Wellbeing at work in the digital age:

Between opportunities and threats

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Abstract—**Currently, the world of work is facing a profound mutation, and is confronting numerous social, economic, sanitary and regulatory changes, bringing with them a host of transformations in the professional sphere, with remarkable consequences on working conditions and human capital's attitudes and behavior.**

This destabilizing context has profoundly changed management methods, and has also accelerated the digital transformation of companies. The use of digital technology has become a fundamental solution to face the current crisis. However, this technological mutation has had a deep impact on the wellbeing and the quality of life at work. The use of digital tools has been both a generator of discomfort for some and a source of wellbeing for others, a factor of psychosocial risk for one category and a facilitator of communication and collaboration for others.

In this theoretical study we will explore the positive and negative effects of digital transformations on the wellbeing at work

Keywords—**Digitalization, Wellbeing, Work, Risk, Ill-being.**

I. INTRODUCTION

Currently, the world of work is facing a profound mutation, and is confronting numerous social, economic, sanitary and regulatory changes, bringing with them a host of transformations in the professional sphere, with remarkable consequences on working conditions and human capital's attitudes and behavior.

This destabilizing context has profoundly changed management styles, and has also accelerated the digital transformation of companies. The use of digital technology has become a fundamental solution to face the current crisis. However, the massive diffusion of digital tools and the different changes it generates, can have a diverse impact on employees' wellbeing at work.

In that regard, we will try to expose, through this bibliographic research, the positive and the negative correlation between digitalization and wellbeing at work and we will explore the twofold consequences of digitalization on wellbeing at work. The main objective of this study is therefore to answer the following question: what are the double effects of digitalization on the employee's wellbeing at work?

In order to provide a detailed answer to our question, we will firstly present the conceptual framework of our study. Then, we will try to understand the different effects of digitalization on the improvement or deterioration of employee's wellbeing at work.

II. DIGITALIZATION AND WELLBEING AT WORK: TWO MULTI-FACETED CONCEPTS

We begin our bibliographic research by defining the key concepts: wellbeing at work and digitalization

A. *The concept of wellbeing at work*

How can we define the concept of wellbeing? The answer is far from being easy, as it is a multidimensional concept, vast and difficult to define, but schematically, we can predict that it refers to a feeling of pleasure, stability, satisfaction or comfort both on the psychological level as well as the physical level.

The concept of wellbeing is frequently confused with other related terminologies, such as quality of life, happiness, health, pleasure, wellness, life satisfaction, fulfillment and material comfort (Ayang-Ondo,2020; Hassani, 2017; Baudelot and Gollac, 2002). These notions are used as strict synonyms without respect for their conceptual meanings (Abaidi, 2017).

From an academic point of view, many attempts to define the concept of wellbeing are present in the scientific literature. Hereafter, we present some definitions.

During the international health conference held from the 19th of June to the 22nd of July 1946 in New-York, the World Health Organization defined health as "*a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity*".

The above definition links health directly to wellbeing, and indicates that health is based on the intersection of the different dimensions of wellbeing (physical - mental - social). However, even if the concept of wellbeing is included in the WHO official definition, it remains unclear and incompletely defined.

René Dubost completed the definition of the World Health Organization by specifying what can be understood by the notion of "wellbeing": "*A physical and mental state relatively exempt from discomfort and suffering that allows the individual to function as long as possible in the in the environment where chance or choice has placed him*" (Dubost, 1978)

According to Breda and Goyvaerts wellbeing is "*the state in which not only 'primary' needs such as food, clothing, health and housing are satisfied, but also the state in which the individual participates in social life, takes part in the culture and values, and is able to develop an autonomous personality, in order to cope with social constraints.*" (Breda and Goyvaerts, 1999)

The National French Center of Textual and Lexical Resources, insists on the multidimensionality of the notion of wellbeing. It is first of all "*a pleasant state resulting from the satisfaction of the needs of the body and the calm of the mind*", and also designates "*material comfort allowing a pleasant life*" (Larousse Dictionary). Therefore, wellbeing in French refers to three complementary dimensions: the physical, the mental, and the material.

For Mondo, wellbeing is "*an unstable balance between the satisfaction of material needs and the satisfaction of the individual's spiritual needs*" (Mondo, 2016).

From the above definitions, we can see that wellbeing is a multifaceted concept with many definitions.

In addition, and in contrast to the concept of general wellbeing, the scientific literature on wellbeing at work is not very abundant (Kiziah, 2003). Workplace wellbeing remains a less studied and developed notion (Bernard, 2019).

Researchers' interest in the concept of wellbeing at work is relatively recent, and it dates back to the 1990s (Bernard, 2019). This notion has been influenced by several disciplines (economics, psychology, philosophy...) over the years. Some researchers consider wellbeing at work as an extension of the concept of general wellbeing (Diener, 1994), yet other researchers believe that the two concepts are not conceptually identical, and that workplace wellbeing should be considered as a specific and distinct construct from general wellbeing (Massé et al., 1998).

Hereafter, we will list different definitions for a better understanding of the notion of well-being at work:

Among several definitions of wellbeing at work in the scientific literature, we find the one proposed by Danna and Griffin who define the concept as "*a construct that includes both physical and psychological symptoms, general life experiences and work-related experiences*" (Danna & Griffin, 1999).

According to the International Labour Organization (ILO),"*workplace wellbeing relates to all aspects of working life, from the quality and safety of the physical environment, to how workers feel about their work, their working environment, the climate at work and work organization*"

Wellbeing at work is also "*a two-dimensional construct: an emotional dimension linked to pleasure and all the positive effects and a cognitive dimension related to the meaning of work for the individual*" (Richard, 2012).

Wellbeing at work is therefore an amalgam of different factors susceptible to influence quality of life at work. It is a multi-dimensional concept that combines satisfaction, fulfillment and balance between the physical and mental health of employees at work.

Through the different definitions cited above, we conclude that general wellbeing and wellbeing at work are two similar concepts, still there is some variability between them.

Hereafter we will discuss the second concept of our study: the digitalization

B.   The concept of digitalization

The concept of digitalization is currently presented as an indispensable and inevitable tool. This term, which is frequently used in public discourse during the last years, is very often confused with other related concepts such as digitization (Gorenšek and Kohont, 2019).

The Larousse dictionary defines the term "digitalization" as a perfect synonym for "numérisation" in French or "Digitization". The two terms are indeed related, but they are conceptually distinct.

Before defining the key concept of our study "digitalization", it seems important to understand what digitization is, in order to clarify the distinction between these two concepts and to remove this ambiguity.

The Oxford dictionary considers digitization as: "*a process of transforming data into a digital form that can be easily read and processed by a computer*".

Brenner and Kreiss define the concept of digitization as "*the material process of converting analogue streams of information into digital bits*" (Brenner and Kreiss, 2014).

Therefore, digitization is a technical process that aims to encode or convert physical data to digital data through the binary (0,1) language.

After these brief clarifications of the concept of digitization, we outline below some definitions of the concept "digitalization".

Etymologically, the word digital comes from the Latin "digitus", and refers to fingers. While in English, the term "digital" refers to the use of numbers

In their conceptualization, Belvaux and Notebaert define the term "digital" as follows: "*digitalization is all about using fingers*" (Belvaux et Notebaert, 2018)

For Fitzgerald and his colleagues, digitalization is "*the use of new digital technologies to enable major business improvements such as enhancing customer experience, streamlining operations or creating new business models*." (Fitzgerald et al, 2013).

Westerman and his colleagues define the concept of digitalization as: "*the use of technology to radically improve the performance or reach of enterprises*." (Westerman et al.,2014).

For Autio, digitalization is: "*the application of digital technologies and infrastructure in business, economy and society*" (Autio, 2017).

Benedetto-Meyer and Anca Boboc define the notion of digitalization as follows: "*the introduction of digital tools into work activity (new equipment such as smartphones, tablets, instant communication tools, applications allowing documents, videos, and schedules sharing, …)* (Benedetto-Meyer et Anca Boboc, 2019).

According to Cijan et al., digitalization is "*the increasing use of information and communication technologies (ICT) in all areas of our lives*" (Cijan et al., 2019).

From the previous, we can conclude that digitalization and digitization are in fact distinct but related and complementary concepts. Digitalization refers to the use and implementation of new technologies and digital tools, while digitization refers to the transformation of physical data into a sequence of digital characters.

After these brief explanations, we will try in the following lines to understand the implications of digitalization on wellbeing at work.

III. DIGITALIZATION: A DOUBLE EFFECT PHENOMENON

The technologies and tools that shape digitalization are very diverse, ranging from computers and instant communication tools, to tablets and smartphones. The massive introduction of digital and high technologies in work activities has accelerated the transformation of people's daily lives (Delahaye, 2019), and it has significantly reconfigured the managerial processes (Cabin and Choc, 2005) and the work organization (Dorn, 2016).

The emergence of digital technology has profoundly changed the work environment, by both changing the way employees think about work, and influencing their physical and psychological wellbeing (Ter Hoeven et al., 2016).

In the present section, we will try to answer the main objective of this study. We will provide clarifications concerning the duality and divergence of the consequences of digitalization on wellbeing at work.

A. *Digitalization: a risk generator*

Digitalization - despite its advantages and benefits - has brought with it a number of challenges and negative effects.

The massive diffusion of digital technologies and tools can lead to feelings of anxiety and discomfort and can generate the so-called "technostress" (Pfaffinger et al., 2021). This term was introduced for the first time in 1984 by the American psychologist Craig Brod, who stated in his book "*Technostress: the human cost of the computer revolution*" that it is "*a modern disease of adaptation caused by an inability to cope with the new computer technologies in a healthy manner*" (Brod, 1984). In another words, technological stress is "*a type of stress related to the permanent and excessive use of digital technologies*" (Chiappetta, 2017).

This feeling of anxiety associated with the excessive use of digital tools has also been mentioned by other authors, among them Gérard Valenduc, who believes that the permanent connectivity and the continuous use of new technologies and digital tools (e.g. computers, social networks, instant communication tools, ...) cause an informational and psychosocial overload (linked to the infinite volume of information available) disrupting the wellbeing at work and leading to negative effects on employees' mental and physical health (Valenduc, 2017).

The consequences of technostress are diverse and undesirable, ranging from disturbances and concentration

problems to distress and burnout (Bunjak et al.,2021; Stich et al., 2018; Wiederhold, 2017).

Besides technostress, relational isolation threatens employee wellbeing. According to Mann and Holdsworth, working remotely can lead to feelings of loneliness (Mann and Holdsworth, 2003), in other words, hyperconnectivity significantly reduces social interactions and weakens interpersonal and physical contact at work (EU-OSHA, 2021), which can cause social and physical isolation (Oakman et al., 2021).

The consequences of social isolation are severe, and can lead to employee disengagement, increased ill-being, and decreased job satisfaction (Marshall et al., 2007). The deterioration of interpersonal relationships can also cause burnout, and adversely affect employee performance and personal and professional development (Smith & Scott, 1990).

In addition, Christophe Degryse's study revealed that the virtualization of the relationship between employees can increase the risk of psychosocial disorders such as stress, social anxiety, psychological fatigue and emotional exhaustion (Degryse, 2016).

Other than psychological and social consequences, several researchers have highlighted the serious effects of the intensive use of digital tools on the physical wellbeing, namely: the appearance of musculoskeletal disorders and other physical pains. The constant and increasing use of computers and the internet is a source of various pathologies such as muscle and articular pains in the neck, back and shoulders, headaches, and physical fatigue (Borhany et al., 2018; Valenduc, 2017; Ellahi et al., 2011). Similarly, over-use of smartphones and continuous exposure to computer screens or tablets and phones can trigger visual problems varying from ocular irritation and dryness to eye pain and to eye pain and fatigue. This pathology is known as "computer vision syndrome" or "digital eye strain". This condition can have serious repercussions on individuals' wellbeing, namely: headaches, sleep disturbance, concentration difficulties, shoulder pain and neck pain (Sheppard and Wolffsohn, 2018; Ellahi et al., 2011)

From the previous paragraphs, we can conclude that the excessive and irrational use of digital tools can harm the physical and the psychological wellbeing of employees. Hyper-digitalization is therefore a generator of physiological and psychological risks.

B. *Digitalization: a lever of wellbeing at work*

After talking about the negative side of digitalization, we will now discuss the opportunities and advantages that this technological phenomenon provides.

The advent of digital technology has facilitated the accomplishment of repetitive and complex tasks, and it has also contributed to time-saving (Bhattacherje et al. 2009; Joling and Kraan, 2008).

The use of new digital technologies has profoundly transformed working mode and rhythm. Firstly, it has accelerated activity (Greenan et al., 2012) by relieving employees of low-value-added tasks and missions that costs company money and time, and secondly, it allowed employees to complete complicated tasks more quickly and also to develop new skills (Joling and Kraan, 2008; Loup, 2016).

The introduction of digitalization has favored the development of "soft skills" and professional skills of employees, and it has contributed significantly to the rise of their knowledge (Ardalan, 2011). This growth in skills and abilities strongly impacts employees' level of flexibility and autonomy. (Westerman et al., 2014 ; Aral & Weill , 2007).

Many researchers have stated that the use of digital technologies offers more authority, autonomy and freedom to staff, (ter Hoeven and van Zoonen 2015; Ninaus et al., 2015; Rallet and Wolkowiak, 2004), which leads to increased motivation, job satisfaction, and wellbeing at work (Morgeson and Humphrey, 2006).

Furthermore, Rallet and Wolkowiak's study showed that "*the use of information and communication technologies give employees more autonomy and responsibility by providing them more freedom in the organization of their work*" (Rallet & Wolkowiak, 2004). This combination - freedom and autonomy - in turn favours the "work-life balance" (Ninaus et al., 2004).

Remote working, for example, has transformed employees' daily lives for the better, in a way that it has brought more flexibility to work, by allowing teleworkers to enjoy variable and more flexible working hours (International Labour Organization, 2020), which has promoted work-life balance (Eurofound, 2017; Ninaus et al., 2015; Haddad et al., 2009,). Breaugh and Farabee have also pointed out that remote working reduces significantly work conflicts and improves the management of personal and professional responsibilities and job satisfaction (Breaugh & Farabee, 2012).

In addition, among the most noticeable effects of the use of digital technologies is the improvement of communication and the fluidity of exchanges between employees (Eurofound, 2017). The advent of digital technology offers the possibility to communicate more quickly (Aral & Weill, 2007), at any time and from several different locations. This instant accessibility promotes information sharing and exchange (Ninaus et al, 2015), enhances collaboration and interaction between teams (Medzo-M 'Engone, 2017) and also increases

engagement and wellbeing at work (Ter Hoeven and van Zoonen, 2015).

From the above, we conclude that the implementation of digital tools can be a source of wellbeing at work.

IV. CONCLUSION

A series of studies have shown that the use of digital tools can be both a generator of wellbeing at work and a source of psychosocial risks and physiological pain putting the personal and professional life of employees at risk.

There is no general agreement on the impact of digitalization on wellbeing at work. Some authors define digitalization as a "double-edged sword" (Diaz et al., 2012). On the one hand, it facilitates exchanges and the execution of complex tasks and can participate in the improvement of professional and individual satisfaction (private/professional life balance), and on the other hand, it can lead to certain physiological pathologies (musculoskeletal disorders, computer vision syndrome) or psychological disorders (technostress, anxiety, social isolation).

The introduction of digitalization in the workplace is a decision that can affect negatively or positively employees' wellbeing, for this reason employers must take into account the threats and opportunities that digitalization can bring, in order to eliminate the risks and profit from the benefits.

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