

DISCONTINUITY OF DIGITAL PLATFORMS

Cristina Gabriela COSMULESE

*Stefan cel Mare University of Suceava, 720229, Romania
gabriela.cosmulese@usm.ro***Abstract**

The structure of contemporary capitalism is characterized by the contextual presence of three platforms that are driving the transformation of economic and social relations: industry, logistics and the digital economy. These three platforms show increasing degrees of intersection, generating a general reorganization of the way capitalism works. The content of jobs is changing, the precariousness of rights is increasing and people's sensitive data is becoming a marketing tool. In the meantime, economic actors are increasingly taking oligopolistic and monopolistic forms, which regulation cannot regulate precisely because of the transnational dimension of networks Logistics, and in particular, the maritime economy is an elective terrain for these global transformation processes, where the convergence between the three platforms becomes particularly evident. This paper discusses the discontinuity between production and logistics induced by digitization and the challenges facing digital sustainability, by identifying factors contributing to the generation of negative environmental impacts through uncontrolled electricity consumption.

Keywords: *digital sustainability; sustainable green energy; waste; environment.*

JEL Classification: *O33*

I. INTRODUCTION

We live in the century of digitization and to function efficiently we need to be informed, and that means we are constantly connected to technology. Indeed, technology saves us from physical travel and makes many activities easier, but not everyone knows that all these facilities come at a price. The more we digitize, the faster we destroy the environment we live in. In the digital world, just like in nature, there is a huge amount of waste, from useless emails to unused files and apps, to duplicate documents and photos. All are considered digital waste and represent a new source of pollution. The technological revolution has become ubiquitous and is no longer just affecting the world of organized production, but increasingly also the sphere of individual habits. Connecting to digital devices is a constitutive component of our daily behaviour and risks becoming an addiction. "Human beings are at a crossroads in using and abusing electronic media. Atomized data producers meanwhile lose ownership of the information they voluntarily, albeit unconsciously, transfer to the network and platforms, and everything becomes a finished product, information being the raw material. Control over the information in a data-driven world shifts to those who generate, store and analyze information flows on their digital platforms" (Ramge, 2021: p. 4).

We live in an increasingly digital world where even an emoticon or a like sent on social media can be a source of pollution. What is more poignant is that this process is happening at extremely high speeds and not all users are aware of it; not all are aware that it goes through a series of processes and servers from the moment it is sent to the recipient, connecting each time to a gigantic infrastructure of metal, concrete and fibre optics, powered by electricity that is in turn produced by the consumption of coal, natural gas, oil or uranium (Pitron, 2021). IT specialists recommend that when we have to send a message (a thought) not to divide it into several pieces but try to summarize a single reference or when we search for something, in particular, to search directly on the source, not a general search, so in this way, our action will have less impact on the environment thus contributing to reducing our carbon footprint on the environment. Also, their advice is to compress documents before storing them so as not to fill up the device we are using so quickly, or not to change our phones so often, as the production of other gadgets again involves the use of precious ores and rare metals, the transportation of raw materials and components to the manufacturer, and their distribution to customers.

Information about social media users has become an extremely valuable and growing economic asset in the advertising market and the parallel and illegal market of political manipulation. Today, Facebook [1] and Google essentially represent a duopoly in digital advertising, with revenues from this sector amounting to \$135 billion in 2017, more than all newspapers in the United States combined (Frenkel & Kang, 2021). Facebook's acquisition of Instagram and WhatsApp has not only led to greater concentration in the social media market but has also led to a convergence between the personal information contained in the different platforms, increasing the amount of

commercial targeting that can be pursued through information convergence". These operations were carried out not only to eliminate potential competitors from the market but also to increase market power through technology and information control synergies. This control now extends to knowledge.

"We live in a paradoxical situation. Modern science was born - in various ways - as a public good but ended up being privatized. This privatization mechanism produces social inequality and contributes to an unequal distribution of income and wealth that undermines the foundations of states and social coexistence."

(Florio, 2021: p. 4).

Digital capitalism is moving towards an increasingly oligopolistic and monopolistic articulation, destined to profoundly mark the structure of other markets, as it will condition two essential levers for the functioning of the economic fabric, namely marketing and connectivity. Increasingly sophisticated consumer profiling allows for the precise targeting of promotional messages for products and services, conditioning the commercial success of companies. Managing the power of connectivity determines the distribution of products in the logistics market and the dynamics of tourism and mobility in the passenger market. In this way, the general organization of contemporary capitalism is moving towards greater hierarchization, as the prices of these two services (digital advertising and connectivity), which were initially affordable, are now becoming a barrier to entry for companies with less market power.

II. THE CHALLENGES DIGITAL SUSTAINABILITY FACES

Every one of our naive digital actions has a huge impact on the environment. But the issue of digital sustainability is not just in the chain from click to physical transaction. The circulation of bits is underpinned by an energy-intensive infrastructure, whose content is becoming more and more intensive, as shown by the emerging technology of digital currencies. Each email message leaves a carbon footprint of between 0.3 and 50 grams of carbon dioxide (Green Report, 2019). It is estimated that by 2170, the number of bits will equal the number of atoms on the planet. Amazon is one of the digital companies leaving the biggest emissions footprint today, and although it has set a goal of achieving carbon neutrality by 2030, it still does not publish official data on this crucial time for the planet's climate future (see <https://sustainability.aboutamazon.com/environment/carbon-footprint>). Today, information storage and processing are the main mechanisms for capital accumulation, which is gradually replacing the accumulation of financial capital. We live in a knowledge-intensive society. The Web of Science, the largest database of more than 12,000 of the most important scientific journals (plus 170,000 conference abstracts), contains 79 million articles (see https://www.e-nformation.ro/resurse/bnr_thomson-reuters), making it a network of researchers with planetary conformation characteristics. The large ATLAS science experiment, which led to the confirmation of the existence of the Higgs boson [2] in 2012, involved the collaboration of more than 5,500 researchers from 181 research institutes in 38 countries on all continents (see <https://www.edupedu.ro>). Real research infrastructures are operating around the world, producing knowledge and stimulating innovation. This factory of minds can lead either to the production of science as a public good or to the creation of oligopolies based on private ownership of knowledge. Digitization is facing this crossroads, and the answer now emerging is the consolidation of powerful oligopolies that appropriate knowledge to create an enormous accumulation of capital with formidable market power. The freer and more accessible science are in the pure research phase, the more profit opportunities can be generated in the applied research and industrialization phase of innovation. Leaving the exploitation of knowledge to the market alone, without public institutions participating in the wealth creation phase, increases the likelihood of hard-to-fight oligopolies. Traditional institutions of representative democracy also risk being challenged by the digital society.

The archipelago of new technologies is stepping into traditional institutions with one foot and causing profound processes of involution. From this point of view, it would be appropriate for the public hand not to stand idly by and do nothing to disseminate knowledge and create innovations. Shifting the frontiers of public action could be a multiplier of greater opportunities as well as a brake on the concentration of economic power. The digital society is underpinned by the logical architectures of artificial intelligence. This phrase can be understood as "an idea, an infrastructure, an industry, a way of exercising power, and a way of seeing things; it is also a manifestation of highly organized capital, contained in vast systems of extraction and logistics, with supply chains that envelop the entire planet" (Crawford, 2021: p.25). Artificial intelligence presents itself as an atlas of knowledge, supported by a system of algorithms and machines. The cloud is a resource-intensive extractive technology, turning water and electricity into computing power. Already today, the carbon footprint of the world's computing infrastructure is equal to that of the aviation industry at its peak and growing at an accelerating pace. One of the National Security Agency's largest data centers, in Bluffdale, Utah, consumes more than six million gallons of water per day, calling into question the location and impact of corporate data centers in general, and the changes they cause to the landscape and local economies. Thus, in his study Hogan (2015) explores how water is an intriguing and politically relevant part of the surveillance infrastructure and how it has been constructed as the

main tool for activism in this case, as well as how it might ultimately contribute to transforming the public conceptualization of Big Data as deep material. Large corporations such as Alfa Energy Group, Google or Microsoft are investing heavily in green electricity and looking for solutions to cool equipment by developing sites in colder parts of the planet using seawater. In March 2022 Microsoft announced that there is already a project underway to create a new data centre in the Finnish capital, whose waste heat will be used to heat homes and corporate headquarters in the Helsinki region. We note that these massively electricity-consuming companies are coming up with all sorts of methods that could further reduce the energy consumption of blockchain technology, some specialists believe that they already consume several orders of magnitude less energy than the first generation of PoW blockchains and that these blockchains thus mitigate the energy problem to a large extent (Sedlmeir, Buhl, Fridgen & Keller, 2020).

The raw materials needed in the 21st-century digital society are changing, but that doesn't mean there aren't critical supply issues. In February 2022, scientists at the US Geological Survey published a list of 50 rare earth minerals that pose high supply risks for technology manufacturers. The environmental footprint caused by digitization risks contrasting with the efforts that the economy of our time needs to make to go green. We are working hard to control the pollution caused by the old industrial economy while struggling to understand that digitization is beginning to replace the polluting production structures of the past.

III. THE DISCONTINUITY BETWEEN PRODUCTION AND LOGISTICS INDUCED BY DIGITALIZATION

In the relationship between production and logistics, the discontinuity induced by digitization is equally profound (Heiko & Darkow, 2013). We are hardly used to globalization and the creation of global value chains by multinational giants that have structured an international market driven by factory hierarchies. The pandemic was the catalyst for a temporal acceleration of a change that was going to happen anyway (Orlando, Tortora, Pezzi & Bitbol-Saba, 2022). The geographical framing of production is being reconfigured towards a kind of regionalization of globalization while preserving the international characteristics of the previous configuration: connections are concentrated on a macro-regional basis, with territorial platforms intensifying their relations. The arena of competitive confrontation is not retreating from globalization but is moving towards a wide perimeter of global regions competing with each other. here is a trend towards "nearshoring", i.e. a return to a more compact pattern of relationships, in response to the crisis of long supply chains. New phenomena appear on the horizon: half-empty warehouses, slow deliveries, and difficulties in sourcing raw materials from multinationals that seemed to have all processes under control (Sudan & Taggar, 2021). Global fashion brands are changing the articulation of their production system to avoid being trapped in procurement and production systems that are too difficult to govern.

In any case, the information content embedded in goods is growing exponentially and the process of disintermediation is accelerating rapidly. The network of digital connections is expanding at a geometric rate of progression: "Just five years ago, there were 17.5 billion networked devices on the planet, and today there are more than 35 billion in the world and it is predicted that by 2025 the number will more than double to an estimated 75 billion" (Ross, 2021). In recent years, growth has affected the world of manufacturing more than private users of citizens. Applications to work organization processes will certainly be the revolution that is now ahead of us. McAfee (2020) states that due to recent technological changes, companies need to think in new ways about the balance between minds and machines, between products and platforms, and between core and crowd. At the heart of this emerging new phase is a reimagining of content logistics, which used to be closer to the industry, and is now increasingly autonomous in creating value. The economy of territorial and technological platforms rewrites the rules of the relationship between production and consumption: before, trade was the intermediary between industry and customers. Today, logistics will increasingly play this role. Perhaps the long era of traders, which began at the dawn of the Renaissance, is coming to an end: the future will be in the hands of technological platforms (Spirito, 2022). The value chain is moving away from production and towards control of the information that drives the market: logistics is the consolidator that transforms hierarchies.

With the advent of platforms, globalization takes on completely different dimensions. "In the gig economy, companies eliminate the costly rigidities of the old-fashioned employment contract, calling and paying workers only when they need them for specific tasks, avoiding social security taxes, the obligation to pay the minimum wage, and all the responsibilities that are attached to the normal employment relationship" (Prati, 2021: p.73). While it is true that information is spreading and is within the reach of more and more people, the actual availability of the keys to access organized and structured knowledge remains in the hands of a few. This is also the reason why the economy is becoming even more pyramidal. Already with globalization at the end of the last century, the season of multinational corporations leading global value chains has returned.

IV. CONCLUSION

The pandemic highlights, even more, the need for an open and serious discussion about the economic model practiced on a global scale, an expansionist, dynamic economic model based on the intensive exploitation of the planet's resources, exploitation that produces on the one hand wealth, on the other hand, destroys the basis of human existence as well as the earth's fauna and flora, destruction due to economic activities and less to global warming.

The digitization process continues to innovate all professions, changing the way but also the type of work, as the application of cloud-based solutions has reduced a significant part of the material, financial and human resources. However, if we look at it from another angle, digitization, smart cities, electric cars, autonomous cars and many others are nothing but huge sources for which enormous amounts of energy are needed, not to mention, there is a lot of talk about energy security, safety and control of fossil resources like oil, gas, coal, minerals, rare metals, agricultural land and many others to secure these expansive economic activities based on continuous economic growth. Continued economic growth cannot be achieved by new technologies, it is a chimera in thinking it is possible just as the whole green movement, the spread of "green and clean" energy, electrification of mobility, and the like are just as much "big nonsense" and pure propaganda. The hunger for data, the "infinite" storage of data without control requires a huge consumption of energy and the effects on the environment are not slow to appear, this fact triggering from the authorities and other institutions of environmental protection actions of total control over the individual, in other words, the establishment of the "transparent consumer", these are just some of the causes of the madness in which we participate and try to find answers.

Consumers should be better informed so that they become aware that the uncontrolled use of digital equipment has a snowball effect and that the lives of tomorrow's generations depend to a large extent on their choices, as well as the fact that their actions must be seen in the light of the multiple consequences they entail, including those that have an impact on the environment. I believe that a first step in the formation of an environmentally responsible department would be if each of us would consider a significant reduction in data storage, compression of documents and sent messages, unnecessary circulation and excessive and unnecessary consumption/demand of gadgets. Also, a transition to a clean transport system is vital, and some specialists recommend giving up on electrification and autonomous car projects and pushing hydrogen technology. Solutions exist, and countries like Japan are proving that they can be implemented on a large scale. Indeed, the production of hydrogen requires electricity that can be produced by different methods, from traditional ones to new ones based on green technologies. Progress is being made at the national level, but even since 2009 at the National Research and Development Institute for Cryogenic and Isotope Technologies Ramnicu Valcea (ICSI), the National Centre for Hydrogen and Fuel Cells (CNHPC) was established with the mission to implement, develop and disseminate hydrogen-based energy technologies in Romania, it is still too small compared to the potential.

As far as the implementation of integrated digitization is concerned, I believe that at a governmental and individual level, before making a decision or taking an action, one should first weigh the long-term benefits and disadvantages of what economic development can mean in terms of digitization. Although technological progress and digitization lead to sustainable economic development, seen from another angle it can have many meanings and the path we are currently on is a wrong one, as we exploit the finite resources of the planet, total control over the individual is desired under various "smart" forms of dictatorship, and in the depression of a "comfort" and lifestyle that is imposed on us by someone else we willingly give up the private sphere and become transparent day by day.

End Notes

[1] By 2019, Facebook had acquired nearly seventy companies, with most transactions valued at less than €100 million and not subject to regulatory scrutiny

[2] the particle is considered to be the keystone of the fundamental structure of the Universe

REFERENCES

1. Amazon Sustainability. Retrieved 20 February 2022 from <https://sustainability.aboutamazon.com/environment/carbon-footprint>
2. Chadwick, J. (2020). Number of digital bits will overtake the number of atoms on Earth by 2170. (2020). Mail Online. Retrieved 3 May 2022 from <https://www.dailymail.co.uk/sciencetech/article-8615541/Number-digital-bits-overtake-number-atoms-Earth-2170.html>
3. Frenkel, S., & Kang, C. (2021). An ugly truth: Inside Facebook's battle for domination. Hachette UK.
4. Green Report, 2019. Retrieved 2 February 2022 from <https://green-report.ro/cu-un-singur-e-mail-trimis-mai-putin-pe-zi-poti-reduce-considerabil-amprenta-de-carbon-a-mesageriei-in-lume/>
5. Heiko, A. V. D. G., & Darkow, I. L. (2013). The future role of logistics for global wealth—scenarios and discontinuities until 2025. *Foresight*, 15(5), 405-419. <https://doi.org/10.1108/FS-05-2012-0031>
6. Hogan, M. (2015). Data flows and water woes: The Utah data center. *Big Data & Society*, 2(2), 2053951715592429.
7. Massimo Florio (2021). La privatizzazione della conoscenza, Laterza, Bari.
8. Massimo Russo (2021). Statosauri. Guida alla democrazia nell'era delle piattaforme, Quinto quarto edizioni, Rome, Italy.
9. Orlando, B., Tortora, D., Pezzi, A., & Bitbol-Saba, N. (2022). The disruption of the international supply chain: Firm resilience and knowledge preparedness to tackle the COVID-19 outbreak. *Journal of International Management*, 28(1), 100876.

10. Pitron, G. (2021). *L'enfer numérique: Voyage au bout d'un Like*. Liens Libèrent, France
11. Ränge, T., Mayer-Schonberger, V. (2021). *Fuori i dati! Rompere i monopoli sulle informazioni per rilanciare il progresso*, Egea, Milano, Italy.
12. Sedlmeir, J., Buhl, H. U., Fridgen, G., & Keller, R. (2020). The energy consumption of blockchain technology: Beyond myth. *Business & Information Systems Engineering*, 62(6), 599-608.
13. Spirito, P. (2022). *Digitalization's challenge in logistics of the new capitalism* (doctoral thesis). Universitas Mercatorum, Rome, Italy.
14. Sudan, T., & Taggar, R. (2021). Recovering supply chain disruptions in post-COVID-19 pandemic through transport intelligence and logistics systems: India's experiences and policy options. *Frontiers in Future Transportation*, 2, 660116.
15. Un cercetător de la Institutul de Cercetare al Universității Transilvania a dezvoltat cipuri pentru cel mai mare experiment de fizica particulelor din lume – acceleratorul de la Geneva (March, 2022). Retrieved 3 May 2022 from <https://www.edupedu.ro/un-cercetator-de-la-institutul-de-cercetare-ale-universtatii-transilvania-a-dezvoltat-cipuri-pentru-cel-mai-mare-experiment-de-fizica-particulelor-din-lume-acceleratorul-de-la-geneva-%EF%BF%BC/>