DISCUSSION PAPER

The Evolution of Work: Technology's Impact on Society and the Economy

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PUBLISHER

TRT WORLD RESEARCH CENTRE

December 2023

TRT WORLD İSTANBUL

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Introduction

The trajectory of technological progress aligns closely with the evolution of work throughout history. The tools available to humanity have not only influenced production methods and occupations but have also played a pivotal role in shaping broader social structures. Beyond the realms of production, technology has left its imprint on societal interactions, communication, commercial activities, and even the dynamics of global conflicts. This interplay of technological developments, innovations in communication and transport tools, has ushered in significant global changes and transformations.

While it would be an oversimplification to attribute occupational outcomes solely to technological advancements, there exists a consensus acknowledging technology as the predominant force. Technological innovation is often regarded as a defining feature, demarcating distinct periods in the historical narrative of mankind. Classification attempts, spanning agrarian societies through the stages of industrialisation to the current information society, consistently highlight the decisive role of technology in shaping social and economic life.

The impact of technological elements on human interaction with the environment, interpersonal dynamics, perceptions of time, consumption habits, and cultural structures is profound. Daily life reflects the forms of production enabled by technological tools, influencing everything from settlement patterns to artistic activities, entertainment habits, nutrition, education, communication, and transportation.

The transformative power of technological change extends to fundamental concepts such as labour and work, which have evolved across different historical periods. The historical shift from muscle power and labour-intensive production to the contemporary emphasis on information-intensive production, automation, and skilled labour is evident. Notable societal shifts, including women's increased participation in the economy, the concept of overtime, the ritual of mass commuting, and urbanisation, are outcomes of technology-driven changes in the nature of work.

This paper endeavours to explore, from a historical perspective, the varied implications of humanity's relationship with technology on a global scale. The focus is on examining the social effects of technology-driven transformations in the way work is conducted.

Views from the production and quality control processes of Togg, Turkiye's first domestically-produced electric car, at the factory in Gemlik district of Bursa, Turkiye on May 10, 2023. Mehmet Gurcan Karakas, the CEO of Togg, stated that the factory is now capable of producing 80 cars a day. (Mustafa Yilmaz - Anadolu Agency)

A Brief Look at Social Transformations

The analysis of human history by dividing it into periods has been favoured by most authors writing on the subject, as it both clarifies the characteristic features of different periods and allows comparisons to be made. These periodisations have been based on universal events affecting humanity in general. Social, political, cultural, and economic developments played an important role in characterising the periods. Economic activity is the most effective element in constructing the social structure. This effect, which can be seen in the agricultural, industrial, and technological periods, shows that the means of production, which form the basis of the economy, have a decisive influence on the social dynamics of society.

The first major period in human history began with transitioning from hunting and gathering to agriculture. The agricultural period changed how people interacted with nature and allowed them to move into sedentary life, radically changing society's structure. Land ownership concretises social classes by forming the basis of social hierarchy.

Beginning in the late 18th century, the Industrial Revolution led to a revolutionary change in social structure with the advent of mechanical production techniques. The emergence of factories and the mechanisation of production transformed agrarian societies into industrial societies. This period opened the door to another major change in social structure: the emergence of the working class and the spread of industrialism.

The transformation of the way of doing business in different periods of human history has left important and profound effects on the social structure. The agricultural, industrial, and technological eras caused radical economic changes and led societies to new economic and social orders. These changes, combined with the evolution of working methods, have shaped the dynamics of the economy, social relations, and individual lifestyles.

Saint Simon, who recognised that society was changing rapidly with industrialisation and was the first thinker to use the term "industrial society", seems to have been partly right in his predictions of a society that controls nature and whose level of prosperity increases with the level of participation in production thanks to industrialisation. In many ways, changes such as increasing welfare and controlling nature have made our lifestyles more comfortable. If we look at today's social structure, described as the "post-industrial society" or the "information society", which allows control not only over nature but also over societies thanks to increased communication and transport possibilities, we see that the quantitative measures of production remain in the background and that knowledge is the basis of power. Changes in the mode of production directly lead to changes in our consumption habits, lifestyles, cultural structure, and, ultimately, how we perceive and give meaning to life.

When discussing historical periods and social structures, it is possible to generalise and assume that these socio-economic transformations took place in all world societies during the mentioned periods. However, it should be remembered that in each period, the lifestyle of the previous period was continued by large masses for a long time and that this transformation process did not take place all at once but in the long term and regionally.

Since the second half of the 20th century, the post-industrial social structure has begun to emerge with the rapid advances in information and communication technologies. The knowledge economy and digitalisation have made working styles more flexible and global during this period. The ability to access information has become a determining factor in the social structure, and workers who rely on muscle power or perform routine operations on the mechanical production line have begun to be replaced by knowledge workers.

The changing nature of work features prominently in the work of Karl Marx. According to Marx, who had a negative view of the impact of technology-driven economic change on social life, the transformation of work would pave the way for the emergence of a mass proletariat. In other words, with the help of technology, artisans would be transformed into operators performing routine tasks due to the automated and mechanised way of doing business, and labour would be replaced by unskilled labour due to factories, machines and mass production lines (Oesch, 2013). Against this expectation, it has been argued that economic developments will increase

knowledge-intensive jobs and, therefore, the need for skilled workers. Thinkers such as Daniel Bell, who took a positive view of change, argued that while some skills and occupations would disappear, more skilled ones would emerge, and a higher-skilled workforce would generate employment (Bell, 2001).

The rise in employment rates, the increasing importance of professionalisation and the need for trained human resources, especially in knowledge-intensive sectors, support the positive thinkers. Mechanisation in the agricultural sector has reduced the need for labour in this sector, but employment opportunities for the increased labour force have emerged in a variety of fields, generally requiring higher levels of competence (Fuchs et al., 1968). What has happened is that the workforce has shifted to different sectors, with the emergence of lines of work that require higher competencies, while low-skilled and automatable jobs have been taken over by technology (Oesch, 2013). The middle-class occupations of modern society can be easily automated, so there will be no need for the labour of people in this occupational group, but the need for labour will continue to grow in new knowledge-intensive lines of business that require higher levels of education and skills (Martišková, 2020).

As a result of this situation, which is reflected in the polarisation of the workforce, unskilled workers will be concentrated in lower-level jobs that cannot be performed with technological tools, while professionalised and trained human resources will be employed in higher-level and relatively more comfortable jobs (Goos & Manning, 2007). While the transfer of jobs that can be easily mechanised, such as the assembly of car parts, to technology allows for completely unmanned factories (machines are extremely successful than humans at performing repetitive, routine tasks), jobs that require human interaction, creativity and management skills can lead to better pay and higher levels of satisfaction for a highly educated and skilled workforce.

Another of the most striking results of the postmodern period can be observed in the perception of individual identity. It is undeniable that occupations and ways of doing business have an essential place in the individual's perception of identity. Zygmunt Bauman used the metaphor of liquidity to examine the impact of the extremely rapid changes of the postmodern period on individuals and society (Bauman, 2013). A liquid substance is highly unlikely to retain its shape; it takes on the shape of its location and the container in which it is placed. Describing the period we live in as liquid modernity provides Bauman with a helpful perspective for identifying and explaining the changes societies are experiencing. Postmodernism refers to a period in which many things about people and society are changing rapidly; our perceptions and concepts and how we make sense of life are changing. Today's fluid modern society has emerged due to the many "developments" that have entered our lives. The concepts of speed, real-time, and individual and cultural identity are deeply linked to production and consumption habits.

Rootlessness, surrendering to what exists and is generally accepted in a way that meets the demands of the current situation, and experiencing constant movement and change in an atomised way to facilitate this situation dis-identifies the individual (Bauman, 2013). The man of the modern era, which Bauman defined as solid modernity, was an element of production, the main argument of labour and work. His lifestyle and forms of perception were standardised and determined by the system, even down to the perception of time, and he was an individual who was passionate about progress. In today's fluid modernity, the most fundamental characteristic of the individual is to be a consumer. Moreover, who is living in a social model in which preferences, tastes and needs are constantly changing and renewed for the sake of continued consumption, and these changes are shaped outside and independently of the individual, and identity and character phenomena can change almost seasonally.

In Bauman's words, people experiencing poverty, the 'reserve industrial army' of modern capitalist society, have become 'defective consumers' (Bauman, 2004). This is because capitalism no longer needs mass labour for mass production. Therefore, in the consumer society, the capital makes profits not by producing more but by consuming more.

Of course, the fact that identity is so easily open to change is not an entirely negative factor. Change and transformation are, at some point, the basic arguments of development. There can be no development without change and transformation to some extent. What needs to be considered, however, is what and by whom the concept of development is filled.

An individual who is uprooted and open to all kinds of influence and manipulation can become a very good tool, depending on who shapes and influences the norms of identity. This situation can manifest itself as a suitable consumer who is happy to transfer his financial resources to the owners of capital, and in other cases, it can transform him into an individual who is happy to spend his labour and even his whole life according to the wishes and instructions of others.

As we can see, the evolution of the way of doing business has effects not only at the economic level but also at the cultural, social, and individual levels. The agricultural, industrial, and technological eras have fundamentally changed the way people view work and the economy, presenting societies with new challenges and opportunities. The constant change in the way of doing business has made societies more complex and dynamic, requiring a new adaptation process in each period. At this point, those who will shape the future of business are those societies and individuals who can adapt quickly to current changes and create sustainable solutions.

The Relationship Between Quality of Life and the Way We Do Business

From the Industrial Revolution to the present day, technological advances, globalisation, and digitalisation have affected urban life and environmental conditions, leading to significant changes in social and environmental dynamics. While globalisation expands employment opportunities, it also has the effect of diversifying cities. While global cities bring together different cultures, labour mobility has changed the demographic structure of cities. This has resulted in cities having more diverse and dynamic social structures.

Flexible working arrangements have also significantly changed how business is done. In particular, as technology makes working from home more accessible, companies have begun to adopt more flexible working models. Remote working, collaboration with freelancers and project-based employment are replacing the traditional office environment in the business world. This situation not only increases employee satisfaction but also offers cost benefits to companies.

Digitalisation has increased the opportunities for remote working in the business world and reduced the work-centred intensity of city life. People can work from anywhere in the world, making jobs less local. These circumstances have impacted urban lifestyles and population mobility, changing work and housing preferences.

Globalisation, digitalisation, and remote working have made cities more diverse and dynamic while triggering sustainability efforts. In this context, understanding and adapting to the impact of changes in the economy is crucial for the future of cities and the environment. Sustainable urban living and environmental awareness can reinforce the positive effects of economic development and contribute to healthier and more balanced societies. Green spaces, cycle paths, green infrastructure projects, remote working, green vehicles, and efforts to reduce carbon footprints will all contribute to environmental sustainability.

Today, the most noticeable shift in the business world towards a remote working model can be seen in the pre-pandemic and post-pandemic periods (The Economist, 2021). In the pre-pandemic period, remote working was seen as a limited benefit and had a narrow scope, particularly in certain sectors. However, the COVID-19 pandemic had a profound impact on this paradigm, making remote work a form of employment and a corporate culture (Marcus, 2022). In the pre-pandemic era, remote working was often based on individual preferences or the requirements of specific situations. Limited technological infrastructure and traditional approaches to business culture prevented the spread of remote working. Companies often encouraged collaboration in physical office environments and emphasised the need for employees to meet and interact face-to-face. However, despite a period of necessity, remote working is now accepted as part of flexible working models (Bloom et al., 2023).

An operator supervises a production robot welds together stamped out metal parts at the Toyota Motor Manufacturing Turkey's (TMMT) assembly plant in Sakarya, Turkey on September 30, 2014. Toyota Motor Manufacturing Turkey is the one of Toyota's vehicle production bases in Europe. (İbrahim Yozoğlu - Anadolu Agency)

The COVID-19 pandemic has radically changed the paradigms of remote working, making this model a necessity rather than an option (Levanon, 2020). Companies had to adapt quickly to digitalisation and encouraged their employees to switch to remote working. This process started a transformation in the business world, and remote working became a sustainable business model rather than a temporary solution to pandemic conditions (Parker et al., 2022). Improvements in technology infrastructure and the move towards flexible working cultures have made remote working a more permanent and effective solution.

In the remote working model, energy consumption due to business travel is reduced as employees do not need to travel to physical office environments. The energy requirements and carbon footprint of office buildings can be reduced thanks to remote working. In addition, as energy consumption is generally lower in home offices, the carbon footprint of individuals is also reduced.

However, the increasing use of the Internet and information technology, together with the remote working model, can increase the energy needs of data centres. The environmental impact of remote working is a complex equation. While positive effects such as reduced energy consumption and paperless office applications offer significant environmental sustainability benefits, negative effects such as increased e-waste and the need for digital data centres should not be ignored. Therefore, managing remote work in line with sustainability objectives, adapting the technology infrastructure to sustainability, and raising individual awareness of environmental impacts can ensure that this model positively contributes to the environment.

In addition, while remote working offers many individual and societal benefits, it also raises some issues for employees. In addition to offering more flexibility and autonomy, there are concerns that it can lead to low pay, social isolation, irregular working hours, overwork, sleep deprivation and burnout (Wood et al., 2019).

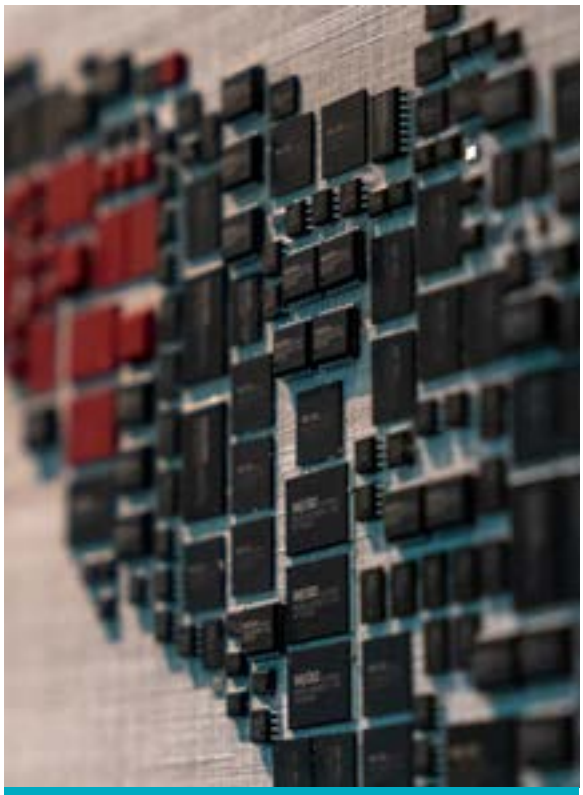
Better Technology for Better Jobs

High-quality, high-speed mobile data access has significantly increased labour force participation, even in African countries where internet access is the lowest compared to the global average (Begazo et al., 2023). This situation contributes to overall prosperity and has naturally led to a reduction in poverty rates of up to 7 per cent. The digitisation adventure of the African continent, one of the most striking examples of the emergence of new interaction possibilities and opportunities with the proliferation of communication tools, offers a macroeconomic view of the positive outcomes of the technology-based way of doing business.

However, the huge gap between the Global South and the rest of the world must be bridged due to serious problems with access to technology. Even the simplest technological tools and the most basic access to the Internet are still a luxury for the people of the continent, where almost half of the population lives below the extreme poverty line (Begazo et al., 2023). This is a clear example of how technological progress deepens the imbalance between different geographies and societies, leading to labour exploitation in almost all sectors. Inadequate infrastructure and inaccessibility cause problems in virtually every aspect of social life, creating a vicious, self-reinforcing cycle. The loss of labour starts at birth due to inadequate health care and requires the skills and equipment necessary to participate in the labour force in a geography where even the most basic needs are not adequately met during endless conflicts and even civil wars due to malnutrition, lack of education, economic and political turmoil. Of course, it is extremely difficult to gain these competencies with all these problems affecting society at large; it is unthinkable that such countries could be economically competitive on a global scale and get a fair share of the world market.

Even if certain efforts are made to have trained human resources in the face of all these difficulties, it can be expected that human resources, equipped by spending a long time and a considerable amount of resources, will quickly migrate to economically developed countries. To put it in its most widely accepted form, Western civilisation, rising on the shoulders of immigrants has for many years maintained its position as the centre of attraction as the first address that comes to mind for a skilled workforce due to the financial prosperity it has achieved. As a natural consequence of this situation, even if economically developing countries have shown the will to take the necessary steps to train a skilled workforce, they have to face the painful prescription of losing the skilled workforce they have lost to Western countries that offer better salaries, working conditions and diverse opportunities.

Labour exploitation indicates the form of low-skilled jobs being outsourced to countries where they can be paid as little as possible (Blinder, 2009) and migrants working in low-skilled jobs (even if they are skilled workforce) in economically developed countries. It is known that 70 per cent of the courier job, which has emerged as a new unskilled job line thanks to consumption habits such as online shopping and remote food ordering, is done by immigrants in those countries (Van Doorn et al., 2023).



An art piece made from memory chips is seen at the Macronix Exhibition Center in Hsinchu, Taiwan on September 16, 2022. (Walid Berrazeg - Anadolu Agency)

Conclusion

The evolution of work in the digital age has triggered a paradigm shift, reshaping professions and business practices. Advanced technological tools, digital platforms, and high-quality connectivity have not only altered how work is performed but have also profoundly transformed the outlook of business life.

This new era of business, constantly tracking technological advancements, demands a systematic approach to development and skill acquisition. It has transcended the traditional boundaries of time and space, presenting both opportunities and challenges for the workforce. The ongoing transformation of work in the digital age comes with a multitude of opportunities and risks, particularly with the recent strides in artificial intelligence and machine learning. Foreseeably, these advancements will bring about even more profound changes in business life and its associated social dynamics.

While technological progress holds the promise of better jobs and increased social welfare, the uneven dissemination of innovations perpetuates a substantial portion of the global population in poverty and challenging conditions. In an era where the skills required for entering the job market are becoming increasingly sophisticated, a lack of basic training opportunities condemns individuals to low-paying jobs. Regrettably, it appears inevitable that a significant segment of the world's population will be relegated to cheap labour, susceptible to exploitation.

Amidst this unprecedented era of change, mitigating potential risks and capitalising on the positive aspects of transformation is achievable through the widespread acceptance of an approach centred on people, prioritising the well-being of societies at large.

An employee make folkloric toys as a symbol of the New Year at "Biryusinka" Toy Factory in Krasnoyarsk, Russia on December 08, 2023. The factory continue to produce the folkloric toys of Ded Moroz (Santa Claus), rabbit and Snegurochka, which have an important place in Russian culture, to decorate Christmas tree for the upcoming Christmas and New Year. (Alexander Manzyuk - Anadolu Agency)

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