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THE PROBLEM OF HARMONIZING TECHNOLOGICAL PROGRESS WITH HUMAN DEVELOPMENT

In recent decades, technological progress has shown significant acceleration. The processes of digitalisation, the rapid development of artificial intelligence, biotechnological innovations, and the large-scale automation of production are substantially transforming all spheres of social life – from the economy and education to healthcare and social communications. At the same time, such changes form new challenges; therefore, the question arises of how to achieve harmony between the growth of technological capabilities and the provision of human development. At the same time, all these processes are taking place against the background of increasing interdependence of countries; therefore, researchers quite rightly note that "global technology diffusion is accelerating. Countries tend to adopt newer technologies in tighter clusters, indicating that the diffusion landscape is becoming increasingly synchronized" [1].

The processes of digitalization are actively developing, expanding their scope and regional presence. Between 2019 and 2024, there has been steady growth in Internet connectivity levels across all regions and groups of countries (Fig. 1) [2].

On average, the share of Internet users worldwide increased from 53% in 2019 to 68% in 2024, which indicates a gradual, though uneven, expansion of digital inclusion. The lowest rates are found in Africa, with only 38% of users, although the increase from 25% in 2019 is significant in relative terms. High-income countries have the highest level of access – 93%; upper-middle-income countries – 81%; lower-middle-income countries – 54%; while low-income countries lag considerably behind, with only 27% of the population using the Internet.

The digital environment is evolving rapidly, with new services and mobile applications continually emerging. Previously, social networks had to wait several years to reach one million users; now, the situation has changed: digital culture has become an integral part of life, and online

services are rapidly gaining popularity. To some extent, this has been driven by the development of information infrastructure and the consequences of the COVID-19 pandemic, during which people found themselves in social isolation and faced an urgent need for communication. For example, in 2023, Meta launched the new social network Threads, which gained 2 million users within the first two hours, whereas Twitter, for instance, took two years to reach that number.

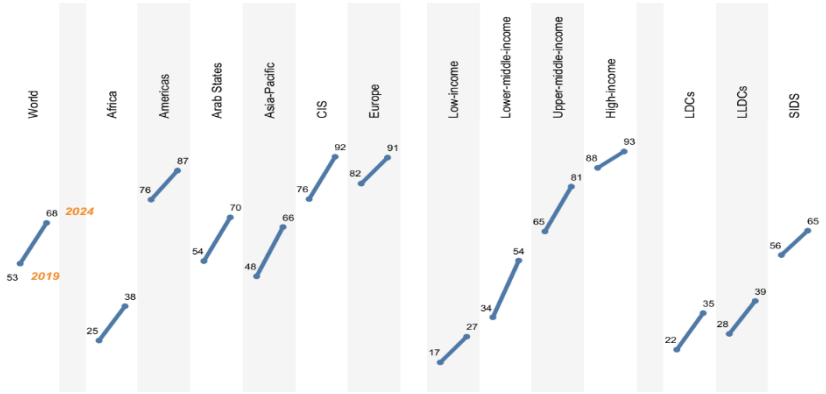

Figure 1. Dynamics of Internet use by world regions in 2019 and 2024

Source: [2]

The growth in the number of Internet users contributes to the dissemination of knowledge, online education, scientific research, and the improvement of digital literacy. Additionally, the Internet facilitates the development of e-commerce, startups, and global markets, which have a positive impact on the economy, particularly in developing countries. It is also crucial that the level of digitalisation in the work environment is increasing, and many employees have transitioned to remote work after the pandemic; therefore, remote employment is gradually evolving from a temporary solution into a stable component of the global labour market. Thus, the share of employees working remotely reached 28% of the total employed population worldwide; in the United States, by 2025, it was expected that 22 million employees would be performing their work remotely [4].

Therefore, we share the optimistic view regarding the positive impact of technological development and digitalisation on human development, which is often emphasised in scientific research. Indeed, thanks to technology, people have gained the opportunity to study online, expand

social interaction and exchange experiences, conduct business, and work. At the state level, online services are being implemented, making public services more accessible to the population. In addition, new financial technologies are being introduced.

At the same time, the processes of digitalisation and the introduction of new technologies are not always in sync with human development. Sometimes this deepens the dependence of less developed countries and is accompanied by the inability of people to adapt quickly to technological changes. First and foremost, digital inequality is becoming increasingly evident, separating those who have access to technology, knowledge, and communication from those who remain outside the digital world. This «digital divide» not only limits economic opportunities but also narrows the space for self-realization. Another challenge of technological progress for human development is related to changes in the labour market, since innovations and automation simplify production processes. Still, many people lose their jobs, which has profound social consequences. The processes of digital transformation have a profound impact on human development, particularly in terms of employment dynamics. The Digital Dividends Report emphasises that: “Digital technologies are changing the world of work, but labour markets have become more polarised and inequality is rising – particularly in the wealthier countries, but increasingly in developing countries. And while the number of democracies is growing, the share of free and fair elections is falling” [5]. Another issue involves the ethical dilemmas that arise from the development of artificial intelligence and biotechnology. Humanity is increasingly faced with the question of whether a person retains the right to privacy in a world where algorithms make decisions.

Thus, technological progress is an essential component of societal development. As researchers emphasize, “scientific, technical, and social progress are interdependent … their development is neither linear nor parallel” [6]. The central contradiction lies in the fact that each subsequent generation of technologies changes the world faster than the previous one, while human development proceeds gradually. Therefore, the modern paradigm of global economic progress should support the harmonisation of technological progress and human development, focusing not only on quantitative indicators of innovative solutions or inventions, but also on their capacity to enhance the level of human development.

References:

1. Tankwa B., Vasquez Bassat L., Barbeook-Johnson P., Farmer J.D. Technological progress at the national level: Increasing diffusion speeds with ever-changing leaders and followers. INET Oxford Working Paper Series. 2025.
2. Internet use continues to grow, but universality remains elusive, especially in low-income regions. ITU. Available at: https://www.itu.int/itu-d/reports/statistics/2024/11/10/ff24-internet-use/
3. Threads hype: Meta launches the fastest-growing app in history. Available at: https://www.adjust.com/blog/meta-threads-app
4. Naveen Kumar. 25+ Remote Work Statistics (2025): Latest Data. 2025. 6 June. Available at: https://www.demandsage.com/remote-work-statistics/
5. World Development Report 2016: Digital Dividends. Available at: https://www.worldbank.org/en/publication/wdr2016
6. Plaksina O. (2024) Vzaiemodiia naukovo-tekhnichnoho ta sotsialnoho prohresu i fenomen staloho rozvytku suspilstva [The interaction of scientific, technological and social progress and the phenomenon of sustainable development of society*]. Naukovo-teoretychnyi almanakh Hrani*, no. 27 (1), pp. 52–63.