


Chapter 5

The Impact of Artificial Intelligence on Intergenerational Diversity

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ABSTRACT

The internet has become one of the most important commodity products in society. Artificial intelligence (AI) is one of the most discussed topics in human resources. Nowadays, four or five generations in the workplace are working together. The young generation is born in a digital era, but the elderly are in an analogic era, so their skills and decision-making behaviors are different. The working values for intergenerational workers are very different. Younger generations value their flexibility to fit their lives, once they believe that working careers are no longer their main goal in life, but the elderly have other values such as family time and flexible work provided by AI development. COVID-19 brings a new mainstream concept to the workplace, only possible through AI development. The effects of artificial intelligence and intergenerational diversity are fundamental topics that need to be discussed at a high level in institutions.

INTRODUCTION

Technological innovations are constantly on the move, almost everyday society is presented with new software, robot, or some machine that will decrease the production cost of companies or that will help employees to be more productive (Kambur & Akar, 2022).

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The Impact of Artificial Intelligence on Intergenerational Diversity

In the current context where automation, digitalisation and artificial intelligence are strongly present in organisations, there are some risks that have to be taken into account due to the existing generational diversity. The different traits and characteristics of each generation can lead to conflicts resulting from the difference in values, beliefs, and communication styles. It is important to study the impact of artificial intelligence in the context of generational diversity in the workplace, in order to minimize these risks and conflicts, seeking to leverage the characteristics of each generation.

In the Human Resources Management technology brings a different way to improve the recruitment proceedings or to increase the teamwork effectiveness (Johnson et al., 2020; Kambur & Akar, 2022; Singh et al., 2022). But, Human Resources Management (HRM) relies on human beings with all their emotional complexity, and the relation between Artificial Intelligence (AI) and intergenerational diversity is the main subject of this chapter (Arslan et al., 2022). However, the use of personal data by companies lacks effective legislation and it tend to have a misuse concerning boundaries of hierarchical procedures (Budhwar et al., 2022).

Through an overview of literature review regarding articles and HRM studies that provide a more accurate analysis to this multi-thematic subject, this chapter's aim is to help integrate and systematize the complexity of the intergenerational relationship with AI technologies, from the perspective of their labour perceptions.

The use of AI technology as became a mainstream organizational method, but not all generation have the same kind of acceptance (Hornung & Smolnik, 2022), that's why this overview is extremely important for the Human Resources Management.

The objectives of this chapter rely on:

- O1 – Conceptualize the labour perceptions between intergenerational diversity and AI.
- O2 – Identify the academic and digital skills gap of different types of generations.
- O3 – Systematize the breach of effective legislation on personal data share and use.

This chapter is divided in three main sections such as intergenerational diversity of workers that conceptualized the different generation's concepts and characteristics and their perceptions accordingly Artificial Intelligence technologies. The second section intended to systematize the fast forward changes that derivate from COVID-19 lockdown measures since 2020 until 2022 around the world based on the breach of effective legislation on personal data share and use. The last section brings the issues regarding the integration between artificial intelligence in the workplace and intergenerational individuals where the gap of digital skills has a tremendous effect.

METHODS

The research method of this chapter is based on a qualitative overview of literature review of academic articles, HRM studies and transnational organizations websites.

A comprehensive search was conducted in the dominant databases, namely Scopus, SAGE, Emeralds, Science Direct and EBSCOhost's, following the keywords for article selection presented in Table 1. Studies and reports on this theme developed by private entities were also considered.

The Impact of Artificial Intelligence on Intergenerational Diversity

Table 1. Criteria used to select articles. Source: Scopus, SAGE, Emeralds, Science Direct and EBSCO-host's (2022)

Artificial intelligence Automation Digitalization	Generational Diversity in the Workplace	Digital Transformations Digital Workplace Future of work Human Resource Management Human Resource Development
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Although the lack of academic literature forced to open the research spectrum to studies carried out in the labour market by transnational and private organizations, to better integrate the multi-disciplinary subjects.

Our main goal was to systematize the impact of artificial intelligence on international diversity in the workplace in contemporaneity.

The next procedure was to define the objectives and chapter approach to the literature researched.

Methodological quality and quality of evidence were based on several case studies where the AI had been implemented and its results on effectiveness and efficiency work procedures.

The authors identified, read and analysed about one hundred academic articles (78) and twenty-two researches and company studies (22) regarding the generational diversity and artificial technology impact, and they decided to excluded opinion daily newspapers articles (12) from their research that were not based on practical or academic research, except for an online newspaper news that is about AI's ability to have emotional intelligence to expose its lack of ability.

The multiplicity of research methods aims to be a first approach to the investigation of the perceptions and feelings of workers in the use of AI in the labour market. Far from being a closed analysis, it is intended to be the trigger to understand the emotional importance that AI has on employees.

INTERGENERATIONAL DIVERSITY WORKERS

Since all times intergenerational diversity has always been an issue for Human Resources, mostly due to potential perceptions regarding their work tasks and careers or gap in academics, literacy, and skills.

According to Sandeen (2008) “a generation is defined as a cohort of people born within a particular period” and most authors describe a generation with an interval approximately 20 years long, considering the division of an average life of human life expectancy of 80 years into four stages: youth, adult, midlife and elder hood.

Is important to realize that different nations have distinct ages to start the working life or the retirement period, although for this Chapter those data have no relevance.

The Generational Cohort Theory by Strauss & Howe (van Eck Duymaer van Twist & Newcombe, 2021) defines a generation as a social construction in which a group of individuals, born in the same historical and sociocultural context, is influenced by a set of unique opportunities and experiences (Ramos, 2017) so according to this theory, a generation definition expected that the individuals born and raised at the same period share the same values, perceptions, and beliefs constraining other generations.

The Impact of Artificial Intelligence on Intergenerational Diversity

People that grew up in the same decades have the same social and economic references, that why “demographic changes will also result in a greater diversity of generations in the workplace, which poses a challenge for Human Resource Management (HRM)” (Ramos, 2017)

To better understand the conflict of feelings between intergenerational workers is necessary to identify their purpose and their perceptions and feelings in the workplace.

Nowadays society has the most academic skills generation (known as Generation Z), but it doesn't mean that they are the most productive employees or the most loyal to a long-life employee.

Companies tend to have four or five generations working together and that maybe became an issue for teamwork there although that has always been a generation gap during times. At the present, organizations have one more subject to attend to the evolution of technological resources, like internet and more specifically the Artificial Intelligence.

In the workplace there are workers born between 1943 and 2000 and they are divided into segments with specific features, behaviours, and digital skills, like Baby Boomers (1943-1960); Generation X (1960-1981); Generation Z (1981-1993) and Millennials¹ (1981-2000).

Baby Boomers (1943-1960) were raised in a time of optimism, post the Second World War, when the global economy had an enormous growth (known as the *Trente Glorieuses*)² and all areas had several important improvements and innovations, like medicine and science, for example. Because of that, Incentive Research Foundation (2015) wrote that this generation tends to believe that everything is possible because they were children of soldiers that fought in one of the darkest events in History: World War II, and their fathers projected their dreams and desires onto their descendants.

For Baby Boomers generation jobs and carers have an important weight on their lives, and they are achievement-oriented to have a long and successful career, most of the time in the same job during their entire lives.

These former children were the first generation to achieve democratized higher education, that's why “boomers tend to value education and many have relied on educational attainment to support their high need for professional identity” (Sandeen, 2008). It's important for them to be engaged with their work as a purpose in life.

Their entire youth lived in an analogical era, but that wasn't an impediment to intervening in society and being responsible for changing the social paradigm about several matters, such as fundamental rights and human rights.

Baby Boomers tended to be stakeholders in society on a disruptive matter, against conservative social values.

This generation were children of so-called Silent Generation which had to get through the war and one of the most difficult economic times. Most families were “supplied by single wage-earning fathers and stay-at-home mothers. Children became the central focus of the family” (Sandeen, 2008). That's why Baby Boomers were so attached to stability, they were raise that way, in other words, they were raised to celebrate world peace and to fight for economic and financial stability.

Baby Boomers live in constant anxiety about AI not only because of their different expectations of the workplace and career matters but mostly because of their perception of the dangers or opportunities regarding AI (Scott, 2018).

Although this generation has all of these features, the next generation is the complete opposite on several matters, because Generation X (1964-1980) was raised in an era with severe economic recessions worldwide, most “children saw their fathers lose well-established positions and high wage-earning jobs through plant closures and workforce reductions” (Sandeen, 2008).

The Impact of Artificial Intelligence on Intergenerational Diversity

Not only because of the several economic and financial crises but also due to the paradigm shift in society concerning to women's rights³ (social and work equity) divorce rates suffer an increase and children were educated by two families: the new families from divorce mothers and fathers, also, during this decades, abortion was legalized in several countries, so, as consequence of these events the birth-rate declined.

“Many members of Generation X were the infamous “latch key kids” who stayed home by themselves after school until their parents returned from work” (Sandeen, 2008), for that matter they became independent, and distrustful of society, unlike their parents, also they were less college-educated when compared to the previous generation . Despite that they were skills training oriented as adults, because they need “to provide the financial security and attention to their offspring that they may not have experienced themselves as children” (Sandeen, 2008).

This was the last analogic generation raised, but they were the first generation to have computers, as Spiro, (2006) claim, “this small generation known as Generation X finds itself wedged between two huge⁴ demographic groups and as a result feels somewhat overlooked. These are the employees who are determined to maintain a work/life balance”.

Some authors allude that Millennials are the generation that comes after X, a macro group that includes Generation Y, Digital Generation and Echo Boomers (Incentive Research Foundation, 2015), but is important for this Chapter to subdivide this macro generation into two main generations, the first one was born between 1981 and 1993 (Spiro, 2006), so-called Generation Y and the other is known as the Millennials generation who had been born until 2000.

Generation Y grew up with digital and connected world evolution, and they were raised to believe that they can be whatever they want to be because they “experienced a shift back to a child-centred social context” (Sandeen, 2008) so they seem to be obsessed with the future formal education of their children, that's why since the earlier years their sons suffer from an enormous pressure to be successful on their professional careers.

This generation is career-oriented, team-oriented, confident, and optimistic with a strong demand balance to ensure between social and professional life, true to be told, despite that they are a hard work generation with gold achievement but have a need to recognition and detailed feedback in the workplace, mostly because their overprotected and achieve professional-oriented pressure during their childhood.

To Spiro (2006) Generation Y is, also, known to have multitasking workers, and wish to have challenging tasks so they can find technological solutions. Although Generation Y doesn't want to work long hours inside an office, they achieve to have balance and flexibility on their daily work. Ware (2013) wrote that “neither Generation X and Generation Y has the loyalty to their employer as the Baby Boomers”.

For this Chapter matter, Millennials are characterized as Digital Generation because they were born and raised within the phenomenon of the internet, “they are a highly networked, connected generation and tend to be completely immersed in technology (Sandeen, 2008).

Taylor et al. (2014) allude that this is the most educated and dedicated generation ever, because they attended to have high school graduation, but to Bauerlein (2009) they are the “dumbest generation” because of their lack of critical thinking regarding the enormous use on internet.

Millennials' have “admirable attributes from organizations' perspectives, including beliefs that they are more accepting of diversity than the past generation, have capabilities with advance information and communication technologies” (Latkovikj & Popovska, 2020).

According to Oracle and Future Workplace LLC., (2019) Millennials are the most excited generation about AI and Baby Boomers are the minus about the use of AI in the workplace.

The Impact of Artificial Intelligence on Intergenerational Diversity

Latkovikj & Popovska (2020) claim that they “have the ability to see problems and opportunities from fresh perspectives and are more comfortable working in teams than were past generations”.

In Table 2, a brief description of the different generations is presented.

Table 2. Systematic generational description. Sources: Adapted Latkovikj & Popovska (2020); Ramos (2017); Sandeen (2008); Spiro (2006)

Generations	Birth period	Description
Baby Boomers	1943-1960	<ul style="list-style-type: none">- Achievement-oriented to have long and successful career;- Same job during their entire live;- Need professional indent;- Aim for work stability.
Generation X	1960-1981	<ul style="list-style-type: none">- Skills training oriented;- Less college-educated than the previous generation;
Generation Y	1981-1993	<ul style="list-style-type: none">- Child-centred social context;- High level education;- Pressure from their parents to have successful on their careers;- Career-oriented.- Team-oriented.- Strong demand balance to ensure between social and professional life;- Need professional recognition.
Millennials	1981-2000	<ul style="list-style-type: none">- High level education;- lack of critical thinking regarding the enormous use on internet

Artificial Intelligence is one of the most discussed topics in Human Resources Management, but according to Tuomi, (2018) there is “always (...) a lot of hype and scepticism around its implications for society and the economy”. True to be told that AI brings to the social sphere new job opportunities, and “new opportunities for fulfilling people’s potential and aspirations” (Ratcheva et al., 2020), but intergenerational perceptions about AI can lead to motivational conflicts in teamwork, mostly because of their working values differences. Academia has paid particular attention to this subject, but perhaps their distinction of beliefs relies mostly on their educational, social, and economic references.

The Labour Perceptions between Intergenerational Diversity and AI

As written before on this Chapter, different generations have different perceptions about their jobs so their feelings about AI are mostly opposite to each other, on one hand, Millennials embrace AI because it allows them to feel free in their task development and gives them the chance to work anywhere in the world, AI gives them a feeling of freedom to become digital nomads and achieve the balance between their personal, social and professional life (O’Flynn & Brennan, 2019).

However, that freedom along with the lack of schedules and formal job rules for the older generation has become an obstacle to their feelings of empathy and belonging in the workplace, because their perceptions are that AI is going to steal their jobs, and they may be unemployed (Scott, 2018) (O1).

The anxiety that elderly generations of workers tend to have are mostly because of their perception of their lack of digital skills (Scott, 2018), although several authors believe that AI and Humans can achieve a productive teamwork environment (Arslan et al., 2022).

Certainly, Baby Boomers need to gain more digital skills, but for that, they must embrace technological innovation as a friendly tool instead of a threat.

Several governments believe that AI development may be a tremendous added value to increasing the retirement age (Scott, 2018), so this can be a piece of good news to Baby Boomers that live to work and the end of their professional career can bring mixed feelings like anxiety to become useless and the desire to have free time for their family and hobbies.

The world population has been aging since the second half of the 20th century. The new age structure of societies is characterized by a growth regarding elderly population and a reduction in the young population, due to the rise in average life expectancy and the decrease in the birth rate, respectively (Ramos, 2017). Although “the number of migrants is increasing (...) [but] migrant workers are concentrated in jobs at high risk of automation or are more likely to be in low qualify positions, despite their high educational level” (Santana & Valle-Cabrera, 2021).

The binomial of the aging of the population and the decrease in birth rates brought the thematic urgency of enlargement the active population, by starting to ensure the technology that increases the retirement age, giving to the elderly generation technological tools to maintain their work activity.

FAST FORWARD CHANGES

In the previous years of the 21st century the labour market has suffered significant changes, due the internet evaluation. According to the 2020 World Economic Forum, issued the *Jobs of Tomorrow - Mapping Opportunity in the New Economy* report in which it was claimed that “the Fourth Industrial Revolution is creating demand for millions of new jobs, with vast new opportunities for fulfilling people’s potential and aspirations” (Ratcheva et al., 2020). In that report the focus of professions of the future relies on seven domains, such as: Care/Social Economy; Data and Artificial Intelligence (AI); Engineering and Cloud Computing; Green Economy; People and Culture; Product Development and Sales, Marketing and Content, because “the importance of these emerging professions for fuelling future economic growth and domino effects in adjacent roles and sectors is considerable” (Ratcheva et al., 2020).

So, the answer may be, for the domain digital job employees need to acquire several skills, not only technical or academic ones, but also soft skills, like digital literacy. This will only be possible if human resources become savvy in digital literacy by pre-acquiring critical thinking within their academic curricula. As Franco et al. (2018) states “governed by fraudulent decision-makers, floppy media, fake news, and frantic information, it is essential to know-how to think critically”

The American Library Association’s defines digital literacy as “the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.”(2020). This means that reading online is not the same as digital ability to understand and process the information read, for that is required that human resources know how to apply critical thinking as an embedded tool on their day-to-day activities. Maybe with this binomial - artificial intelligence and critical thinking in the analysis - it is possible to analyse to overcome the disadvantages presented by Krupiy (2020).

Academic and Digital Skills Gap of Different Types of Generations

On this Chapter it was already mention that Millennials are the most qualify generation on the workplace and according to Bauerlein, (2009) the “dumbest one” because, as written before, they don’t have the need to research for information (like previous generations), in fact Baby Boomers and Generation Z tend to have more skills to social and conflict problem solving regarding emotional intelligence problem solver process.

Millennials had grown up in a digital world, where all their questions can be answered on internet, but the lack of critical thinking process tools are an obstacle to understand some situations regarding elderly generation feelings about AI on the workplace.

Over the years, mostly during this century, AI has provided different ways to have the job done, with several tools that have been innovated and democratized over the years, like working through clouds, Virtual Private Network (VPN) and many data disposal on free open internet websites.

For that matter society tend to accept new forms and places to work, Millennials and Generation Z started to work away of conventional office buildings and become digital nomads, without schedules and formal relations with their employers.

What it seems to have been a disruptive way of work for young generation (mostly the Millennials), like telecommuting and hybrid work has become for a while the “traditional” way, because of the pandemic situation, cause by coronavirus, also known as COVID-19, that the world has been assaulted on the in contemporaneity.

COVID-19 brought to the world a new mainstream concept to the workplace, only possible through AI development and technological internet tools.

In 2020 the world has been haunted by a global pandemic, named COVID-19, and nations were forced to apply lockdown measures on their territories, those measures forced companies to adopt procedures and workers were sent home overnight to carry out their tasks to online mode through telecommuting method, so the most of negative perceptions about the lack of skills, by the elderly generations, were exceeded, as Singh et al. (2022), “the ones who were incapable of switching online or could no switch due to the specific business were effected badly”.

The gap in digital education between the different generations was tremendous because elderly individuals had to learn the hard way how to do the obligation of their jobs using telecommuting.

For Millennials most of the time that was not a problem, once they were accustomed to using digital tools in their everyday jobs, but for Baby Boomers and some Generation Y that was an issue, because of their deficient digital skills.

Many elderly individuals have been accused of being unproductive on the telecommuting method. On the other hand, would be expected that Millennials were most efficient and productive in this work methodology, but Sandeen (2008) exposes that there are no concrete data on this subject. Table 3 shows the digital skills of different generations and AI technology perception.

According to International Labour Organization (2022) individuals and employers weren’t prepared for this sudden change of the workplace rules, not only the digital skills were a problem, but intergenerational employees had new challenges in occupational health, and their fundamental rights at work were compromised or ignored because, without formal schedules and office rules, employees tended to work overtime and started do feel overwhelming with their job tasks.

The Impact of Artificial Intelligence on Intergenerational Diversity

Table 3. Intergenerational digital skills and AI technology perception. Source: Adapted Franco et al. (2018); Krupiy (2020); Ratcheva et al. (2020); Singh et al. (2022)

Generations	Birth period	Digital Skills	AI Technology perceptions
Baby Boomers	1943-1960	<ul style="list-style-type: none"> - Born in an analogical era; - Lack of digital skills 	<ul style="list-style-type: none"> - Fear of losing their jobs; - Tend to have mixed feeling and struggling with technological innovations
Generation X	1960-1981	<ul style="list-style-type: none"> - Last analogic generation; - Lack of digital skills, but with a predisposition to learn how to use them. 	<ul style="list-style-type: none"> - It has greater acceptance of new technologies than the previous generation; - Technological innovation was developed during their lifetimes
Generation Y	1981-1993	<ul style="list-style-type: none"> - Grew up with digital and connected world evolution; - Desire to have challenging tasks so they can find technological solutions; - Less loyal to their employer then the previous generations 	<ul style="list-style-type: none"> - Highly networkers; - Connected generation; - Immerse in technology.
Millennials	1981-2000	<ul style="list-style-type: none"> - Fully digital generation; - High digital skills; - Digital nomads. 	<ul style="list-style-type: none"> - Capabilities with advance information and communication technologies

Most countries, like Portugal, didn't had effective legislation to regulate telecommuting, and without the formal procedures of an office, people tend to be overworking or, on the opposite, not to carry out the work tasks and that was a big problem for the companies.

During the two years of strong measures to mitigate COVID-19, there was an increase in "diminished labour and business income, including enterprise closures and bankruptcies, particularly for small enterprises"(International Labour Organization, 2021).

The intergenerational gap in digital skills was more prominent than ever because the world was depending on AI technology tools to keep working and to provide income to individuals and companies.

Organizations understood the need of training their workers on AI technology, so they acquire digital skills and provide at the same time equity between generations, although in several cases that was a trigger to distress on the elderly generations.

In the first half of 2022 companies start to call their employees to the formal building offices, but, for exemplum, in Portugal workers (in some economic activities) could choose to maintain telecommuting work or to have a hybrid method of work, in other words, employees could choose to intercalary with the telecommuting or move to the headquarters a couple of days per week or month.

Without any surprise, most of the Baby Boomers choose to maintain their formal workplace at the headquarters, despite Millennials that tend to choose between hybrid work and telecommuting.

During COVID-19-time AI technologies become more and more democratic, open free usable, and friendly-use to the average consumer, but the distrust and anxiety feels by Baby Boomers employees about AI aren't free of charge.

Despite all the mental health topic problems that lockdown measures had increased for individuals, technology has a huge potential for the business decisions (Hogg, 2019), but businessmen and business-women must be aware of the AI risks and not over underestimate the power of AI technology on their employees.

The Impact of Artificial Intelligence on Intergenerational Diversity

According to Hogg (2019) “as new technologies became mainstream, they can overcome workplace bias and facilitate a more flexible office culture with greater work-life integration”,

As common-sense replies “the future is now”, but it is still difficult to measure the real impact of these structural changes on the workplace regarding the different generation’s co-worker’s values, perceptions, and feelings. For some authors, like the ones that were quoted before, Artificial Intelligence has become an added value to working procedures and features, but the human cost, according to other authors is extremely high.

Although all the advantages that AI brings along, human feelings can’t be neglected.

There is a growing interest in AI technology by company stakeholders and scholarship members in their research regarding AI-based technologies, but for Human Resources Management these studies are limited and fragmented (Budhwar et al., 2022).

COVID-19 period indeed had the benefit to increase the attention and the use of AI tools by the working society, but the turnover has been tremendous fast, and society wasn’t mentally prepared or had digital knowledge for that quick change of working paradigm.

ARTIFICIAL INTELLIGENCE IN THE WORKPLACE

Artificial Intelligence theme is an ambiguous subject not only because of described items above but because it’s fast development that brings to the public sphere several issues that must be discussed and interpreted in a multi-disciplinary way, inasmuch not only because personal data privacy gains another social perspective because people tend to dispose freely of their personal information every day on the internet (through social media), although there is a line that no one is prepared to cross... the lack of empathy on decision-making AI and the loss of privacy.

Despite several attempts to regulate AI development there is a breach that no institution can through (World Economic Forum, 2021), the human behaviour.

The Breach of Effective Legislation on Personal Data Share and use

Another aspect to consider is the notion of working ethics regarding AI technology society has to rely on common sense ethics, but as mentioned before, different generations have different values.

Ethics regarding the use of AI technology is a grey area that is depending on human perception about right or wrong procedures and most of the time the difference between these two fields is not black or white. For some individuals and organizations, there are no boundaries on using online personal data, because if people published it is their will that those data became public, despite bringing personal and social problems. For some individuals “*Freedom of Speech*” as mentioned in the 19th article in *United Nations Human Rights Declaration*⁵ (1948) has a large wide interpretation, but worldwide organizations needed to create several formal documents regarding this subject, intending to create self-conscience and self-awareness on the individuals and companies.

Despite *Human Rights Dimensions of Automated Data Processing Techniques (in Particular Algorithms) and Possible Regulatory Implications* created by the Council of Europe (2017) or *International Standards on Freedom of Expression* written by the United Nations (2010), there is still a breach of effective legislation in the nations regarding the boundaries of internet use.

Society when through freedom of speech, as a fundamental right, to a hate speech against all the ones that are different from them.

This may seem maladjusted in this chapter, or unfair to all generations but intergenerational diversity brings along different perceptions about privacy data or freedom to express their opinion. There is no intergenerational consensus on this subject, so companies tend to use this gap of perceptions and breach effective and pragmatic regulation.

Regarding loss of privacy in an interconnected world there is a lack of ethics regulation and effective legislation to create boundaries for the use of personal data for commercial purposes (Klockmann et al., 2021), but as already mentioned individuals share freely on social media their desires and feelings. Unless there is a change in social behaviour, effective legislation becomes impossible to apply, even though there is a Regulation on Data Protection in the European Union (European Parliament, 2016), its supervision is fallacious and insufficient .

However international organizations still have the strength and the obligation to create rules and norms for internet use and in particular AI technologies.

As UNESCO (2022) introduces this topic on their website “Today, artificial intelligence plays a role in billions of people’s lives. Sometimes unnoticed but often with profound consequences, it transforms our societies and challenges what it means to be human” (2022). So, because of that, this transnational organization with the association of COMEST adopt a global agreement on the Ethics of AI, on the 24th of November in 2021, named *Recommendation on the Ethics of Artificial Intelligence* (UNESCO/COMEST, 2019).

In a preliminary study, they started to conceptualize AI and present the difference between other technologies, by writing that “the key issue in the ability of AI to show human-like capabilities is its scalability. The performance of AI machines depends on the data to which they are exposed, and for best performance, access to relevant data should be borderless” (UNESCO/COMEST, 2019, p. 7), because it not only has technical limitations, but it can be a socio-cultural issue, regarding the substantial societal and cultural implications.

To Margaret Mitchell, the former co-lead of Ethical AI at Google, these risks underscore the need for data transparency to trace output back to input, “not just for questions of sentience, but also biases and behaviour,” she said. If something like LaMDA is widely available, but not understood, “It can be deeply harmful to people understanding what they’re experiencing on the internet,” she said quoted by Tiku (2022) in The Washington Post on the 11th of June.

Once that AI Technology isn’t confined to local or national borders, owing its worldwide range, it is extremely difficult to create legislation that is consistent to the specific civil law of the nations. So, for now, society needs to rely on common-sense ethics for the use of AI technology.

AI Technology in Decision-Maker

The lack of AI empathy seems to be another main issue in decision-maker behaviour, because emotional human intelligence and critical thinking characteristics are impossible to be acquired by technology, no matter what Blake Lemoine had claimed in June of 2022⁶ (Tiku, 2022).

The Impact of Artificial Intelligence on Intergenerational Diversity

According to *The Washington Post*(2022), and several other media sources, on a normal working day Google's Responsible AI, Blake Lemoine, started his morning, as usual, interacting with LaMDA (short for Language Model for Dialogue Applications)⁷ and after an ordinary test, Lemoine felt that Google's AI technology started to understand his feelings about several issues.

Most academics and AI practitioners, however, say the words and images generated by artificial intelligence systems such as LaMDA produce responses based on what humans have already posted on Wikipedia, Reddit, message boards, and every other corner of the internet. And that doesn't signify that the model understands meaning (Tiku, 2022).

Technology was gradually advance over the latest few decades, but in the past few years has been drastically increased, because of the internet phenomenon that brought to the common ground innovations like large storage, cheap broadband or artificial intelligence (Singh et al., 2022). However, technology innovation hasn't reached, yet, the Holy Grail of AI technology, the understanding of human feelings.

In fact the biggest technological companies that invest millions on AI research, despite their advance innovations tend to be careful on the release of some AI technology, because potential speculations or human misapplication (Tiku, 2022).

Leaderships have an important role in the business process when implement artificial intelligence on their originations that generates changes on working procedures and resistance from their workers, but technology can be used to improve the supply chain of work activities (Singh et al., 2022) or to better organized several procedures or just a daily task schedule.

Personal virtual assistants (PVAs) started to be used in private contexts, in the small things like daily schedule, to-do list, shopping list or reminders for family and friends' birthdays, mostly among the younger generations (Millennials) that tend to stop using paper for organizational reasons, physical space and environmental concerns. Although Baby Boomers have a need to be more paper trustful.

Over time PVAs were recognized by companies has an added value and a reliable organizational tool on the workplace, suddenly what it seems to be a modern and innovator way to organized daily work has become the mainstream organizational method, but employees, according to Hornung & Smolnik (2022) had shown resistance regarding this technological change. Their concerns were mostly concerning their human value on their jobs, workers had the perception that AI technologies would take their jobs away.

Contemporaneity had showed that PVAs are used to improve time and organizational procedures into the companies, so the AI technology tend to have a bigger range on business departments, functions, and tasks.

Johnson et al. (2020) believes that in several economic activities such as the hospitality and tourism industry, AI and electronic human resource management can be a solution to the "high turnover rates and associated replacement cost with continually identifying and hiring new employees", but using those tools may became counterproductive, not only due to an algorithm-based analysis, but because it is exempt from analysis about the candidate's emotional intelligence. A candidate may have excellent technical skills and poor on emotional and social skills.

As physiologist Daniel Goleman written (2000) emotional intelligence matters more than individual intelligence, and algorithm-based decision can't notice the five components of emotional intelligence in the employees, such as self-awareness; self-regulation; internal (or intrinsic) motivation; empathy or social skills, for that matter.

The Impact of Artificial Intelligence on Intergenerational Diversity

Intergenerational diversity itself has several constraints that Human Resources Management must attend to, but the awareness relies on the balance between generation working values, emotional intelligence, and AI technology algorithm-based decision.

In some areas and themes support decisions on algorithms could be considered valid since emotional intelligence doesn't interfere with the conclusions reached, but in some matters, this can be a problem, Krupiy (2020) claims that artificial decision-making can be unfair, and can be a tool to increase society discrimination, once their decision making is sustained in an echo-chamber system supported by research carried out by individuals, the authors gives an example about universities recruitment system in the United States of America (USA) where there are quotas to the minorities candidates and through algorithm-decision maker that become a quantities issue, once the quota is fulfilled the system doesn't accept any more candidate of that minority group, no matter their amazing skills of professional potential.

On the other hand, Kambur & Akar, (2022) wrote that AI has the "ability to detect subtle features in data in algorithmically precise ways gives it an advantage over humans" and the authors believed that the use of AI technology can increase human interaction and communication between colleagues because tasks tend to become performance faster with efficient and effectiveness. In fact according to the author the use of AI technology allows employees to be more "focus on themselves into the development of new strategies and on using their energy in more important tasks" (Kambur & Akar, 2022). The balance on their use it's the key.

For a long time, mainstream AI in the workplace was seen as a science fiction movie that would take place in a distant time and place. People saw AI development as a utopic gold to achieve in the future, but nowadays that is far from the truth.

According to Hogg (2019), "nobody doubts their [AI] productivity and commitment either. Same can be said for their "cultural fit". Yet, some of those inherent corporate biases are still front and centre when it comes to acquiring and managing human talent".

Intergenerational teamwork brings to Human Resources Management a wellspring of challenges, such as a gap between formal education and digital literacy skills or work perceptions. "Although the modern workplace should be reimagined in a way that accommodates the Millennials and Generation-Zers, it must also allow older generations (as Baby Boomers and Xers) to feel comfortable"(Latkovikj & Popovska, 2020).

The authors believe that Human Resources Management as must construct a motivational working environment to intergenerational diversity, through the creation of an effective communication process and clear job description that leaves no room for doubt and uncertainty regarding the AI Technology use and procedures, because uncertainty breeds frustration and a decrease of productive workers.

According to what as mentioned before perception and feelings of different generations about their careers are the main obstacle to teamwork, especially when AI technology is in the main stage. But Kambur & Akar, (2022) believes that AI technology are an enormous advantage to create teamwork's because machines and algorithms can process the information and learn to provide recommendations about the suitability of the members of the team. So, in that matter, conflicts turn up into harmony between team workers according to the authors.

For Arslan et al., (2022) organizations that use interaction and collaboration between human workers and robots need to have more acuity in their communication process, to mitigate the insecurity feelings that AI technology tends to bring along and to maintain the collaborative spirit, because if the communication process tends to be flawed, the workers may not understand the full context of the message. The authors utter that the use of AI technology can be a tremendous opportunity to create added value

The Impact of Artificial Intelligence on Intergenerational Diversity

to human interactions and productiveness once the use of machines and robots made their tasks easier and faster.

To be clear AI technology is defined as a system that thinks and act like a human, and has the ability to be a rational thinker and act accordingly (Norvig & Russell, 2010). But as it was before notice AI technology can't feel or express emotions or feelings, then it can't demonstrate empathy, although this technology can have a wide range of collaboration with many fields, such as most of social sciences and mathematics or biology.

The main advantage of AI technology relies on solving difficult problems, increasing the well-being of society, and in the long term becomes cheaper to invest in human resources because the machines don't lose information and allow to spread of big data to a large audience in a short period of time and are free of human errors.

Those are the main issues of the anxiety generated on Baby Boomers, in particular, since "much of this anxiety tends to be situated in the field of employment, as lower-level employees worry they might be at risk of being replaced by AI alternatives" (Scott, 2018). But on the other hand, Millennials and Generation Z are technology-friendly, and once they are inured with internet connectedness in their personal and professional life, they expect modern technologies to do their job tasks (Latkovikj & Popovska, 2020).

It doesn't mean that these generations are free of anxiety or suspicion about AI technology, in fact, they are, but regarding de fast technologies innovations they are more open to change in their mindset.

CONCLUSIONS AND IMPLICATIONS

Labour Perceptions Between Intergenerational Diversity and AI

Intergenerational diversity in the workplace has always been a reality, but since the end of the 20th century digital technologies had become more and more a commodity product to companies and society in general.

This event brings along a gap between human resources academic and digital skills, because of their born and raised period.

The elderly generation grew up in an analogic era, and their abilities were trained to use their experience and formal knowledge in the workplace, but time has passed, and younger generations were born and raised during the digital revolution and their skills were directed and fostered to using digital technology. Although Baby Boomers could have learned how to use digital tools their skills are far from the Millennials regarding dexterity on a day-by-day use. So is expected that elderly generations tend to have bad feelings about technology innovations, like distrust, anxiety, or even fear of losing their job. All these emotions tend to converge in frustration and lack of motivation regarding their work.

Academic and Digital Skills Gap of Different Types of Generations

Human Resources Management had always to attend to the intergenerational diversity, to avoid job conflicts among their different generation workers, but they have managed to have the job done with success. However, the procedures were taking on a traditional work environment.

AI technologies were a reality in the workplace, but through teamwork, employees tend to help each other with their weaknesses, so the lack of digital skills was mitigated during the working schedule.

But in 2020, the world had suffered a twist with the appearance of a global pandemic generated by a coronavirus, also known as COVID-19.

Almost every nation had to create measures to mitigate the spread of the virus, like locking down entire countries, and overnight the traditional way of work became online work, and AI technologies had gained a new dimension to daily-based working life because people were a force to stay at home for about a couple of months.

COVID-19 measures lockdowns brought to the working society the urgency to manage and learn about AI technologies, but that was a need to become a survival worker in the economic climate.

It cannot be denied that AI has corporate advantages, like those that were described above, but it also brings disadvantages, like unmotivated or the feeling of non-recognition by the workers.

So, the main goal of Human Resources Management must be the creation of equitable standards to promote generational balance with AI technologies as professional training and the incorporation of digital so intergenerational perceptions and working values could converge and mitigate their differences.

The Breach of Effective Legislation on Personal Data Share and Use

Through this overview, the conclusions reached are that although different generations have distinct emotions concerning AI technology, there seems to have a breach of equity opportunities for digital literacy in the workplace. This aspect was more prominent during COVID-19 lockdown measures. Another finding was regarding the sudden mainstream use of futuristic ways of working, like telecommuting and hybrid work.

Despite all the advantages of production and physical resources, such as office rentals (the workplace tends to be smaller and cheaper), leadership must be attended to the mental health of their human resources. Because without formal procedures employees have difficulty establishing a balance between labour and personal hours.

This type of research promotes debate about the best strategies for recruitment and selection and the best ones for retaining employees. In terms of climate and organisational culture, it alerts to the importance of avoiding assumptions and stereotypes based on age and the definition of teams of different ages for projects, in order to take advantage of the contributions of the various generations. In terms of leadership, it highlights the need to refine techniques to provide feedback according to the characteristics of each generation, adopting various communication styles and a personalised approach for each employee. Increasingly in the organisational context, it is important to listen to employees and find out what they want from the organisation.

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

This research is intended to become a first-line investigation concerning AI technology and intergenerational diversity. It's urgent to research individuals' feelings regarding the use of technology in different generations. But this research is far from over and must be knowledge as one of the most important subjects on Human Resource Management.

During the last decades' society has watching the fast evaluation of artificial intelligence, but despite the production cost reduction, the effectiveness of supply chains, or the facilitation of communication

The Impact of Artificial Intelligence on Intergenerational Diversity

and data distribution, the human resources need to be analysed regarding their concerns, and perceptions, and emotions.

There is a latent, and sometimes truthfully feeling, that robots, computers, and machines will take away their jobs, generations have been afraid of being unemployed by automation.

The formal curricula at schools need to be attended to this social issue, also companies must give their employees digital training. Although general society needs to be aware of the opportunities and risks regarding the overuses of AI technology.

There is a breach of scholarship research about the real impact on perceptions and working values concerning AI technology on international diversity in the workplace.

Through this research, we can reinforce the existence of strong impacts on IA arising from the correct management of generational diversity in the organisational context, highlighting the search for solutions and problem solving, the better understanding of the different publics that the organisation intends to reach and the learning opportunities for all employees of the various generations, stimulating a culture of continuous learning and promoting mentoring practices, where older employees can transfer knowledge to new employees.

Another topic that needs to be explored and understand is the main role of Human Resources Management in the interaction between intergenerational diversity and technologies, in other words, it's urgent to research about human and technology procedures to accomplish harmony and belonging feelings in teamwork.

As important as the subjects above are effective labour legislation regarding AI technology use by leaders and works to mitigate the abuse of personal data on workplace. For this technology ethics need to be clear and pragmatic for everyone, without grey areas on their perception.

We understand that these future research directions are too vague to be study as one, that's why there is a subdivision of the topics, but at the end the effects of artificial intelligence and intergenerational diversity are felt by everyone, whether workers or employers.

The role of leadership and human resources management is the inclusion and integration of everyone in organizations. Given this intergenerational diversity with distinct characteristics and competencies, it is essential to promote research that develops more knowledge of how to manage organizational diversity more effectively.

AI and big data are a reality and the future of organizations. Each generation feels and reacts to AI in different ways. Therefore, this research highlight the need for leadership and management practices that address intergenerational diversity.

This literature review intended to fill the gap in literature regarding the impact of artificial intelligence on intergenerational diversity through a catch-all overview through the different items about these topics.

The authors' contribution to academia is related on the identification of different variables that are needed to have more clarity on these nutshell subject.

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KEY TERMS AND DEFINITIONS

AI Technology: Technology that act like humans, but can't feel or express emotions.

Generation: Group of individuals that cohort on a specific time and have the same references, literature places them in a time period of 20 years between one another.

Hybrid Work: Work that is done in formal offices and in another place, such as employee's homes.

Intergenerational: Different generation's cohort together in the same place.

Lockdown Measures: Measures that countries had took place to mitigate COVID-19, such as force people to stay at home.

Telecommuting: A remote work environment out of formal buildings offices.

ENDNOTES

¹ Incentive Research Foundation (2015) claims to be three generations: Baby Boomers (1943-1960); Generation X (1960-1981) and Millennials (1981-2000), but Ware (2013) identifies Generation Z thought people born between 1981-1993.

² Or the "Thirty Glorious Years, according to the famous term coined by Jean Fourastié" (Cohen, 2019)

³ "Women joined the workforce in record numbers either due to financial necessity or due to women's dissatisfaction with and rejection of traditional females roles" (Sandeen, 2008, p. 16).

⁴ Baby Boomers and Millennials

⁵ "Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers" (United Nations, 1948).

⁶ "Google vice president Blaise Aguera y Arcas and Jen Gennai, head of Responsible Innovation, looked into his claims and dismissed them" (Tiku, 2022).

⁷ "Google's system for building chatbots based on its most advanced large language models, so-called because it mimics speech by ingesting trillions of words from the internet" (Tiku, 2022).