated the digitization of everyday life processes. To overcome this significant obstacle to the country's economic and social development, in 2019 the strategic initiative "Repubblica Digitale" was launched to provide strategic direction and facilitating the integration and systematization of initiatives dedicated to digital skills by all relevant stakeholders across the nation. Italy aims to increase, by 2025, the basic digital skills to 70% of the population, increase the number of ICT graduates and improve ICT employment in SMEs (Repubblica Digitale, 2021).

“Piano Triennale per l’informatica” is another national project that is essential for promoting the digital transformation of the country and, in particular, that of the Italian Public Administration, through the declination of the digitization strategy into operational indications , such as objectives and expected results, attributable to the administrative action of the PAs.

### 2.4.3 VENETO

Based on the DESI methodology of the European Commission, an examination of the composite index of regional economic digitization revealed that in 2019, the Veneto region's level of digitization slightly exceeded the national average. This achievement was primarily attributed to advancements in e-government. However, Veneto businesses seemed to lag behind the European Union average in terms of digitization, especially noticeable before the pandemic. The analysis also explored smart working and the digitalization of the banking system. During the pandemic, Veneto had lower adoption of remote working compared to the rest of the country, largely due to the region's greater focus on the manufacturing sector, which offers fewer telework opportunities. Additionally, the transformation of interactions between banks and their customers continued during the pandemic, with digital channels gaining increasing prominence over physical ones.

The data substantiates that a significant number of companies have embraced digital transformation, with 57.6% of the surveyed sample confirming the adoption of one or more digital technologies. Over the past four years, the proliferation of digitization in businesses has witnessed exponential growth, attributable to incentives from the National Industry 4.0 Plan, reduced technology costs, and the companies' own drive to maintain competitiveness in the market. The inclination to invest in new technologies is further reinforced by the substantial increase in the percentage of companies that have implemented at least one Industry 4.0 technology, rising from 32.8% in 2017 to 57.6% in 2021. Prominent technologies include information security management (implemented by 67.3% of adopting companies), robotics and automation (48.2%), cloud services (44.3%), and the Industrial Internet of Things (26.7%). The positive evolution of Veneto companies' digitization journey is evident in the significant rise in the number of technologies adopted within organizations. In the initial survey conducted in the first quarter of 2017, only 4.8% of companies had introduced three or more technologies, while currently, this figure stands at 22.3%. The trend of companies investing in future technological innovations is also encouraging, with 26.5% of the surveyed companies expressing their intention to introduce further advancements. This aspiration extends to more sophisticated technologies that are currently underutilized. Overall, the analysis provides valuable insights into the potential trajectory of sustainable development for the Veneto manufacturing sector, leveraging human capital within companies (Unioncamere, 2023).

## **2.4.4 EDUCATION SYSTEM**

### ***UNIVERSITY***

On June 21, 2016, a comprehensive agreement was signed in Veneto among various stakeholders, including, the Veneto Universities, the Veneto Region, the Veneto Regional School Office and the social representatives. This agreement establishes the overarching guidelines and criteria for the establishment of higher education and research apprenticeship programs within the region (UNIPD (b), 2023).

The higher education and research apprenticeship is regulated by a contract that aims to provide opportunities for the training and employment of young individuals while allowing them to pursue higher education qualifications such as a three-year degree, master's degree, first and second level master's degree, or research doctorate. This contract is designed to enable young people between the ages of 18 and 29 to combine work and study effectively. It offers the flexibility of being employed under an apprenticeship contract within a company while simultaneously pursuing a degree or engaging in research activities.

The higher education and research apprenticeship contract not only benefits the young individuals, but also provides advantages to employers. By integrating skilled individuals with specialized knowledge into their workforce, companies have the opportunity to foster innovation and enhance productivity. This contract facilitates the inclusion of medium-high level professionals who can contribute valuable expertise to drive growth and development within the organization (UNIPD (b), 2023).

The University of Padova (UNIPD (a)) has developed programs aimed to stimulate a continuous cooperation with local businesses and governing bodies. Open University Career Day is an important networking event in which companies and other organizations actively engage with university students to identify talents who possess the precise skills necessary to meet the labour market's needs, creating tangible opportunities for companies. The Career Day serves as a platform for open dialogue between the academic world and the professional realm, with the University of Padova welcoming companies and organizations to foster direct engagement with emerging talents and harness the potential that thrives within the academic environment. The objective of the University of Padua's Career Service is to facilitate connections between students and companies, establishing mutually beneficial relationships (UNIPD (a), 2023).

The Career Service at Ca' Foscari University of Venice (UNIVE, 2023) operates as a comprehensive system comprising activities, counselling, and guidance services. Its primary

objective is to enhance the employability of graduates and effectively address the needs of companies in terms of intermediation, recruitment, orientation, and employer branding.

The UNIVE also organizes the Career Days events that are specifically designed for students and recent graduates from all academic disciplines within the University. Career Days aim to facilitate connections and recruitment opportunities between companies and undergraduate/graduate students. The goal is to create a platform for meaningful interaction where desired profiles sought by companies can match with profiles of Ca' Foscari students (UNIVE, 2023).

### *ITS*

The "Istituti Tecnici Superiori "(ITS) play a crucial role in Italy's educational landscape by offering advanced vocational programs that cultivate versatile trades and professions. These programs have a primary objective of equipping individuals with a high level of knowledge, skills, and competencies that can be applied across various industries. The focus is on specialization, encompassing a diverse range of expertise and, importantly, the ability to adapt to dynamic changes in the professional landscape.

A key aspect of the ITS programs is the collaborative approach to designing work and developing skills. By bringing together industry stakeholders, educators, and students, these programs actively contribute to the creation of new occupations and the cultivation of emerging skill sets. This collaborative effort ensures that the ITS programs stay relevant and responsive to the evolving needs of the job market. The ITS programs prepare individuals for a wide range of professional roles that span different levels of responsibility and skill requirements. Through a combination of theoretical knowledge and practical training, these programs provide apprenticeship opportunities and phases of increasing responsibility. This hands-on approach allows students to apply their learning in real-world settings and gain valuable experience. Furthermore, the ITS programs recognize the importance of both personal and professional qualities. They not only focus on technical expertise but also emphasize the development of essential attributes such as teamwork, problem-solving, and adaptability. By acknowledging and nurturing these qualities, the ITS programs produce well-rounded individuals who are prepared to excel in their chosen fields.

One of the significant strengths of the ITS programs is their ability to bridge the gap between technical expertise and broader education. By incorporating theoretical knowledge alongside practical training, these programs offer a comprehensive learning experience that combines

critical thinking skills with vocational proficiency. This integration helps overcome the traditional divide between institutions that prioritize theoretical learning, such as classical high schools and universities, and those that emphasize practical skills and vocational training, such as vocational education and training schools.

In conclusion, the ITS are strategic in driving Italy's workforce and organizations towards digital transformation. Indeed, half of the courses offered by ITS incorporate Industry 4.0 enabling technologies, which are utilized as educational tools for learning purposes and for the creation of smart products relevant to each field (ITS, 2020). Through their advanced vocational programs, these institutes facilitate the development of adaptable trades and professions that are essential in the rapidly evolving digital landscape. These programs not only foster specialization but also actively promote collaboration in work and skill design, preparing individuals for a wide range of professional roles. By bridging the divide between technical expertise and broader education, the "ITS contribute significantly to the growth, success, and overall advancement of Italy's workforce (Butera, 2018).

## **2.5 CONCLUSIONS**

This chapter has evaluated the dynamics that digitalisation and hybrid jobs generate on individuals, organisations and institutions. The advent of digitalisation has brought a paradigm shift on workforce, workplace and society. This chapter is useful to understand the context in which modern organizations operate and how companies can thrive in digital times. The next chapter examines a case study based on a Italian SME operating in the manufacturing sector in Padova. The findings from the case study will be compared with literature in the last chapter of this thesis.





# **CHAPTER 3 - HYBRID JOBS CHALLENGES: VENETO CASE STUDY**

## **INTRODUCTION**

In order to integrate digitalization into their operations, organizations need to undergo a cultural and organizational change. Various internal and external factors can either facilitate or impede this organizational change process.

In this chapter there is an evaluation of the methodology and tools used in this dissertation to collect data and information. Next there is the presentation of a theoretical framework that guides organizations to implement a strategy aimed at fostering knowledge across the workforce and at redesigning organizational structure and management practices. This framework is based on the findings of the literature review, highlighting the key elements, features, and characteristics that either stimulate or hinder the organizational change towards digitalization.

## **3.1 METHODOLOGY**

The primary aim of this Master's Thesis is to evaluate how the digital revolution is impacting on Italian small-medium enterprises with particular attention on how hybrid jobs challenge the traditional concepts of organizational management. The investigation of this dissertation is based on qualitative data that have been obtained through primary and secondary data collection. Qualitative data research involves collecting non-numerical data through methods such as interviews, observations, and document analysis. Primary data collection comprehends questionnaires, interviews, focus group interviews, observation, survey, case-studies, diaries and memos. Secondary data collection consists in the evaluation of published sources such as journals, books, articles, websites, magazines, newspapers, research, institutional reports and other publications (Taherdoost, 2021).

### 3.1.1 DATA COLLECTION

#### Secondary Data Collection

In this thesis a secondary data collection has been conducted in the first two chapters by evaluating extensive literature on the evolution of digital era, the rise of hybrid jobs, the concept of transversal knowledge, the new management models applied at individual, organizational and institutional levels.

#### Primary Data Collection: Case-Study & Interview

##### Case-study

The case-study method offers the opportunity to thoroughly and descriptively investigate various issues. It encompasses a wide range of concepts, from individuals to organizations and sectors, particularly when the number of sites is limited. By observing and interviewing participants within a real-world context, case studies facilitate precise examination and in-depth exploration of the site. Essentially, they involve empirical investigations that examine different phenomena within a real-life setting, even when the boundaries between them are unclear and require comprehensive exploration.

Various methods are employed for data collection in a case study: direct observation, participant observation, interviews (structured or semi-structured). While case studies are not considered research methods in themselves, researchers employ various data collection and analysis techniques to obtain the necessary material for their study. For qualitative research, interviews and diaries can be utilized to gather data, along with the use of official and personal notes to collect information. Analytical methods like grounded theory can be applied to analyse the collected data (Taherdoost, 2021). The case-study research is based on semi-structured interviews with senior managers of Bano Recycling srl, a manufacturing company based in Campodarsego, Padova. The semi-structured model has been selected to allow the interviewer to ask further questions in order to improve relevant information.

##### Interview

Data and information were gathered through a semi-structured interview conducted with Minotto Laura and Nardo Nicola. The semi-structured interview format was chosen as it combines elements of structured and unstructured interviews. The interviewer follows a predetermined set of questions but can also ask additional probing questions based on the participant's responses.

This approach ensures some level of standardization while allowing for deeper exploration. It strikes a balance between structure and flexibility, enabling comparability across interviews and a better understanding of individual perspectives (King, 2004). The main advantages of using a semi-structured interview include the ability to collect rich, in-depth, and detailed data, obtaining insights into both past and future events, flexibility in administering interviews, and the opportunity to provide clarification to interviewees regarding the questions. However, there are some disadvantages to consider, such as the potentially lengthy scheduling process for interviews, the possibility of last-minute changes to plans, the risk of missing out on certain information, and the potential difficulty and time-consuming nature of the coding process. (Taherdoost, 2021).

### **3.1.2 CASE-STUDY COMPANY**

Bano Recycling srl (2023), founded in 2001 in Campodarsego, PD, is an Italian SME operating in the metalwork sector with a business-to-business model. The company core business is the design and production of big shredders that are used in the recycling process of plastic, iron, aluminium, gum, wood, paper, mix urban waste, electric and electronic scraps. Bano Recycling produces and personalizes the machines according to specific client requirements from international markets. The company employs fifty people and it has recently opened a new plant with Industry 4.0 technology such as intelligent cranes and production management software. The company has developed innovative technologies and it has patented some components of the machines. At the present Bano Recycling offers a range of over 20 types of shredders, with horizontal or vertical axis, and other machines for recycling purposes. The core areas of the organization are design, manufacturing, assembling, logistics, commercial and post-sale assistance (Bano, 2023). The type of business requires employees to hold technical knowledge and experience in the metalwork industry, the technical department needs also specific digital fluency in order to operate technical design software like AutoCAD. The primary data collection from Bano Recycling has been conducted through a semi-structured interview with Laura Minotto, Export Sales & Project Manager, and Nicola Nardo, Organizational Manager.

### 3.1.3 LIMITATIONS

The limitation of this research is the reliance on only one case study, which may limit its generalizability. Additionally, the specific timing and time-horizon of the interview played a significant role in adopting such methodology for this research. However, despite these limitations, the analysis carried out in this study provides valuable insights for future research. This is supported by a comprehensive literature review and the inclusion of real-world case studies, which contribute to the richness and applicability of the findings.

### 3.2 THEORETICAL FRAMEWORK

The primary objective of this thesis is to investigate the challenges that hybrid jobs pose on Italian SMEs in the digital era. The research focuses on the age gap between digital fluent and non-digital fluent workers and the dynamics that this relationship generates. The theoretical framework of this research builds upon the extensive literature discussed in the first two chapters: digital revolution, digital fluency, hybrid jobs, evolution of the jobs in the history, workers' digital gap, management models in the digital era, institutions roles. The literature review aims to identify the new dynamics brought by the digitalization and to provide a benchmark for Italian SMEs that are navigating the digital transition and face the challenges posed by hybrid jobs and digitalization. The research showed the centrality of subjects like transversal knowledge, hybrid workers, workplace reorganization, new management culture, and institutions role in the digital era. The findings that emerged from this investigation are compared with the data obtained from Italian SMEs case-studies in order to evaluate the challenges posed by digital transformation in Italian small-medium enterprises with reference to individual level, organization level and institution level.

**Table 1 Evidence from literature**

|                     |  |
|---------------------|--|
| INDIVIDUAL<br>LEVEL | <ul style="list-style-type: none"><li>• Talent Management in SME: inclusive approach, egalitarian concept within organization.</li><li>• In SME HR department is not always defined and human capital strategy is administrated by other management positions or by the owner-manager.</li></ul> |
|---------------------|--|

|                           |  |
|---------------------------|--|
|                           | <ul style="list-style-type: none"> <li>• MNE talent management procedures are not replicable in SME as they differ in size, structure and resources</li> <li>• SMEs face challenges in terms of legitimacy in the labor market due to limited organizational information available to job seekers.</li> <li>• MNE has formalized HR practices, SME has own unique HR models that align with the organization specific contexts</li> <li>• SME gets talent from different labor pool than MNE</li> <li>• SMEs creative environment, better job quality, less bureaucracy, higher flexibility, more informal workplace can help attract and retain valuable employees.</li> <li>• Person-Job fit is a match more indicated for MNE or grown-up SME</li> <li>• Person-Organization fit is a match for early stage SME</li> <li>• Employees who possess confidence, digital self-efficacy, and the ability to navigate complexity and ambiguity thrive</li> <li>• OCEAN: personal traits like openness, conscientiousness, entrepreneurship and low neuroticism are important indicators in hybrid jobs selection.</li> <li>• RIASEC: investigative and realistic interests have a positive association with digital self-efficacy and hybrid job performance.</li> <li>• Young digital manager vs old subordinate is a relationship that may cause tensions as older workers may feel a sense of personal failure. Negative emotions can influence worker performance and may contaminate other workforce feelings thus compromising organization.</li> </ul> |
| <p>ORGANIZATION LEVEL</p> | <p>Organization management models in the digital era:</p> <ul style="list-style-type: none"> <li>• Learning Organization model: continuous learning, adaptability, and innovation as crucial elements; organization like interconnected systems, where individuals, teams, and departments are interdependent</li> <li>• SECI model: Externalization, Combination, and Internalization,</li> </ul>   |

|                              |  |
|------------------------------|--|
|                              | <p>representing the four modes of knowledge conversion.</p> <ul style="list-style-type: none"> <li>• High-Velocity Edge model: the importance of operational excellence as a driver of success. Organizations that possess the high-velocity edge have the ability to sense and respond quickly to market changes. Organizations must cultivate a culture of continuous learning, improvement, and employee empowerment.</li> <li>• Holacracy model: aims to distribute authority and decision-making throughout the organization. Flexible and adaptive approach to managing work and empowering employees. It creates a self-organizing and self-governing environment where employees have the autonomy to make decisions within their roles. It is a decentralized system of nested circles, each with its own purpose and accountabilities. These circles operate with defined roles and transparent rules, enabling greater clarity and agility in decision-making.</li> </ul> |
| <p>INSTITUTION<br/>LEVEL</p> | <p>Europe:</p> <ul style="list-style-type: none"> <li>• Digital Agenda for Europe 2020</li> <li>• ESCO dataset</li> <li>• Digital Education Action Plan (2021-2027)</li> <li>• PNRR/NRRP</li> </ul> <p>Italy:</p> <ul style="list-style-type: none"> <li>• Repubblica Digitale is a national strategic initiative designed to address the digital skills gap among the Italian population, promote digital inclusion, and foster educational initiatives for the effective use of new technologies.</li> <li>• “Piano Triennale per l’informatica” is another national project that for promoting the digital transformation of the country and of the Italian Public Administration.</li> </ul> <p>Veneto:</p> <ul style="list-style-type: none"> <li>• In Veneto businesses lag behind the European Union average in terms of digitization, especially before the pandemic. The gap has been reduced thanks to the National Industry 4.0 Plan that supports</li> </ul>             |

|  |  |
|--|--|
|  | <p>the proliferation of digitization of businesses. Veneto has recently improved its digital knowledge and is moving towards Community standards. The Veneto region has reached agreements with ITS and universities to promote employability and expand the talent pool for companies.</p> <p>Education system:</p> <ul style="list-style-type: none"> <li>• Universities in Veneto have developed agreements with public institutions and the private sector to foster students employability and cooperation with companies that are searching talented students to integrate into organisations. Career day is an event that fosters networking between students/graduates and companies.</li> <li>• ITS offer advanced vocational programs that cultivate versatile trades and professions. These programs have a primary objective of equipping individuals with a high level of knowledge, skills, and competencies that can be applied across various industries.</li> </ul> |
|--|--|

### 3.3 RESULTS

The comparison between the literature review and case study findings allows to gain a deeper understanding about the digitalisation and the hybrid jobs challenges faced by Italian SMEs.

The literature analysis serves as a digital benchmark to be compared against Italian SMEs case study. Furthermore, the comparison permits the implementation or the design of strategies in order to facilitate the digital transaction and to manage the challenges created by hybrid jobs.

In Table 2 there are the questions and answers of the interview with Laura Minotto and Nicola Nardo from Bano Recycling srl.

**Table 2 Case study findings**

| <b>Laura Minotto</b>  | <b>Nicola Nardo</b>   |
|---|---|
| <b><i>Does your organization have hybrid jobs?</i></b>  |   |
| I consider that our company holds few hybrid roles.<br>Some workers hold key knowledge of all | We have 3 hybrid roles with transversal knowledge. These positions require advanced digital fluency, communicative skills, ability in |

|  |   |
|--|---|
| <p>areas of the company and are not easily replaceable. Some other workers have transversal knowledge that can be applied within the company in a rapid way.</p>   | <p>sales and knowledge of the various departments of the company.</p>   |
| <p><b><i>Need for transversal knowledge?</i></b></p>   |   |
| <p>Minotto suggests that transversal knowledge is an essential feature for a worker to be integrated into organizational activities in a fast and smooth fashion. Transversal knowledge workers are more accepted by colleagues and older co-workers as their high knowledge make them solve many problems that others cannot. Transversal knowledge is a key element.</p> | <p>There is definitely need of transversal knowledge.</p>   |
| <p><b><i>How do you get skilled worker? Labor market or Internal training?</i></b></p>   |   |
| <p>Head hunting companies, Michael Page headhunter.<br/>Technical institutes.<br/>No internal training schemes. The organization employs new workers that have already gained knowledge and experience in the sector.<br/>Networking.</p>  | <p>Networking. As a matter of fact, I was offered my present position after informal social networking with one of the managers of the company.</p> |
| <p><b><i>How do you select the right candidate? Experience, study, personal traits?</i></b></p>  |   |
| <p>We much value previous experience and transversal knowledge.<br/>The education level is not much considered as long as the person can do the job.<br/>We consider also personal traits of the person and we appreciate personal attributes like conscientiousness, entrepreneurialism,</p>  | <p>We pay attention to the experience shown on CVs.</p>   |



|   |   |
|---|---|
| openness, agreeableness. We like calm, thoughtful, self-efficient people who can work alone and as part of a team.  |   |
| <b><i>Do you manage the age gap?</i></b>  |   |
| Yes, the organization manages the age gap tensions by selecting people with personal traits that match with the company culture. We value agreeableness as an important trait to moderate the age gap tensions. | We take in considerations the dynamics that generate from a young manager and older subordinate relationship.<br>For example, when we have to introduce a new software in the operations, we overcome scepticism among older co-workers by introducing the new system in parallel with the old so to bring evidence of the improvements. By introducing the change in this way, as a better alternative to the old way, and not through imposition from superiors, older workers tend to better embrace the change and smooth tensions. |
| <b><i>Do you spread knowledge among workforce?</i></b>  |   |
| There are learning processes that combine tacit-explicit knowledge and externalize-internalize information.   | We use collaboration as a tool to train workers and transmit knowledge.   |
| <b><i>How do you reduce the knowledge gap between workers?</i></b>  |   |
| They reduce the gap through collaboration: mechanic worker with engineer, sales staff with production manager.  | Training through collaboration.   |
| <b><i>How do you manage the organization? Vertical or horizontal?</i></b>   |   |
| There is a vertical hierarchy in the company which is totally controlled by the owner who participates in all decisions making.   | The company has a marked vertical structure where the owner follows all operations with little delegation.  |
| <b><i>Industry 4.0 technology? Management software?</i></b>   |   |
| The new plant is equipped with cranes that incorporate industry 4.0 technology, a software that tracks all the activity of the  | The cranes in the new plant are equipped with Industry 4.0 technology.<br>We also have a software that manages the  |

|   |   |
|---|---|
| <p>crane. The system extrapolate data to implement solutions to improve the use of the crane by reducing costs and speeding up production.</p> <p>The machines that we produce adopt industry 4.0 technology such as data cloud, IoT.</p> | <p>production cycle of our machines.</p>                                      |
| <p><b><i>Do institutions support SMEs in human capital development?</i></b></p>   |   |
| <p>Institutions do not support human capital education and development.</p>   | <p>Institutions have many plans but they lack to convert them in actions.</p> |

### 3.4 CONCLUSION

This chapter has analysed how this academic research has been conducted with regard to the methodology, the primary and secondary data source, the theoretical framework and the results.

This summary is functional to the evaluation of organizational challenges of hybrid jobs faced by Italian SMEs. It is also useful to notice that the challenges faced, and the solutions adopted by the case study company are in part congruent with literature findings.

In the next chapter there is a further analysis of similarities and dissimilarities between the case study and main literature, with the presentation of a roadmap towards digitalization and hybrid jobs integration in Italian SMEs.



# CHAPTER 4 – SURFING THE DIGITAL WAVE

## INTRODUCTION

This last chapter examines the congruences and differences between the Italian SME case study and mainstream literature, with the aim of understanding the actual challenges on the path towards Industry 4.0 organisations.

After a detailed evaluation of the results of the interview according to the specific topics, the thesis presents a roadmap to digitalisation in which there is an introduction of the new architects of work, that can be embodied in people or institutions. Finally this research proposes virtuous models for the three different dimension we have evaluated along this thesis: institutions, organisations and individuals. The aim is to identify what best practices should be used in each single dimension in order to accelerate the integration into the digital era.

## 4.1 ANALYSIS OF THE FINDINGS

The aim of this research is to identify the organizational challenges the hybrid jobs produce within Italian SMEs. This thesis uses the comparison between literature review and the case-study to evaluate the digitalization level in Italian SMEs, more precisely in Veneto. This research seeks to understand the actions Italian SMEs are taking in order to face the challenges generated by hybrid jobs and digitalisation. The analysis is focused on these topics: hybrid workers and transversal knowledge, talent management, organizational management, innovation and knowledge diffusion, role of institutions.

### 4.1.1 HYBRID WORKERS AND TRANSVERSAL KNOWLEDGE

According to Minotto and Nardo (2023), the company has a limited number of hybrid roles, where certain workers possess valuable knowledge spanning across all areas of the company, making them hardly replaceable. Additionally, there are other workers who possess transversal knowledge that can be swiftly applied within the company, facilitating smooth integration into organizational activities. They also suggest that having transversal knowledge is crucial for workers to seamlessly integrate into organizational activities. Such workers are highly regarded

by colleagues and older co-workers due to their ability to solve complex problems that others may struggle with. Therefore, transversal knowledge plays a pivotal role as an essential element in this context.

What has emerged from the interview is in line with the literature analysis of the first chapter. Transversal knowledge is crucial as it allows a worker to cover different roles and it enables organizations to be more agile and reactive. Gubitta (2017) affirms that the hybridization of trades is a widespread phenomenon, also observed in the Veneto region. The jobs emerging in the fourth industrial revolution extend beyond mere technology skills and digital training. They encompass new roles characterized by accountability for outcomes, work autonomy, effective management of human-technology relationships, and the continuous development of technical and social skills. These jobs emphasize responsibility and the need for individuals to possess a diverse set of capabilities to navigate the evolving work landscape successfully (Butera, 2019).

#### **4.1.2 TALENT MANAGEMENT**

Based on the interview with Minotto, it has been discovered that the case-study company utilizes headhunting platforms like Michael Page to identify and hire talented workers. Additionally, the company acquires student records from local technical institutes as a means to identify young individuals with digital knowledge who can participate in apprenticeship programs at Bano Recycling.

Minotto mentioned that the company does not have formal and structured internal training programs. Instead, they prefer to hire new employees who already possess knowledge and experience in the industry. Moreover, Minotto emphasized the importance of networking, both formal and informal, as a valuable channel for connecting with talented individuals who possess transversal knowledge.

Similarly, Nardo shares the belief that networking plays a crucial role in discovering skilled individuals with diverse knowledge. In fact, he obtained his current position through informal social networking with one of the company's managers.

According to Minotto and Nardo, when it comes to selecting candidates, the company highly values previous experience and transversal knowledge shown on the curriculum. The level of education is not given significant consideration as long as the individual is capable of performing the job. Additionally, the organization takes into account personal traits of the candidates and

places importance on attributes such as conscientiousness, entrepreneurialism, openness, and agreeableness. They particularly welcome individuals who are calm, thoughtful, self-efficient, and capable of working both independently and as part of a team.

Minotto says that the organization effectively addresses tensions arising from generational differences by selecting individuals whose personal traits align with the company culture. The company places a high value on agreeableness as a crucial trait for mitigating age gap tensions. Nardo also says that the dynamics arising from relationships between young managers and older subordinates are highly considered. For instance, when introducing a new software into operations, young managers proactively address any scepticism among older colleagues by introducing the new system in parallel with the existing one. This approach allows to provide tangible evidence of the improvements the new system offers. By presenting the change as a superior alternative to the old system, rather than imposing it from above, make older workers more receptive to the change and tensions are alleviated.

With reference to the personal traits, it is worth of note that the company, differently from what emerged from the literature research, values agreeableness as an important asset of the personality as it helps to create empathy between workers of different age cohorts. Younger managers who show agreeableness and are emphatic with older subordinates are taken in high consideration. Finally, Minotto said that strong transversal knowledge transcends personal traits as there are few talented workers available for challenging hybrid jobs. From the answers given by Minotto it emerges how the company, when selecting a new candidate, adopts both approaches: Person-Organization fit and Person-Job fit. Smaller companies tend to prioritize personal characteristics that align with the organizational culture, whereas larger companies often place greater emphasis on human capital attributes such as education, experience, and skills. Studies highlight diverse viewpoints regarding the importance of Person-Job and Person-Organization fit in the employee selection process within small and medium-sized enterprises. While aligning with the organizational culture may be a primary consideration in the early stages of development, as the company expands, more attention may be directed towards the skills and abilities of candidates.

The hybrid approach is in line with the findings from literature that exhibit how the size of the company influences the philosophy behind the employee selection. As a matter of fact, Bano Recycling srl has reached an organisation size that demands the integration of people with high technological and digital knowledge in key roles of the company.

### **4.1.3 ORGANIZATIONAL MANAGEMENT**

Minotto and Nardo say that company maintains a clear vertical hierarchy in which the owner assumes complete control and involvement in all decision-making processes, with limited delegation of authority to subordinates.

The company vertical hierarchy collides with the flatter organizational structures evaluated in the second chapter. For instance, the Holacracy model decentralizes authority and decision-making, enabling flexibility and employee empowerment. It leverages collective knowledge and creativity for increased engagement, agility, and innovation.

Knowledge driven organizations are agile and reactive, senior managers delegate, workers are more independent, and their performance is measured on a result basis.

The fact that senior managers adopt a delegate strategy is a key factor as they can focus on tactical aspects of the company and let the others deal with operations. When senior managers or company owners take part in all decision makings the organization generates opportunity costs as those skilled and experienced workers should be planning and organizing strategic actions to increase market-share, boost innovation, increase profits or build partnerships.

### **4.1.4 INNOVATION AND KNOWLEDGE DIFFUSION**

The interviewees mentioned that the company's new facility incorporates industry 4.0 technology in its cranes, which includes software for tracking crane activity. This software enables data analysis to implement solutions that aim to reduce costs and improve production efficiency. Additionally, the organization utilizes a software to manage the production cycle of its machines. Regarding knowledge dissemination among the workforce, Minotto highlighted the presence of learning processes that combine tacit and explicit knowledge and involve the externalization and internalization of information. The company encourages collaboration among employees as a method of training and knowledge sharing. For example, engineers collaborate with production workers, and sales staff collaborate with the production manager. The organization's board of directors believes that collaboration between skilled and less-skilled workers can help narrow the knowledge gap and facilitate knowledge transfer.

Nardo, like Minotto, said that the company promotes worker training through collaboration among the employees themselves.

The interview revealed that the company has embraced Industry 4.0 technologies like the smart crane and production management software. Despite these advancements, the company faces a disadvantage compared to international competitors when it comes to innovation and digitalization. This disadvantage is consistent with the digital landscape of Italy and specifically the Veneto region. Although Veneto's level of digitization slightly surpasses the national average, businesses in the region appear to lag behind the European Union average in terms of digitalization.

With reference to knowledge diffusion the case study organization adopts employee's collaboration as a tool to transfer knowledge among workers, a practice that seems in line with the models earlier considered: the Learning Organization, the High-Velocity Edge, SECI and Holacracy.

Senge's Learning Organization model emphasizes continuous learning, adaptability, and innovation. It recognizes organizations as interconnected systems where a supportive environment fosters growth and improvement at all levels.

The High-Velocity Edge model promotes a culture of continuous learning, improvement, and employee empowerment. It encourages experimentation, risk-taking, and idea contribution for innovation and problem-solving.

The SECI model describes the cycle of knowledge conversion, emphasizing both tacit and explicit knowledge in creating and transferring knowledge within organizations.

Also Holacracy leverages collective knowledge and creativity for increased engagement, agility, and innovation.

The case study's practice of using collaboration between employees as a means to spread knowledge among the workforce seems to fit within these models adopted by organizations seeking to thrive in a rapidly changing world, especially those requiring transversal knowledge to adapt to new technologies and socio-economic shifts. Also in the case study organization knowledge appears to be the most important asset.

#### **4.1.5 ROLE OF INSTITUTIONS**

Minotto and Nardo expressed their belief that public institutions do not provide sufficient support to companies in their digitalization efforts. They also mentioned that educational institutions, including schools and universities, fail to equip students with the skills that organizations are



seeking. Furthermore, Nardo mentioned that while institutions have numerous plans, they struggle to translate them into action.

These opinions align with the current state of digitalization in Italy, as previously discussed. Italy's average digital fluency is among the lowest among European Union member states. In Veneto, a region with a strong manufacturing focus, the adoption of remote working during the pandemic was comparatively lower due to limited telework opportunities in the manufacturing sector.

According to the Digital Economy and Society Index 2022 (DESI), Italy ranks 25th out of 27 EU countries in terms of human capital related to digitalization. Only 46% of the population possesses basic digital skills, falling below the EU average of 54%. However, the gap narrows when considering individuals with above basic digital skills. Italy ranks 7th in terms of connectivity and 8th in the EU for the integration of digital technology.

While most Italian SMEs exhibit a basic level of digital intensity (60%, surpassing the EU average of 55%), their performance in adopting specific technologies varies. For instance, the use of e-invoices is widespread (95% of enterprises) due to legislative interventions. Cloud services are also relatively well-adopted, with 52% of enterprises utilizing them. However, the uptake of technologies such as big data and Artificial Intelligence remains low, with only 9% of Italian enterprises utilizing big data and AI-based technologies. The share of e-commerce in SMEs' turnover and cross-border sales has shown limited growth, reaching 13% but still lagging behind the EU average (DESI, 2022).

Italy has started the Operational Plan to bridge the gap with similarly sized countries like Germany, France, and Spain by 2025. The plan's primary objectives include reducing digital illiteracy, increasing the percentage of ICT specialists in emerging technologies, equipping young people and the entire workforce with essential digital skills, addressing the gender gap, and narrowing the digital divide. Aligned with the European Action Plan for digital education (2021-2027), the Operational Plan supports the goals outlined in the ongoing National Recovery and Resilience Plan. It serves as a reference framework for national initiatives concerning digital skills and aligns with European programming in this domain. The Operational Plan focuses on implementing digitalization in four key areas: the education system, the active workforce, ICT knowledge, and citizens' digital proficiency (MID, 2020).

According to the prevailing economic theory of growth, investment in innovation, research and development, as well as human capital enhancement, is crucial to achieve high rates of GDP

growth. However, when comparing Europe to the USA and China, Europe lags behind. Italy, in particular, is even further behind, with the southern economy facing even greater challenges.

In terms of the innovation index in 2021, Emilia-Romagna takes the lead among Italian regions with a score of 125.67, followed by Friuli-Venezia Giulia with a score of 122.45, and Veneto with a score of 118.00. The average increase in the innovation index between 2014 and 2021 across Italian regions was approximately 30%. There is a notable disparity between southern and northern regions in terms of the innovation index. However, Italian regions still exhibit low levels of innovation compared to other administrative areas in Europe. The European Innovation Scoreboard identifies 240 administrative regions in Europe, with Emilia-Romagna, the top Italian region, ranking 76th.

To address this situation, significant investment is needed in technological innovation, research and development, and the training of human capital. Strengthening the collaboration between companies, research institutions, and universities is crucial. Unfortunately, investing in technological innovation becomes even more challenging in the Italian context. This lack of attention not only affects the competitiveness of companies but also jeopardizes the future prospects of the "Made in Italy" brand (Leogrande A., 2023).

## **4.2 ROADMAP TO DIGITALIZATION**

In the previous section the information from the case study was compared with the literature in order to have a picture of the actual situation, to understand how an Italian SME cope with the challenges arising from digitalization and hybrid jobs. This section attempts to design a roadmap to digitalization for Italian SMEs that want to navigate into the digital era.

Despite the profound transformations brought about by the digital revolution in Italian organizations, there are still elements of work from the Taylor-Fordist model, elements that persist significantly within companies and public institutions. Despite the crisis faced by hierarchical organizations, these ideas struggle to fade away from both the structures and mindset of individuals. The prevailing model, which is characterized by task prescriptions, procedures, duties, levels, departments, and hierarchies, remains unchanged. This model is firmly reinforced by the systems governing the representation and regulation of work, as established by the regulatory framework and industrial relations. Oppositely, the younger generations hold vastly different perspectives on work and life. However, these ideas are often devalued through

patronizing attitudes. Merely observing this epochal change is insufficient. It is imperative to conceive and develop a new approach to work, potentially leading to a new paradigm for the world of work.

Butera (2022) suggests that it is essential to move towards new ways of working that reconsider the concepts of workforce and workplace. Achieving collective transformation in work methods and environments necessitates undertaking change initiatives within each organization, accompanied by support from public promotion and regulation programs and collective bargaining that actively involves individuals.

To effectively drive these initiatives, it is essential to employ enhancement strategies. The most successful companies and administrations are those that have embraced innovative approaches to their strategies and organizational structures, resulting in enriched work experience. As a result, these entities prosper economically and avoid situations of job dissatisfaction. In contrast, organizations that have neglected to adopt such progressive approaches face challenges in the market and encounter difficulties in attracting and retaining a skilled workforce.

According to Butera (2022) there should be coordinated actions from organizations, public institutions and academics in order to address the digitalization process.

Organizations' leaders should draw lessons from successful examples of the new flexible work architecture and strive to develop participatory projects and programs that integrate technology, organizational changes, and work practices.

Public institutions must enhance the regulatory system to align with the evolving nature of work and foster research initiatives and implementing "Pacts for Work." These pacts serve as catalysts for promoting and disseminating innovative practices within both private and public organizations. Emilia-Romagna's approach stands as a notable example in this regard.

Scholars should increase their research activities to identify and share best practices. The aim is to contribute to the advancement of renewed organizational and work models by assessing the positive and negative effects of adopted solutions on organizational performance and workers' quality of life.

Butera suggests the introduction of "work architects", professionals who are able to join forces to collaboratively design and implement novel work structures, ensuring the active involvement of individuals. Next paragraph analyses in details the functions of these work architects.

#### 4.2.1 WORK ARCHITECTS

It is essential to develop a group of designers or architects for the new world of work, as suggested by Marco Bentivogli and advocated since the 1970s by Davis and the International Council for Quality of Working Life. These professionals will not be isolated specialists like industrial engineers or traditional Taylorist time and methods technicians. Instead, they will be managers, trade unionists, public administrators, and scholars who actively collaborate in managing and innovating work, actively involving the individuals affected. Their collaborative efforts will focus on designing and implementing new work models that address the evolving needs of the workforce (Butera, 2022).

Architects of the new era of work should strive for three fundamental design objectives, applicable to both businesses and public administrations: organizational restructuring, wide-ranging professionalization, advancement of work-life quality.

Organizational restructuring must aim at fostering the development of flexible, self-regulating, and interconnected organizations that embody the principles of the next generation. These organizations should leverage digital technologies to enhance their operations. The objective of the new organizational forms, characterized by flexibility and democracy, is to alleviate the conventional vertical hierarchy found in the Fordist model and instead foster a shared purpose. These innovative structures rely on self-regulated collaboration among members, widespread knowledge sharing within the organization, effective communication both internally and externally, and a community-oriented approach that encourages innovation.

Work architects should dedicate their efforts to studying successful organizations in order to comprehend the strategies that have contributed to their achievements. This knowledge can then be applied to replicate similar outcomes in other organizations, whether in the private or public sectors. The concept of widespread professionalization entails a shift away from narrow and fragmented roles towards more comprehensive positions that prioritize accountability for outcomes, collaboration among colleagues, adept utilization of technologies, mastery of processes, and a sense of community.

In the context of the fourth industrial revolution, the world of work will undergo significant transformations, giving rise to a diverse array of new roles or extensively modified ones.

These numerous roles that emerged during this industrial revolution possess the potential to be classified into new professions and trades. These professionals will be distinguished by their breadth of knowledge and skills, acquired through a recognizable and structured training path.

The new working model will be anchored in knowledge and responsibility, demanding the ability to navigate complex productive and cognitive processes, as well as necessitating technical and social competencies.

Finally, advancement of work-life quality points to ensure that every individual has access to meaningful and dignified work. This entails promoting holistic well-being by addressing various aspects of personal integrity such as physical, cognitive, emotional, professional, social and self-integrity (Butera, 2022).

In conclusion, the architects of work should upgrade workforce knowledge and skills, restructure organisations, and promote a new conception of work-life balance.

### **4.3 A MODEL FOR INSTITUTIONS: EMILIA ROMAGNA**

Previously it has been highlighted the importance of institutions in the digital transition and their capability to create a network between all stakeholders to integrate digitalization at all levels. The Regione Emilia Romagna is a virtuous example of collaborations between public and private institutions to create a system able to thrive in the digital era. As a matter of fact, a cooperative agreement was signed under the “Patto del Lavoro 2023” - Pacts for Work - (RER, 2023), a contract that put together region, provinces, councils, schools, universities, businesses, unions and many other stakeholders of the Regione Emilia Romagna. The novelty in this region is a system of representation that comprehends all categories, public and private, and spread a shared strategy, demonstrating the strength of a perspective vision. The region's appeal lies in the quality of relationships, as demonstrated by the 55 signatures endorsing the Patto. The journey to reach a shared agreement was challenging, requiring necessary compromises that safeguarded individual interests for the greater collective good (RER, 2023).

Vincenzo Colla, councilor for economic development at Regione Emilia Romagna, says that today society and businesses are based on an economy driven by knowledge and skills. Colla says that without talents there are not entrepreneurship, academic research and innovation.

For this reason, the Patto identifies investments in the education and training chain at all levels as a strategic asset, transversal to all sectors. The proponents of the Patto aim to create a significant “New Deal” of knowledge, skills, and expertise. They have expressed the intention to revitalize technical and scientific culture, recognizing that failing to do so would result in a widening gap between job supply and demand. A key focus will be on providing extensive guidance and

orientation, starting from middle school, to effectively identify each individual's talents and guide them in the right direction. It is crucial to communicate to children, their families, and teachers that pursuing a professional degree, an ITS, offers better prospects for securing a decent job (Bottos, 2021). The university plays a prominent role in the education system and represents a priority for investment in the Patto. The aim is to increase the number of professionalizing degrees, recognizing the importance of facilitating the smooth transition between ITS and the university. The role of the university is crucial for technological and sustainable innovation, as it serves as a reference point for academic research. However, it has been understood that research alone is not sufficient to achieve concrete and practical results. For this reason, the Emilia Romagna region has established a collaboration system between the public and private sectors for years, promoting the integration of the academic environment with businesses to stimulate the development of innovative industrial solutions (RER, 2023).

The Patto focuses on the need to invest in digital innovation, including areas such as Big Data, sensors, artificial intelligence, and robotics, in order to design a transformation of production chains that is environmentally friendly and does not result in job losses, but rather generates new opportunities. The goal is to promote an integrated public-private model called the innovation ecosystem, which involves collaboration between the academic world, universities, high-tech networks, regional clusters, and technology parks. It has already been observed that when the public and private sectors collaborate, exceptional multiplier effects are created. This concept also applies to technology parks, which adapt to the specificities of their territories. For example, the Bologna Technology Park will have an international presence and will host the largest European computer dedicated to climate research, as well as a quantum supercomputer at Cineca for the analysis of Big Data, capable of providing services to the economy, education, businesses, and researchers. The Technology Park will also be home to the Civil Weather Agency, research centers such as the Enea for the study of the environment and climate, the National Institute of Nuclear Physics, the BI-REX competence center for Industry 4.0, and the CNR, with which an agreement has been signed for materials research. The objective is to create the necessary cross-cutting elements for the transition of the regional economic and manufacturing system, as established in the Patto (Bottos, 2021).

#### 4.4 A MODEL FOR ORGANIZATIONS: LOCCIONI

Loccioni was established in 1968 with a knowledge-based business model, which flourished through effective management, innovation, and internationalization while maintaining a strong connection to the local community. Presently, Loccioni stands as a global leader in quality control and sustainability measurement and automation. Its clientele comprises top players across various industries, including automotive, appliances, aerospace, energy, medical, and agri-food. With installations spanning over 40 countries and offices in America, Germany, and Asia, Loccioni's mission revolves around measuring to enhance the well-being of both individuals and the planet. It embraces innovative challenges that generate employment and foster cultural development (Gambarini, 2021).

At Loccioni, people hold the utmost importance. From the outset, founder Enrico Loccioni has nurtured and revolutionized relationships with educational institutions at all levels. Schools serve as a source of ideas and talent, while the company acts as a real-world laboratory for students and universities, nurturing potential talents and fostering new entrepreneurial ventures. Loccioni embodies the idea of being an enterprise deeply rooted in the local community, functioning as a value-creating and value-giving community. For instance, a remarkable 80% of employees (with an average age of 34, half are graduates) reside within a 30-minute drive from the company's premises (Gambarini, 2021). The organization is distinguished for its strong problem solving ability that derives from the transversal knowledge of the workforce that can be applied in different contexts and projects. It seems that hybrid jobs at Loccioni have become the standard.

Loccioni follows an open company model that places the individual at its core, promoting trust, knowledge, and passion (Luksch, 2019). The organization's guiding principles include the relentless pursuit of advanced technologies and continuous experimentation, a commitment to the common good of the company, and a horizontal organizational structure built upon trust rather than hierarchy. Love for individuals remains the driving force propelling Loccioni towards a brighter future (Luksch, 2019).

The culture of the organization is perfectly defined with a statement publicized on the company LinkedIn profile:

*“From data to value. We design measurement technologies for the wellbeing of people and the planet. In the Knowledge Company everyone is an entrepreneur, and relationships are based on trust. The company is a school of competencies. It fosters people to develop new skills and make their dreams come true”* (Loccioni, 2023).

This organization well exemplifies the model of horizontal structure and knowledge-based company, in which the individual is at the center of the organizational process and becomes the real generator of value. Loccioni model perfectly fits in the digital era because of its distinctive culture that praise people skills and foster their potential. As a matter of fact, the most talented people desire to work for Loccioni as they tribute great importance to the company business model that stimulate participation and innovation. Anyway, it is very important to highlight that the organizational model of Loccioni stems from the very top level of the company, from the vision of the founder Enrico Loccioni. It is essential to understand that the change in mindset must start from the top management that has to instill the new culture among the workforce and promote it out of the organization in order to attract talents.

#### **4.5 A MODEL FOR INDIVIDUALS: LIFELONG LEARNING**

A 2020 report published by UNESCO emphasizes the necessity of establishing a global culture of lifelong learning to effectively address the myriad challenges humanity will encounter in the coming decades. The digital revolution, continuous technological advancements, and the knowledge era in general require new skills.

Learning and change are pivotal concepts within lifelong learning. Learning entails embracing change, which, in turn, shapes the dynamics of learning. Transformation stands as a fundamental key to personal growth, if not the most significant one. Whether in the workplace or personal life, disrupting the status quo creates a gap that can seem insurmountable because the skills acquired in the past often fail to comprehend a rapidly evolving reality. At first glance, this may appear to be a no-win situation, particularly after completing formal education. However, there exists a powerful tool to bridge this gap, and that tool is learning. Learning involves acquiring, interpreting, adapting, and assimilating a comprehensive range of information, skills, as well as emotions and feelings. It is through the continuous enrichment of knowledge that individuals can develop new competencies and open the doors to unexpected opportunities (UNESCO, 2020).

Lifelong learning is a process that belongs to the individual and is characterized by the pursuit and attainment of personal, professional, civic, and social fulfillment. It is founded on the premise that, in order to stay closely connected to the ever-changing reality that surrounds us, three essential resources are required: the ability to learn, knowledge, and skills.



Lifelong learning can be defined as an ongoing process of self-education and self-direction. Its primary feature lies in its extracurricular nature, as it takes place outside the confines of formal educational settings such as schools and universities. This is due to the inherent limitation of institutional educational programs in providing all the knowledge and skills necessary to navigate the challenges of adulthood and the ever-evolving reality. Lifelong learning is not an obligation; it is a voluntary path to cultivate knowledge and revolutionize the routines of acquired gestures and concepts during one's educational journey (UNESCO, 2020).

The citizens of the future are individuals who are independent, autonomous, and mindful of the ever-changing world around them. Through lifelong learning, these individuals possess the ability to thrive in their time and comprehend its transformations. The goal of education is to teach individuals how to learn, providing them with a solid foundation of skills that can accompany them throughout their lives, ensuring they are never left defenseless in the face of the unexpected. The pedagogical lesson learned is the necessity of being prepared for anything. By fostering lifelong learning within the classroom, students gain an understanding of the interconnections between various subjects, avoiding compartmentalization. This process nurtures their critical thinking and self-awareness. A spirit of initiative, robust problem-solving abilities, and effective communication skills naturally emerge as a result of a lifelong teaching approach.

Lifelong learning permeates the lives of individuals of all ages through three fundamental stages: formal learning, non-formal learning, and informal learning. Formal learning occurs within the structured environment of educational institutions, leading to the attainment of diplomas, degrees, and recognized qualifications. Non-formal learning encompasses experiential learning on the job, incorporating accumulated experiences alongside courses that may not offer official certifications. Lastly, informal learning does not occur in traditional classrooms with tests and quizzes but rather through everyday life experiences, often unconsciously equipping individuals with the skills needed to confront future challenges (UNESCO, 2020).

In conclusion, lifelong learning is a model that perfectly suits the increasing demand for hybrid workers. Continuous learning allows people to widen their knowledge, increase their skills, and strengthen their problem-solving capabilities. Individuals who embrace the philosophy of lifelong learning are those who succeed within organizations and thrive in the digital revolution.

## 4.6 CONCLUSION

This thesis has extensively investigated the effects of digitalization on organisations and workforce with the aim of understanding the challenges that Italian SMEs have to face in the digital era, with the rise of the digital and hybrid workforce. Along the thesis it has emerged that hybrid jobs are the result of the digitalization of society and continuous technological advancements. Sadly, it has been discovered that Italy digitalisation level is one of the lowest in the EU and the lowest among similar-size Member States. Such condition represents a structural disadvantage for Italian SMEs that are competing with international players that benefit from supportive national institutions and skilful workforce who can match local organizations' talent demand. The competition between digitalised and not digitalised countries can be compared to a race between motorcycles and bicycles.

Unfortunately, Italian SMEs are the bicycle, and they fall below the European average in terms of level of digitization, as assessed by DESI (2022). The actual digitalisation state in Italy represents a strong disadvantage for the country economy and society in general. Such a condition also emerges in the case study findings that highlight a lack of support from institutions to organizations in their digitalization process. The digital revolution demands a homogeneous upgrade of all society including governing bodies, institutions, businesses, educational system, individuals. Digital revolution has changed the rules of the game and Italy must rapidly close the gap with other countries. Italian SMEs nowadays struggle to get workers with transversal digital knowledge mainly because of a shortage of talented individuals in the national labour market.

Italian SMEs face a significant drawback in the form of their organizational structure, which continues to adhere to a traditional family business model characterized by a strong vertical hierarchy. In this model, the owner/founder retains tight control over the organization, resulting in limited delegation of authority. The case study analysis also underscores that most Italian SMEs still exhibit aspects of the Taylor-Ford model, which features a rigid vertical structure, minimal autonomy for workers, and a clear division of roles and responsibilities.

These organizational management approaches of Italian SMEs are inappropriate for the digital era and clash with the demands of Industry 4.0. In today's rapidly evolving markets and technology landscape, organizations must swiftly respond to changes by promptly adjusting their strategies through their workforce. However, the presence of vertical structures hinders their ability to effectively respond to market disruptions due to the slow decision-making process and the overall reaction time of the organization.

Furthermore, the attractiveness of vertical and inflexible organizations is diminished, particularly for talented workers who are in short supply. These individuals prefer to work in organizations that cultivate a culture of innovation, fostering a sense of empowerment and enabling them to pursue their career ambitions. Such workers perceive vertical organizations as stifling their initiatives and limiting their potential for growth. Conversely, individuals possessing diverse skills and knowledge tend to settle within horizontally structured organizations that foster personal initiative and cultivate a collaborative atmosphere, viewing workers as collaborators rather than mere employees.

In summary, the organizational structure of Italian SMEs poses a significant challenge for them in the digital age. Their adherence to vertical hierarchies inhibits their agility and responsiveness, impeding their ability to adapt to market changes. More important, these structures fail to attract and retain talented individuals who seek dynamic and empowering work environments to unleash their potential.

In conclusion, today Italian SMEs should definitely abandon any Taylor-Ford practice and learn from the “bottega” of the Renaissance that were organizations capable of turning ideas into action, fostering dialogue, and facilitating the convergence of transversal knowledge.



# BIBLIOGRAPHY

- Abdu A., Rashad A., 2018. *Evolution of English in the internet age* [online]. Indonesian Journal of Applied Linguistics, Vol. 7 No. 3, January 2018, pp. 727-736.
- Adesina A.O., Ocholla D.N., 2019. The SECI Model in Knowledge Management Practices: Past, Present and Future. *Mousaion: South African Journal of Information Studies*, 37, 3.
- Agarwal, R., Sambamurthy, V., Stair, R.M., 2000. Research report: the evolving relationship between general and specific computer self-efficacy – an empirical assessment. In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. *Technological Forecasting & Social Change*, 175, 2022.
- Ager, S. 2009. How do you define fluency? In: Niessen S., 2015. *What is Digital Fluency?* [online]. University of Regina, Canada. Available at: [https://www.researchgate.net/publication/283266223\\_What\\_is\\_Digital\\_Fluency](https://www.researchgate.net/publication/283266223_What_is_Digital_Fluency) [Accessed: 07/05/2023]
- Ahmad, M., Karim, A.A., Din, R., Albakri, I.S.M.A., 2013. Assessing ICT competencies among postgraduate students based on the 21st century ICT competency model. In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. *Technological Forecasting & Social Change*, 175, 2022.
- Bandura, A., 1977. Self-efficacy: toward a unifying theory of behavioral change. In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. *Technological Forecasting & Social Change*, 175, 2022.
- Bandura, A., 1994. Regulative function of perceived self-efficacy. In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. *Technological Forecasting & Social Change*, 175, 2022.
- Bandura, A., 2012. On the functional properties of perceived self-efficacy revisited. In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. *Technological Forecasting & Social Change*, 175, 2022.

- Bandura, A., Locke, E.A., 2003. Negative self-efficacy and goal effects revisited. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- Barnard C., (1938). The Functions of the Executive. *In: Skačkauskienė I., (2022). Research on management theory: A development review and bibliometric analysis. Problems and Perspectives in Management, 20(2), 335-347*
- Barnard C., (1948). Organization and Management: Selected Papers. *In: Skačkauskienė I., (2022). Research on management theory: A development review and bibliometric analysis. Problems and Perspectives in Management, 20(2), 335-347*
- Barrick, M.R., Mount, M.K., Gupta, R., 2003. Meta-analysis of the relationship between the five-factor model of personality and Holland's occupational types. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- Barrick, M.R., Mount, M.K., 2012. Select on conscientiousness and emotional stability. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- Bellini, C.G.P., Isoni Filho, M.M., de Moura Jr., P.J., Pereira, R.de C.de F., 2016. Selfefficacy and anxiety of digital natives in face of compulsory computer-mediated tasks: a study about digital capabilities and limitations. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- Belshaw D.A.J., 2011. *What is digital literacy? A pragmatic investigation.* Durham University, UK. Available at: <http://neverendingthesis.com/doug-belshaw-edd-thesis-final.pdf> [Accessed: 07/05/2023]
- Bentley University, 2016. *Future-proof your career* [online]. Available at: <https://www.bentley.edu/news/time-hybrid-job-now> [Accessed: 12/05/2023]
- BGT - Burning Glass Technologies, 2019. *The hybrid job economy. How New Skills Are Rewriting the DNA of the Job Market* [online]. Available at:

- [https://4906807.fs1.hubspotusercontent-na1.net/hubfs/4906807/BGT-reports/hybrid\\_jobs\\_2019\\_final.pdf](https://4906807.fs1.hubspotusercontent-na1.net/hubfs/4906807/BGT-reports/hybrid_jobs_2019_final.pdf) [Accessed: 12/05/2023]
- Bottos G., 2021. Un New Deal delle conoscenze: accompagnare le filiere nell'economia dei saperi. Intervista a Vincenzo Colla. Available at: <https://www.pandorarivista.it/articoli/un-new-deal-delle-conoscenze-accompagnare-le-filiere-nell-economia-dei-saperi-intervista-a-vincenzo-colla/> [Accessed: 01/06/2023]
- Briggs, C., Makice, K. 2011. Digital fluency: Building success in the digital age. *In*: Niessen S., 2015. *What is Digital Fluency?* [online]. University of Regina, Canada. Available at: [https://www.researchgate.net/publication/283266223\\_What\\_is\\_Digital\\_Fluency](https://www.researchgate.net/publication/283266223_What_is_Digital_Fluency) [Accessed: 07/05/2023]
- Britannica, 2023. Technology, *Technology* [online], 24th April. Available at: <https://www.britannica.com/technology/technology> [Accessed: 07/05/2023]
- BSU - Boise State University, 2015. *Definition of digital fluency* [online]. Available at: <https://www.boisestate.edu/ctl/programs-2/certificate-programs/ten-for-teaching/> [Accessed: 07/05/2023]
- Buettner R., & Buettner L., 2011. Bridging the Gap: Reaching the Next Generation of Non-Digital Natives. *Journal of Leadership Studies*, 5(4), 21-31.
- Butera F., 2018. *La progettazione del nuovo lavoro e il ruolo degli ITS*. Bene Comune. Available at: <https://www.benecomune.net/rivista/numeri/lavoro-professioni-digital-economy/la-progettazione-del-nuovo-lavoro-e-il-ruolo-degli-its/> [Accessed: 16/05/2023]
- Butera F., 2019. *Progettare i nuovi lavori e il nuovo sistema educativo*. Persone e Lavori Ibridi. Osservatorio delle Professioni Digitali.
- Butera F., 2022. Progettare e sviluppare una new way of working. *Lavoro Diritti Europa*. Available at: [https://www.lavorodirittieuropa.it/images/Butera\\_Progettare\\_e\\_sviluppare\\_una\\_new\\_way\\_of\\_working-1\\_Per\\_Diritti\\_Lavoro\\_Economia\\_revisione\\_21\\_02\\_1.pdf](https://www.lavorodirittieuropa.it/images/Butera_Progettare_e_sviluppare_una_new_way_of_working-1_Per_Diritti_Lavoro_Economia_revisione_21_02_1.pdf) [Accessed:07/06/2023]
- Carnevale, A.P., Smith, N., 2013. Workplace basics: the skills employees need and employers want. *In*: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. *Technological Forecasting & Social Change*, 175, 2022.
- Cennamo K., Gardner D., 2008. Generational Differences in Work Values, Outcomes, and Person-Organization Values Fit. *Journal of Managerial Psychology*, 23(8), 891-906.

- Christensen C. M., 1997. The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail. *In: Skačkauskienė I., 2022. Research on management theory: A development review and bibliometric analysis. Problems and Perspectives in Management, 20(2), 335-347.*
- Costa, P.T., McCrae, R.R., 1992. Four ways five factors are basic. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- Costa, P.T., McCrae, R.R., Holland, J.L., 1984. Personality and vocational interests in an adult sample. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- DESI, 2022. *Digital Economy and Society Index (DESI) 2022.* European Commission. Available at: [file:///C:/Users/samsung/Downloads/DESI\\_2022\\_\\_Italy\\_\\_eng\\_HBZ9c5xbsGermDTZ3Hx1QskMVII\\_88708.pdf](file:///C:/Users/samsung/Downloads/DESI_2022__Italy__eng_HBZ9c5xbsGermDTZ3Hx1QskMVII_88708.pdf) [Accessed: 03/06/2023]
- DeYoung, C.G., Quilty, L.C., Peterson, J.B., 2007. Between facets and domains: 10 aspects of the Big Five. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- Drucker P. F., 1994. The Age of Social Transformation. *The Atlantic Monthly*, November 1994, 53-80.
- Dudley, N.M., Orvis, K.A., Lebiecki, J.E., Cortina, J.M., 2006. A meta-analytic investigation of conscientiousness in the prediction of job performance: examining the intercorrelations and the incremental validity of narrow traits. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- D'Zurilla T.J., Maydeu-Olivares A., Gallardo-Pujol D., 2011. Predicting social problem solving using personality traits. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- Eurostat, 2021. *Digital Economy & Society Statistics - Digital Skills.* Available at: [https://ec.europa.eu/eurostat/statisticsexplained/index.php/Digital\\_economy\\_and\\_society\\_statistics\\_-\\_digital\\_skills#ICT\\_skills\\_of\\_individuals](https://ec.europa.eu/eurostat/statisticsexplained/index.php/Digital_economy_and_society_statistics_-_digital_skills#ICT_skills_of_individuals) [Accessed: 17/05/2023]



- European Commission, 2019. *Digital Skills and Jobs Coalition: Delivering on the European Pillar of Social Rights*. Available at <https://ec.europa.eu/digital-single-market/en/news/digital-skills-and-jobs-coalition-delivering-european-pillar-social-rights> [Accessed: 17/05/2023]
- European Commission, 2022. *European Skills/Competences, Qualifications and Occupations (ESCO)*. Available at: <https://ec.europa.eu/social/main.jsp?catId=1326&langId=en> [Accessed: 22/05/2022]
- European Court of Auditors, 2021. *EU actions to address low digital skills*. Luxembourg. Available at: [https://www.eca.europa.eu/Lists/ECADocuments/RW21\\_02/RW\\_Digital\\_skills\\_EN.pdf](https://www.eca.europa.eu/Lists/ECADocuments/RW21_02/RW_Digital_skills_EN.pdf) [Accessed: 17/05/2023]
- Festing, M. (2007). Globalisation of SMEs and implications for international human resource management research and practice. In: Krishnan T.N., Scullion H., 2017. Talent management and dynamic view of talent in small and medium enterprises. *Human Resource Management Review*, 27 (2017) 431–441.
- Follett M. P., 1941. Dynamic administration: The collected papers of Mary Parker Follett. In: Skačkauskienė I., 2022. *Research on management theory: A development review and bibliometric analysis*. Problems and Perspectives in Management, 20(2), 335-347
- Formica P., 2016. The Innovative Coworking Spaces of 15th-Century Italy. *Harvard Business Review*, April 2016.
- Gambarini E., 2021. *Loccioni, testiamo le supercar e investiamo sulla sostenibilità: la nuova Silicon Valley è nelle Marche*. L'Economia, Corriere della Sera. Available at: [https://www.corriere.it/economia/aziende/21\\_marzo\\_02/loccioni-testiamo-supercar-investiamo-sostenibilita-nuova-silicon-valley-marche-6bc9151a-7b8d-11eb-a9cc-1eebe11a6a7c.shtml](https://www.corriere.it/economia/aziende/21_marzo_02/loccioni-testiamo-supercar-investiamo-sostenibilita-nuova-silicon-valley-marche-6bc9151a-7b8d-11eb-a9cc-1eebe11a6a7c.shtml) [Accessed: 10/06/2023].
- Gubitta P., 2017. *Le sfide formative per la società 4.0*. Editoriale, Corriere Imprese Nord Est, novembre 2017.
- Gubitta P., Gianecchini M., 2019. *Persone e lavori ibridi. Nuove competenze per nuove professioni* [online]. Osservatorio delle professioni digitali. Available at: [http://www.osservatorioprofessionidigitali.it/wp-content/uploads/2019/07/OPD\\_Workshop\\_LavoriIbridi\\_22marzo2019.pdf](http://www.osservatorioprofessionidigitali.it/wp-content/uploads/2019/07/OPD_Workshop_LavoriIbridi_22marzo2019.pdf) [Accessed: 12/05/2023]

- Herzberg F., 1959. The Motivation to Work. *In: Ilona Skačkauskienė (2022). Research on management theory: A development review and bibliometric analysis. Problems and Perspectives in Management, 20(2), 335-347*
- Holland, J.L., 1997. Making Vocational choices: A theory of Vocational Personalities and Work Environments. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- Howe N., Strauss W., 2000. *Millennials Rising: The Next Great Generation*. Vintage Books.
- Hughes, M., Rigtering, J.C., Covin, J.G., Bouncken, R.B., Kraus, S., 2018. Innovative behaviour, trust and perceived workplace performance. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- Iacono N., 2019. *Rapporto Istat, l'Italia è indietro sulle competenze digitali: ecco che fare*. Agenda digitale. Available at: <https://www.agendadigitale.eu/cultura-digitale/rapporto-istat-litalia-e-indietro-sulle-competenze-digitali-ecco-che-fare/> [Accessed: 17/05/2023]
- ITS – Istituti Tecnici Superiori, 2020. *Industria 4.0*. ITS. Available at: <https://sistemait.it/?p=industria-4> [Accessed: 25/05/2023]
- Kasriel S., 2019. What the next 20 years will mean for jobs – and how to prepare. *World Economic Forum* [online], 10th January. Available at: <https://www.weforum.org/agenda/2019/01/jobs-of-next-20-years-how-to-prepare> [Accessed: 07/05/2023]
- King N., 2004. Using interviews in qualitative research. *In: Cassell, C. and Symon, G., 2004. Essential Guide to Qualitative Methods in Organizational Research*. London.
- Kristof-Brown A. L., Zimmerman R. D., Johnson E. C., 2005. Consequences of individuals' fit at work: A meta-analysis of person–job, person–organization, person–group, and person–supervisor fit. *In: Krishnan T.N., Scullion H., 2017. Talent management and dynamic view of talent in small and medium enterprises. Human Resource Management Review, 27 (2017) 431–441.*
- Kunze F., Menges J. I., 2017. *Younger supervisors, older subordinates: An organizational level study of age differences, emotions, and performance*. *Journal of Organizational Behavior, 38(4), 461-486.*

- Larson, L.M., Borgen, F.H., 2006. Do personality traits contribute to vocational self-efficacy? *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- Lent, R.W., Larkin, K.C., Brown, S.D., 1989. Relation of self-efficacy to inventoried vocational interests. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- Leogrande A., 2023. L’Innovation Index nelle Regioni Italiane. Available at: <https://ilsudest.it/economia-lavoro/2023/03/13/linnovation-index-nelle-regioni-italiane/#:~:text=L'Emilia%2DRomagna%20%C3%A8%20al,ammontare%20di%20118%2C00%20unit%C3%A0>. [Accessed: 05/06/2023]
- Lin, W., Koopmann, J., Wang, M., 2020. How does workplace helping behavior step up or slack off? Integrating enrichment-based and depletion-based perspectives. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- Lind, P. (2012). Small business management in cross-cultural environments. *In: Krishnan T.N., Scullion H., 2017. Talent management and dynamic view of talent in small and medium enterprises. Human Resource Management Review, 27 (2017) 431–441.*
- Loccioni, 2023. About. Available at: <https://www.linkedin.com/company/loccioni/about/> [Accessed: 10/06/2023]
- Luksch A., 2019. *Loccioni: così il gruppo marchigiano è diventato un modello di open company.* Economy up. Available at: <https://www.economyup.it/innovazione/loccioni-cosi-il-gruppo-marchigiano-e-diventato-un-modello-di-open-company/> [Accessed: 10/06/2023].
- Luhn A., 2017. The Learning Organization. *De Gruyter Open*. Available at: [https://www.researchgate.net/publication/316573161\\_The\\_Learning\\_Organization#fullTextFileContent](https://www.researchgate.net/publication/316573161_The_Learning_Organization#fullTextFileContent) [Accessed: 21/05/2023].
- Mainemelis, C., Boyatzis, R.E., Kolb, D.A., 2002. Learning styles and adaptive flexibility: testing experiential learning theory. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*

- Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. *Technological Forecasting & Social Change*, 175, 2022.
- Martin, A., 2008. Digital literacy and the ‘digital society. In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. *Technological Forecasting & Social Change*, 175, 2022.
- Martínez-Climent, C., Rodríguez-García, M., Ribeiro-Soriano, D., 2019. Digital transformations and value creation in international markets. In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. *Technological Forecasting & Social Change*, 175, 2022.
- Mayo E., 1933. The Human Problems of an Industrial Civilisation. In: Skačkuskiene I., (2022). *Research on management theory: A development review and bibliometric analysis*. Problems and Perspectives in Management, 20(2), 335-347.
- McGregor D., 1960. The Human Side of Enterprise. In: Skačkuskiene I., (2022). *Research on management theory: A development review and bibliometric analysis*. Problems and Perspectives in Management, 20(2), 335-347.
- Medieval Chronicles, 2023. Goldsmith [online]. Available at:  
<https://www.medievalchronicles.com/medieval-people/medieval-tradesmen-and-merchants/goldsmith/> [Accessed: 14/05/2023]
- MID - Ministero Innovazione e Digitalizzazione, 2020. *Piano Operativo. Strategia Nazionale per le Competenze Digitali*. Available at:  
<https://repubblicadigitale.innovazione.gov.it/assets/docs/Piano-Operativo-Strategia-Nazionale-per-le-competenze-digitali.pdf> [Accessed: 04/06/2023]
- Mintzberg H., 1979. The Structuring of Organizations. In: Skačkuskiene I., (2022). *Research on management theory: A development review and bibliometric analysis*. Problems and Perspectives in Management, 20(2), 335-347
- NRC - National Research Council, 1999. Being Fluent with Information Technology. Washington, DC. In: Niessen S., 2015. *What is Digital Fluency?* [online]. University of Regina, Canada. Available at:

- [https://www.researchgate.net/publication/283266223\\_What\\_is\\_Digital\\_Fluency](https://www.researchgate.net/publication/283266223_What_is_Digital_Fluency) [Accessed: 07/05/2023]
- Niessen S., 2015. *What is Digital Fluency?* [online]. University of Regina, Canada. Available at: [https://www.researchgate.net/publication/283266223\\_What\\_is\\_Digital\\_Fluency](https://www.researchgate.net/publication/283266223_What_is_Digital_Fluency) [Accessed: 07/05/2023]
- OECD (2007). Keynote paper on removing barriers to SME access to international markets. *In*: Krishnan T.N., Scullion H., 2017. Talent management and dynamic view of talent in small and medium enterprises. *Human Resource Management Review*, 27 (2017) 431–441.
- OECD (2015). Taxation of SMEs in OECD and G20 countries. *In*: Krishnan T.N., Scullion H., 2017. Talent management and dynamic view of talent in small and medium enterprises. *Human Resource Management Review*, 27 (2017) 431–441.
- OECD (2016). *Skills Matter: Further Results from the Survey of Adult Skills*. Available at <http://www.oecd.org/skills/piaac/Skills-Matter-Further-Results-from-the-Survey-of-Adult-Skills.pdf> [Accessed: 17/05/2023]
- Oxford English Dictionary 2013. Fluency. Oxford University Press. *In*: Niessen S., 2015. *What is Digital Fluency?* [online]. University of Regina, Canada. Available at: [https://www.researchgate.net/publication/283266223\\_What\\_is\\_Digital\\_Fluency](https://www.researchgate.net/publication/283266223_What_is_Digital_Fluency) [Accessed: 07/05/2023]
- Ozeliene, D. 2018. Problematic aspects encountered upon implementation of sustainable development. *In*: Skačkauskienė I., (2022). *Research on management theory: A development review and bibliometric analysis*. Problems and Perspectives in Management, 20(2), 335-347
- Palmer, C., Niemand, T., Stockmann, C., Kraus, S., Kailer, N., 2019. The interplay of entrepreneurial orientation and psychological traits in explaining firm performance. *In*: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. *Technological Forecasting & Social Change*, 175, 2022.
- Raines, C., & Twenge, J. M. (2007). *Understanding Generation Y*. HRD Press.
- Ratcliff C., Martinello B., Litos V., 2022. Digital Agenda for Europe. Fact Sheets on the European Union. Available at: <https://www.europarl.europa.eu/factsheets/en/sheet/64/digital-agenda-for-europe> [Accessed: 21/05/2023]

- Repubblica Digitale, 2021. *Strategia Nazionale per le competenze digitali*. 1° Rapporto di Monitoraggio del Piano Operativo. Ministero per l'innovazione tecnologica e della transizione digitale.
- RER – Regione Emilia Romagna, 2023. *Patto per il lavoro e per il clima*. Available at: [https://www.regione.emilia-romagna.it/pattolavoroeclima/patto\\_lavoroclima\\_2023](https://www.regione.emilia-romagna.it/pattolavoroeclima/patto_lavoroclima_2023) [Accessed: 05/06/2023]
- Resnick, M., Rusk, N., & Cooke, S. 1998. The Computer Clubhouse: Technological fluency in the inner city. In: Niessen S., 2015. *What is Digital Fluency?* [online]. University of Regina, Canada. Available at: [https://www.researchgate.net/publication/283266223\\_What\\_is\\_Digital\\_Fluency](https://www.researchgate.net/publication/283266223_What_is_Digital_Fluency) [Accessed: 07/05/2023]
- Robertson, B. J. (2015). *Holacracy: The New Management System for a Rapidly Changing World*. Henry Holt and Co.
- Rohatgi, A., Scherer, R., Hatlevik, O.E., 2016. The role of ICT self-efficacy for students' ICT use and their achievement in a computer and information literacy test. In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. *Technological Forecasting & Social Change*, 175, 2022.
- Roshchuk I., Oliinyk O., Mishchuk H., & Bilan Y. 2022. IT Products, E-Commerce, and Growth: Analysis of Links in Emerging Market. In: Skačkauskienė I., (2022). *Research on management theory: A development review and bibliometric analysis*. Problems and Perspectives in Management, 20(2), 335-347
- Schell S., Bischof N., 2021. Change the way of working. Ways into self-organization with the use of Holacracy: An empirical investigation. *European Management Review*, 1-15, 2021.
- Schwab K., 2016. *The Fourth Industrial Revolution: what it means, how to respond* [online]. *World Economic Forum* [online], 14th January. Available at <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/> [Accessed: 07/05/2023]
- Schwab, K., 2017. *The Fourth Industrial Revolution*. Crown Business.
- Senge P. M., 1990. The Fifth Discipline: The Art and Practice of the Learning Organization. In: Skačkauskienė I., 2022. *Research on management theory: A development review and bibliometric analysis*. Problems and Perspectives in Management, 20(2), 335-347

- Senge P. M., 2006. *The Fifth Discipline*. DOUBLDAY, Random House, Inc.: The Crown Publishing Group.
- Skačkauskienė I., 2022. Research on management theory: A development review and bibliometric analysis. *Problems and Perspectives in Management*, 20(2), 335-347
- Spear, S. (2009). *The High-Velocity Edge: How Market Leaders Leverage Operational Excellence to Beat the Competition*. McGraw-Hill Education.
- Taylor F. W., 1911. *The Principles of Scientific Management*. New York: Harper.
- Teece, D., Peteraf, M., Leih, S., 2016. Dynamic capabilities and organizational agility: risk, uncertainty, and strategy in the innovation economy. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change*, 175, 2022.
- Taherdoost H., 2021. Data Collection Methods and Tools for Research; A Step-by-Step Guide to Choose Data Collection Technique for Academic and Business Research Projects. *International Journal of Academic Research in Management*, Vol. 10, No. 1, 2021, 10-38.
- Trost, A., 2019. Human Resources strategies: Balancing stability and Agility in Times of Digitization. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change*, 175, 2022.
- UNESCO, 2020. Futures of Education. *In: Scuola.net, 2022. Lifelong learning: l'importanza della formazione continua per il mondo educante*. Scuola.net. Available at: <https://www.scuola.net/news/635/lifelong-learning-l-importanza-della-formazione-continua-per-il-mondo-educante> [Accessed: 10/06/2023].
- Unioncamere Veneto, 2021. *Digitalizzazione: il 57,6% delle imprese ha adottato una tecnologia digitale*. Available at: <https://www.unioncamereveneto.it/digitalizzazione-il-576-delle-imprese-ha-adottato-una-tecnologia-digitale/> [Accessed: 25/05/2023]
- UNIPD (a) - Università di Padova, 2023. *Servizi per le aziende*. UNIPD. Available at: <https://www.unipd.it/target/cittadinanza-e-territorio/servizi-per-le-aziende?target=Cittadinanza%20e%20territorio> [Accessed: 29/05/2023]
- UNIPD (b) - Università di Padova, 2023. *Servizi per le aziende*. UNIPD. Available at: <https://www.unipd.it/altoapprendistato> [Accessed: 29/05/2023]

- UNIVE – University of Venezia, 2023. *Il Career Service per gli Employer*. UNIVE. Available at: [https://www.unive.it/pag/fileadmin/user\\_upload/ateneo/career\\_service/Flyer\\_ufficio/WEB\\_pieghevole\\_career\\_service\\_impresa\\_135x235\\_2023.pdf](https://www.unive.it/pag/fileadmin/user_upload/ateneo/career_service/Flyer_ufficio/WEB_pieghevole_career_service_impresa_135x235_2023.pdf) [Accessed: 29/05/2023]
- Urbancová H., Vrabcová P. 2020. Factors influencing the setting of educational processes in the context of age management and CSR. *In: Skačkauskienė I., (2022). Research on management theory: A development review and bibliometric analysis*. Problems and Perspectives in Management, 20(2), 335-347.
- Voogt, J., Roblin, N.P., 2012. A comparative analysis of international frameworks for 21st century competences: implications for national curriculum policies. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- Webb, M.E., Little, D.R., Cropper, S.J., Roze, K., 2017. The contributions of convergent thinking, divergent thinking, and schizotypy to solving insight and non-insight problems. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- Wilmot, M.P., Ones, D.S., 2019. A century of research on conscientiousness at work. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*
- Zoltners, A.A., Sinha, P., Sahay, D., Shastri, A., Lorimer, S.E., 2021. Practical insights for sales force digitalization success. *In: Maran T.K., Liegl S., Davila A., Moder S., Kraus S., Mahto R.V., 2022. Who fits into the digital workplace? Mapping digital self-efficacy and agility onto psychological traits. Technological Forecasting & Social Change, 175, 2022.*