

FUTURE OF WORK

Exploring tomorrow's employment through the three great trends of today: demographic, technological and attitudinal change.

1 Aim

The aim of this paper is to explore how demographic changes brought by an ageing population and developments such as the digitalisation of work and everyday life, have affected the nature and types of employment. Drawing on aspects from the four scenarios developed by the UK Commission for Employment and Skills (2014), this report will present how the future will unravel and impact the labour market of 2030 through a conceptual model. One aspects that will be further analysed is the shifting attitudes towards employment. According to a recent global survey in 189 countries of more than 200,000 job seekers, appreciation for work is a top priority nowadays (BCG, 2014). Hence, this report will explore how UKs increasing 'aesthetic' economy has resulted in a modification in job preferences. To do so, it will re-evaluate Maslow's hierarchy of needs (Maslow, 1943) to better illustrate the classification of job preferences as an *interconnected network*, as the top area in the pyramid including self-actualisation, self-esteem and belonging are increasingly becoming crucial aspects of work.

2 Background

"The way we think about tomorrow influences what we do today"

- UKCES, 2014

According to a Wilson et al. (2014), in 2030, the population aged over 65 will increase by 42% whilst the population aged 16 to 64 will only increase by 3%. Indeed, one of the main forces that will fundamentally transform employment is this profound change in longevity and demography; the future of employment will be geared by this unprecedented population panorama, where the "baby boom" generation reaches state pension age, and older people having to participate in the labour market for longer. Such drastic increase in the older population age proportion will inevitably lead to workplaces becoming more multi-generational.

Furthermore, technological advancement and automation will also transform much of what we take for granted about work. According to a recent analysis, around 47% of the total US employment is in the high risk, meaning that almost half of 'average' jobs are expected to become automated relatively soon (Frey and Osborne, 2013). Similar trends towards automation are also expected to be seen in the UK as according to Oxford university economists Dr Frey and Dr Osborne (2013), 40% of all jobs are at risk of being lost to computers in the next two decades. Furthermore, if recent UK trends continue, the High Pay Commission (HPC) has estimated that the proportion of national income accounted by the highest 0.1 per cent of earners will increase from 5% to 14% by 2030 (HPC, 2011). Indeed, with the pervasive automation brought by rapid technological advancement, automated systems are beginning to partially or totally replace many jobs in the UK, inevitably leading to an expansion in unemployed population. According to recent ONS data (2016), unemployment continues to increase as figures show that in April 2016 there were 1.7 million unemployed people, 21,000 more than the previous year. Henri Ford contends that the consequences of this will not go unnoticed. In his book 'The Lights in the Tunnel' (2009), he argues that although automation has been widely adopted by many businesses and is cost-driven (to save money and increase their surplus value), in the long term, this skewness in the gains of the economy to a few will inevitably weaken the 'chief engine of growth', this is, the middle class demand.

However, this rapid advance in technology does not only have an impact on the types of employment available, but will also affect how, where and when employment is organised. Technological change in an increasingly globalised world also means that the economy and financial system are increasing in complexity (UKCES, 2014) and companies will need to develop new management techniques and a different business model to become more resilient and be able to accommodate unpredicted change and uncertainty. According to Trevor (2016), *innovativeness* substitutes efficiency as the new definition of organisational effectiveness. Indeed, increasing globalisation is another crucial factor that will influence how the future of work will look like. However, according to the UK Commission for Employment and Skills (2014), de-globalisation, this is – 'governments continuing to protect their industries and increasing the obstacles to free trade, resulting in a reduction of international cooperation and trade' - appears to be a possible disruption that could drastically impact the future of employment in UKs economy.

A trend that will be explored in more depth is the prevalent shift in attitudes towards employment and consumption as, nowadays, successful businesses are determined by rapidly changing collective purchasing decisions (Kirby et al., 2014). Moreover, today's environment not only requires organisations to respond rapidly to the multifarious preferences of costumers, but also of their employees. Maslow's pyramid of needs (1943) will allow us to show how these

changing attitudes seem to have reversed the way we understand business and the economy, as the economy is shifting from an organisational centric or traditional type to a new business ecosystem driven by innovation. In order to be able to respond and accommodate this new reflexive and creative era, according to Trevor (2016), organisations will come to resemble networks more than hierarchies or bureaucracies.

3 Methodology

This report draws on the four scenarios developed by the UK Commission for Employment and Skills (2014) and will use a DPSIR model (Driver, Pressure, State, Impact, Response) to synthesize the picture of employment in the near future. Although such causal framework is generally used to present the indicators needed to enable feedback to policy makers on environmental issues, its structure appears to be of great utility in the analysis of current socio-economic changes affecting the way employment will look like in the future. Setting causal predictions using a DPSIR model not only allows for an understanding of current societal trends, but also for an exploration of the ways policy makers, employees, employers and education providers should respond to these trends in order to ameliorate their negative impacts and therefore accommodate the greater global volatility characteristic of tomorrows society.

According to the UKCES (2014), the three strong common developments driving the four alternative paths include further globalisation, an ageing workforce, and digitalisation of work and everyday life. However, after the recent UK referendum (June, 2016), the employment situation in Britain is already being disrupted by de-globalising forces. Therefore the impact of further globalisation in the future of work will not be analysed. Thus, the three main trends that will be explored and will be presented as the *driving forces* in the DPISR model are demographic change, technological advancement and attitudinal change. The following stages down the chain are 'pressures', 'state', 'impact', and 'response'. *Pressures* are theoretical consequences or effects of the driving forces or drivers, the *state* stage outlines the prediction of how the labour market will look like in 2030, the *impact* stage presents possible consequences of such state and its pressures, and finally, the *response* stage presents the policy or social decisions which can be made in order to adapt to the changes or impacts brought by the pressures.

Responses

**Actions taken by policy
makers, education
providers, employers
and employees**

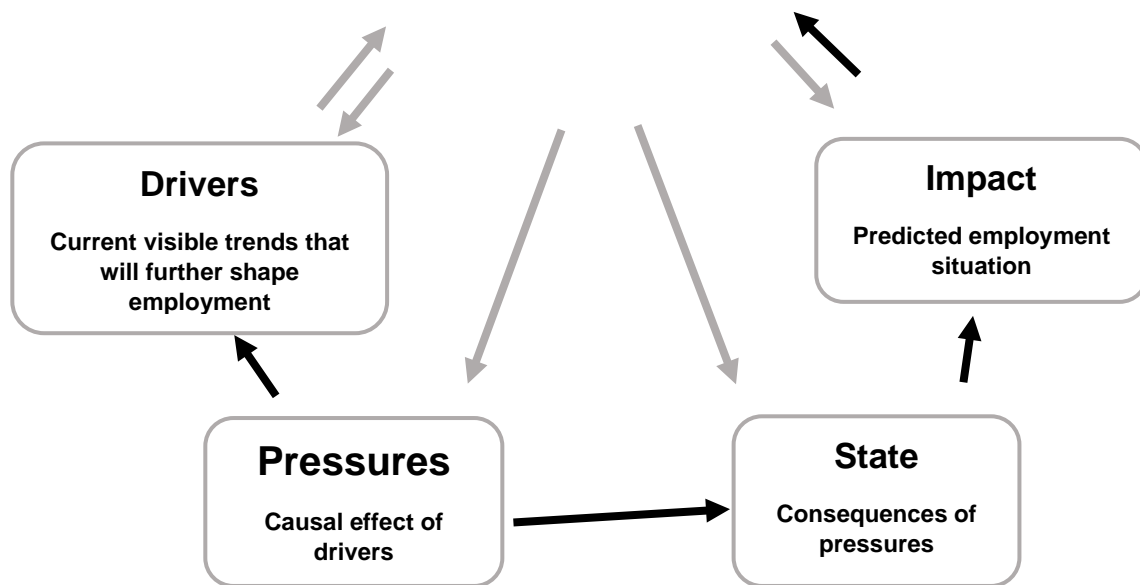


Figure 1: DPSIR model adapted towards the analysis of employment change

4 Model

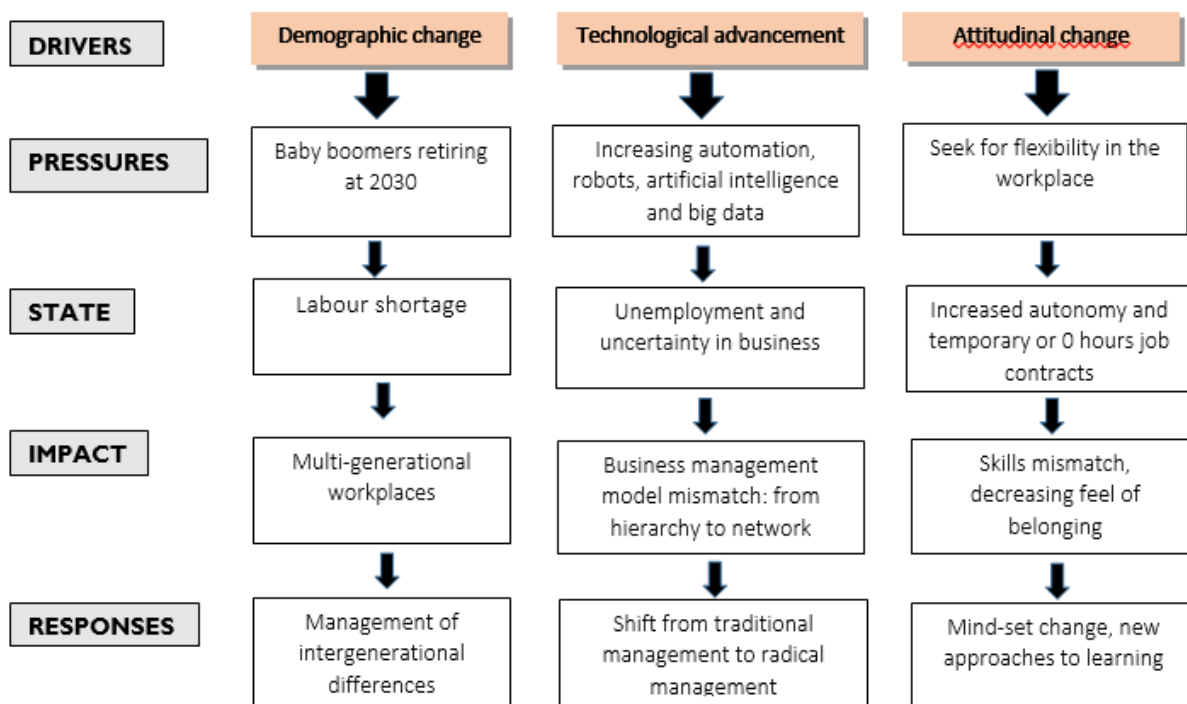


Figure 2: DPSIR framework using demographic change, technological advancement and attitudinal change as drivers

5 Analysis

The following analysis will discuss the causal relationships presented in the model and will focus in a greater extent on the impact and response stages, which correspond to the predicted future we will encounter in the labour market and the decisions we need to take in order to become more resilient and be able to accommodate an increasingly complex, interconnected and volatile economy.

Part 1: Technological advancement

Indeed, technologies are re-shaping not only the workplace but also how work takes place. The proliferation of technologies will impact and disrupt existing business models, and is also shaping the way production and consumption processes unfold. It is evident that many average jobs have disappeared; cash machines and self-service machines are two widespread examples of how automation has been unfolding in the present time. However, as technology rapidly advances, many more average jobs will be partially or totally replaced by increasing automation, robots and artificial intelligence, and this will impact UKs economy and employment in various ways. According to Bollegala (2016), among the jobs soon to be replaced by machines are real estate brokers, animal breeders, tax advisers, data entry workers, receptionists and various personal assistants.

Indeed, the thought of machines taking over 40% of all jobs in the UK over the next decades seems highly distressing. However, as Bollegala claims, “losing jobs to technology is nothing new” (Bollegala, 2016). Since the industrial revolution, many jobs exclusively performed by humans have slowly but steadily been replaced by some form of automated machinery. As Seager (2016) states, the Oxford university economist Dr Frey reminds us that in the 1930s economist John Maynard Keynes wrote an essay suggesting there would be mass unemployment following automation of mining and manufacturing, an idea that was also at the root of the protests led by the luddites in England two centuries ago. “And while it’s true that all those activities are more automated today,” claims Fray, “Keyes failed to predict the shift in the rise of the service economy – which now takes up most jobs. In the same way we may be missing something important today.”

Following the aforementioned idea of a current underlying shift in the sector gearing the economy, Zysman (2006) argues that we are in the midst of the 4th services transformation or what he calls the ‘algorithmic revolution’. In his article, he argues that the service sector has changed in significant ways since its rise. He claims that the first transformation was namely an ‘accounting error’, where activities outsourced from manufacturing came to be relabelled as services, the second transformation relates to the evolution in consumption and production

which consequently expanded the service sector, the third transformation recognises the changing role of women in the workforce and the consequent progressive conversion of unpaid domestic work into ‘commercial services bought and sold in the market’ and finally, the fourth and current service change is the digital or algorithmic transformation facilitated by the application of digital tools with algorithmic underpinnings. According to Zysman, this new trend blurs the line even further between product and service; “slowly the particular product, the purchase of a CD”, he claims, “blurs into a service, a subscription to download music.” According to recent ONS data (2016), households now spend more on services than physical goods: ‘over the 2000 and 2013 period, resource productivity – this is, the relationship between economic activity and material consumption- in the UK has positively increased. Rising 59.4% from 1.87 pound per kilo in 2000 to 2.98 pounds per kilo in 2013, reflecting the shift away from manufacturing towards financial and other service industries.’ Collinson and Vaughan (2016) argue that this reduction in UK material use is due to the growing impact of digitalisation, a claim that runs parallel to Zysman’s conclusions (Zysman, 2006).

What is particularly interesting about Zysman’s analysis of current technological trends is that although situating them within the evolution of the service sector, he argues that such a digital transformation has the ‘power to revolutionize business models the way manufacturing was revolutionized in the industrial revolution’, therefore pointing towards a shift from the service sector towards something else, rather than an evolution of the service sector itself.

“Everything changes; what work is, the skills work requires, where work is conducted, how firms organize, and how they capture value.”

- Zysman, 2006

Indeed, technological progress and the increasing automation brought by it has translated into a replacement of employees in many routine jobs in the middle of the income distribution by machines and computers. According to Bakhshi and Windsor (2015), there is growing evidence that technological advancement has created a ‘sagging middle’ in the labour market, which has contributed to record increases in income inequality (Wilson et al, 2014). However, some scholars argue that losing jobs by machines is not necessarily a bad thing. According to Bollegala (2016), increasing automation will enable individuals to engage in more creative and intellectually stimulating activities.

Similarly, Seager (2016) claims that there are many types of jobs that cannot be easily automated. Amongst these are those framed by creative principles. According to the Government's 2001 Creative Industries Mapping Document (Cunningham, 2002), the Creative Industries are "those industries which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property". Hence, the principles governing the rise of the creative economy (creativity, individuality, skill) are contrary to those governing the rise of automation (which aim to substitute routinary jobs by machines). Therefore, whereas robots will take over many jobs in a recent future, the creative economy is said to create new jobs. According to the recent report named 'Creative Industries: Focus on Employment' conducted by the Department for Culture, Media & Sport (2016), the creative economy employs 2.5 million people (greater than financial services, advanced manufacturing and construction) and accounts for at least 9.7 per cent of the UK's Gross Value Added. In recent years, this creative workforce has grown four times faster than the workforce as a whole, with a 7.3 per cent increase in people in creative occupations from 2011 to 2013. Results also show that the GVA of the Creative Industries increased by 37.5 per cent between 2008 and 2014.

According to the UKCED (2014), the amount of data generated by the digital economy is also growing rapidly. According to Adaci et al's (2013) predictions, the amount of data that will be produced annually by 2017 will exceed the total accumulated data from 1984 to 2012. This new age of data has already reversed the way we see business from fixed to flexible and will need the development of new and more resilient business models. Whereas the fixed –also known as organisational centric- economy was based on a worshiping of the corporate world, which provided employees with labour and therefore consumerist power to buy its fixed outputs, analysing this data has reversed the aforementioned business relationship, with now the corporate world serving consumers through a 'cloud of sufficiency', delivering outputs –this is, services and materials- as they need (or want) them. Furthermore, due to globalisation and technological change, the economy and financial system are increasing in complexity. UKCES (2014) claims that this, along with a greater global volatility, will need companies to 'make their activities and value chains more *resilient* to cope with uncertainty'.

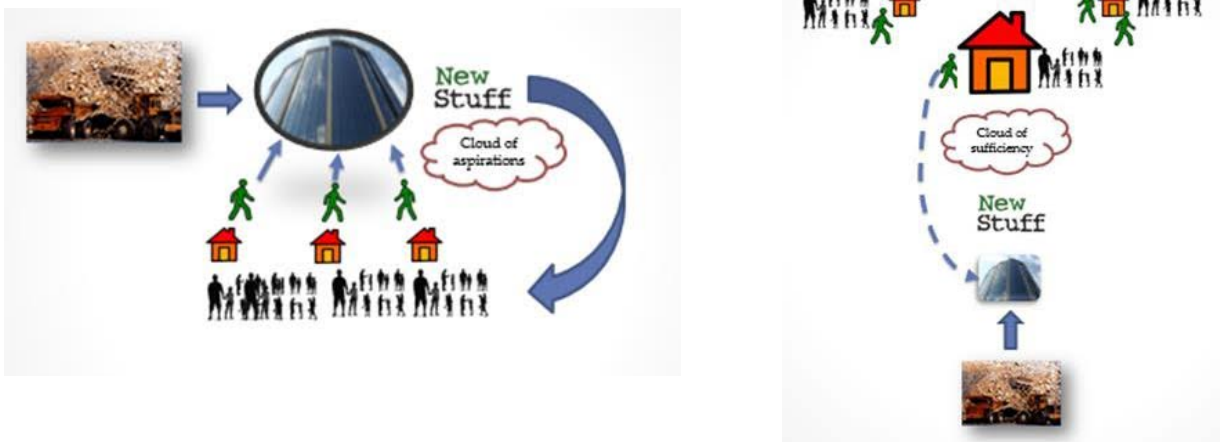


Figure 3: diagram showing the shift from traditional to ecocentric economics.

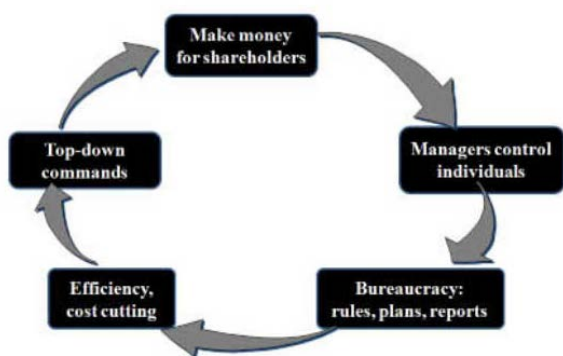
In *Reorganise for Resilience*, Gulati (2013) claims that shifting management from inside-out (“You take what we make”) to outside-in (“We seek to understand your problems and will surprise you by solving them”) is one of the five fundamental shifts that ought to be part of the reinvention of management due to traditional management practices no longer suiting today’s consumerist society.

“There is only one valid definition of business purpose: to create a customer. It is the customer who determines what a business is. It is the customer alone whose willingness to pay for a good or for a service converts economic resources into wealth, things into goods. The customer is the foundation of a business and keeps it in existence.”

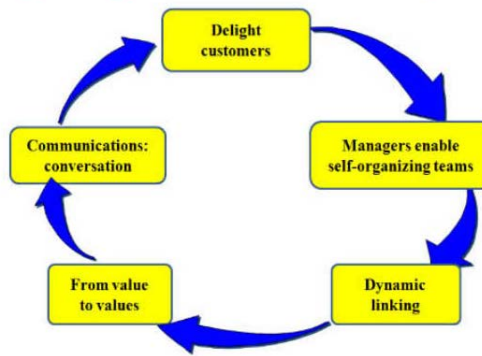
- Drucker, 1973

Many scholars refer to this emerging new type of model within businesses as ‘*radical management*’. Alongside the shift in the balance of power from seller to buyer, a second shift that has been accounted for is the one from traditional hierarchy to a more network-oriented type of internal organisation where the role of the manager shifts from controller to enabler. Furthermore, as summarised by Steve Dennin, in order to support and sustain these shifts and hence allow work to be both efficient and innovative, there also must be a shift from value to values- this is, a shift from a single-minded focus on economic value to instilling the values that will create innovation and growth for the organization in the long term- along with a shift from communication to conversation (i.e. a shift from top-down communications to adult-to-adult conversations in order to solve problems and generate new insights).

This new perspective in business management is at the root of the Agile movement and echoes the values and principles from the Agile Manifesto (2001) which emphasise communication, collaboration, team self-organisation and the flexibility to adapt to emerging business realities (James, 2016). Scrum is one of the specific methodologies developed in accordance to the Agile Manifesto that is increasingly used in new sectors, and emphasises the need of decision making processes based on real world results rather than speculation. As James (2016) claims, “by removing unnecessary unpredictability, we’re better able to cope with the necessary unpredictability of continuous discovery and learning”. In order to create resilience and interdependence, Scrum eliminates traditional co-ordination roles such as project manager, as these interfere with team self-organization. This increase in individual and team responsibility inevitably clashes with more traditional and hierarchical types of management and although optimal Agility requires fundamental changes to organizational design, hybrid approaches that combine a watered-down version of Scrum with traditional hierarchical management have been developed.



The principles are self-reinforcing & interlocking



The principles are self-reinforcing & interlocking

Item 4: principles of the traditional and radical management. The principles are self-reinforcing and interlocking.

Part 2: attitudinal change

Indeed, economic changes have also brought a shift in attitudes that seem to have turned employment around, from the way the market is organised to how businesses should be managed to maintain their productivity and efficiency within contemporary markets. However, today's environment not only requires organisations to respond rapidly to the multifarious preferences of customers, but also of their employees. Maslow's pyramid of needs (1943) appears to be a useful starting point when understanding individuals' job preferences and employees' needs within this new context. However, analysing Maslow's 1940s distribution of needs as a hierarchy or pyramid does not seem to reflect employees or consumers more

aesthetic and cultural preferences in today's employment and societal context. Understanding Maslow's model of human needs as a network instead of levels in a hierarchical structure forming a pyramid allows us to grasp and accommodate this new reflexive and creative era, as well as explore how each need category has been affected by recent changes in the workplace geared by the rapid advancement of technologies. Indeed, Maslow's model is a constructive tool in understanding individual human behaviour (Benson and Dundis, 2003). The earliest and most widespread version of Maslow's (1943) hierarchy of needs includes five motivational need. The original hierarchy of needs is represented as a five-stage model. These definitions were modified by Maslow himself and various scholars to suit the work environment.

	ORIGINAL	WORK SETTING
1. PHYSIOLOGICAL NEEDS	<i>Air, food, drink, shelter, warmth, sex, sleep.</i>	<i>Wages. survival needs must be met with wages which in turn provide shelter, food, water, heat, clothing, etc.</i>
2. SAFETY	<i>Protection from elements, security, order, law, stability, freedom from fear</i>	<i>Physical and mental safety, secure working environment.</i>
3. BELONGINGNESS	<i>Friendship, intimacy, affection and love.</i>	<i>Workplace collegiality - pleasant working relationships with co-workers, peers, and others.</i>
4. SELF-ESTEEM	<i>Achievement, mastery, independence, status, dominance, prestige, self-respect, respect from others.</i>	<i>Successful performance appraisals, incentives, rewards received and recognitions obtained</i>
5. SELF-ACTUALISATION	<i>Realising personal potential, self-fulfilment, seeking personal growth and peak experiences</i>	<i>Development of one's potential, to learn new things, to take risks, and to feel even more confident in what one does.</i>

Figure 4: original definition of Maslow's human needs (right), and their adaptation to the working environment (left)

Technology provides new ways to think about, learn about, and complete tasks which provides the organization with new opportunities. These opportunities, however, also bring with them new challenges.

- Benson and Dundis, 2013

Indeed, while technology might enhance productivity and reduce unwanted risks, employees might be reluctant to technological change within employment as they might “fear for job security, loss of power/prestige, and changes in relationships.” Benson and Dundis (2013) place great emphasis on the role of training in the workplace, as a means to not only increase employees safety need (physical - as a trained employee is a safer worker than one that has been required to learn by trial and error, and mental - as assurance that he/she is of value to the company as it is willing to spend resources) but also provides the individual with opportunities to meet people in the workplace and hence, increase their sense of belonging. Moreover, training also enhances employees’ self-esteem and self-actualisation needs, as it increases their confidence and consequently their productivity, as well as also allows workers “to develop [their] potential, to learn new things, [and] to take risks”.

Due to the progressive improvement in working conditions, the decline of factory-based employment, and the rise of ‘aesthetic’ capitalism, the top area in Maslow’s pyramid of needs is increasingly becoming predominant, not only regarding employees motivation at work but also in the job selection process. According to a recent global survey in 189 countries of more than 200,000 job seekers, appreciation for work is a top priority nowadays (BCG, 2014). Indeed, the top area in the pyramid including self-actualisation, self-esteem and belonging are becoming crucial aspects of work.

According to UKCES (2014), individuals are also increasingly seeking for a more suitable work-life balance. Their report shows that 57% of employees claim that flexibility is an important aspect in their job, a number that will further increase as the Generation Y (individuals born between 1980-2000 and have grown up almost entirely in the digital age) enters the job market, with 92% identifying flexible working as a top priority in the job selection process. Indeed, technologies offer the opportunity to outsource and displace work. According to Thompson and Truch (2013), 57% of employees worldwide reported an increase in their number of employees who work from different geographical locations. Thus, organisations are becoming increasingly flexible. According to the Institute of Leadership and Management (2013), 50 per cent of businesses say that flexible working is now a common practice. However, as aforementioned, there are downsides regarding the adoption of technologies as a crucial tool in the working environment. Benson and Dundis (2003), applying Maslow’s model, demonstrate how every need category has been disrupted as a result of technologies colonisation of the workplace. They claim that technologies have affected individuals’ security needs as employees are getting concerned about unemployment due to automation and become stressed as a result of their lack of necessary skills and their consequent need to adopt new types of knowledge. Also, as employment becomes displaced, employees feeling of social belongingness is threatened. Moreover, a lack of ‘social presence’ might also increase misunderstanding (Murphy and

Collins, 1997). Furthermore, although technologies might facilitate virtual communication and decision-making, it negatively impacts employee's self-esteem as quantitative aspects overcome qualitative ones and individuals feel like numbers.

Rutledge (2011) emphasises the role of social connection in the ability to meet Maslow's needs and argues that it is belonging what drives human behaviour and provides individuals with a sense of security and agency. Stating that "Maslow's model needs rewiring so it matches our brains", she argues that the strength of networks and bonds retranslates into an improvement in effectiveness in the environment, as individuals feelings of safety and comfort become heightened. Social networks in the working environment are also crucial when coping with uncertainties brought by 'the rapid innovation and ubiquitous nature of technology', as, according to Rutledge, it provides employees with the social validation and social identity necessary to maintain emotional engagement and enhance attachment to our mates and our group.

Citing the Maslows Business Reader (2000) below, Benson and Dundis (2003) argue that whilst technology might make "more promises" in self-actualisation as it offers unlimited means of learning, individuals "may need help in overcoming a long tradition of passive learning that they have become accustomed to".

"Think of the huge acceleration in the rate of growth of facts, knowledge, of techniques, of inventions, of advances in technology. It seems very obvious that this requires a change in our attitude toward the human being, and toward his relationship with the world".

- The Maslow Business Reader, 2000: 188

Indeed, technologies have a double effect on skills. On one hand, automation downskills us by making skills obsolete and on the other hand, technology provides new ways to access skills through, as aforementioned, online resources (upskilling us). Furthermore, with the growth in collaborative business models and increasing project-based employment, fundamental business skills are needed more widely among individuals (such as organising, marketing, contract negotiation, and project management). Turcq (2016) points out that "all new technologies are both destructing and creating jobs, destructing and demanding new skills". She argues that corporations must reinvent their approach to skills based on fast moving flows of skills rather than stocks. Indeed, employees who are in highest demand are those who can work in complex teams and think across complex systems. As Trevor (2016) claims, in order to allow work to be both efficient and innovative, individuals will increasingly be required to become polymaths or develop a T-shaped knowledge. Labour market data from the workforce analytics

firm Burning Glass (2015) shows how the demand of these “hybrid” jobs and skills is rapidly increasing, with more than 250,000 of such positions opening last year. Amongst these, positions in mobile development (combining skills from engineering, computer science and coding), have grown by 135 percent since 2011.

Indeed, these new skills and requirements of employees need to be accounted for by education and training providers, who, according to one of the various actions proposed by the UKCES (2014), ought to “collaborate closely with employers to support them in achieving their business and skills objectives to ensure provision is responsive to their needs and forward-looking in a competitive learning market.” Furthermore, learning programmes should also reflect the importance of an interdisciplinary approach to innovation in the workplace and the increasing influence of technology. Most importantly, in the future, personal agility – this is, the ability to adapt to or embrace change and acquire new skills and competencies - , will become more important. Indeed, as the world of work becomes more flexible, employees’ responsibility for developing appropriate skills will drastically increase. According to the UKCES (2014), self-management, alongside core business skills, such as project management expertise, and the ability to promote your personal brand, will become increasingly vital.

“Individuals, are the ultimate drivers of change to come, which means that we must all learn to accept our obsolescence”.

- Turcq, 2016

Part 3: Demographic change

Indeed, one of the biggest challenges the UKs economy will face in the future will be brought by the “baby boom” generation reaching retirement age. According to Wilson et al (2014), over the next decade the number of economically active people aged 65 and over is projected to increase by one third. This disproportional shape in the UK age pyramid means that while labour supply will unavoidably go down significantly, labour demand will increase, and therefore, by 2030, we will face a global workforce crisis, affecting the high skilled population to a greater extent. Studying the very similar population panorama in Germany, Strack et al (2008) claim that in order to solve or mitigate this labour shortage, with its accompanying skills mismatch, we must apply what he calls a ‘People’s strategy’, which involves companies and countries necessity to formulate a plan in order to forecast supply and demand for jobs and skills, to attract employable people: such as more women, retirees, migrants, etc., to educate and upskill people and to be able to retain the best people. Inevitably, workplaces will become

more multi-generational and although technological advancement might place the younger in advantage, all four generations will continually need to invest in up-skilling, and the older age groups will need to embrace technology fully in order to remain competent. Furthermore, cross-generational skills acquisition will be crucial to create effective social networks in the workplace.

6 Conclusion

The world is changing and employment must continue to reflexively change with it. As reviewed in this paper, three great visible trends are impacting and will further influence how the future of work will look like: demographic, technological and attitudinal change. Indeed, these trends interlock and although analysed separately, they are strongly, mutually influenced. Indeed, technological advancement is increasingly transforming the workplace, not only by physically replacing many regular jobs by automated systems, but also by mentally shifting individuals' perspectives regarding employment, and therefore reversing the way we understand businesses- from traditional to radical management. Although this report is based on an extensive body of literature and recent research, predicting the future is no easy task. This report presents a brief outline and discussion of trends currently influencing work, as well as predictions of how the present nature of employment will continue to evolve. As individuals, we must expect our personal responsibility to be heightened, not only within the workplace but also when developing appropriate skills. Work is crucial in society, and thus, changes in how, where and when employment is organised are not only of relevance regarding individuals' day to day lives, but also provides clues on how to maintain UKs economy resilient in an increasingly uncertain world. Indeed, the future is unknowable, but hopefully the trends, scenarios and ideas outlined in this study will promote thought and discussion on how changes in the employment panorama will unfold and how they should be understood, and most importantly, embraced.

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