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DIGITAL SERVICE ECONOMY: CURRENT TRENDS AND LABOUR MARKET EFFECTS

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Abstract

The development of the information society fosters the evolution of an information-driven economic system, the digital economy, which is characterised by active use of information and communication technology and the Internet. Digitalisation brings cardinal change to business landscapes, business processes (both core and non-core), and requirements to and patterns of works or services and exerts significant influence on labour market transformations. The paper outlines scholarly interpretations of the notion of the digital economy and analyses the theory of the post-industrial society in the context of the development of the digital service economy. An expert survey is conducted to identify major structural shifts in the global labour market and map the trends and outlook of digital employment in the digital service economy.

Keywords

Information and communication technology – Digital economy – Service economy

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Introduction

The transformation of social and labour relations and the labour market can be analysed in terms of its major processes and directions¹. Digitalisation comprises two major processes, which may be linked to its narrower and broader sense definitions. In the narrower sense, digitalisation is understood as the multi-level incorporation of information and digital platforms and operators across the economy, accompanied by the transformation of information and communication technology (ICT) as a widely-adopted tool and characterised by the active implementation of digital technology for data storage, processing, and transfer in all areas of human activities, which corresponds to the first and second levels of the digital economy². In the broader sense, the digitalisation of the economy is associated with adjustments of the nature of productive or economic relations and changes in the productive forces and factors of production caused by technological disruption, robotisation, and cybophysical structures³.

Where the description of the notion of the digital economy is concerned, various interpretations can be found today depending on individual scholarly attitudes, research school affiliations, and methods. The main conceptual approaches to the digital economy are laid out in Table 1.

Author	Definition of the digital economy
Tapscott, D. ⁴	an innovation-driven dynamic economy powered by active adoption of innovation and ICT across the range of economic activities and social life, contributing to enhanced efficiency and competitiveness of individual companies, the economy, and living standards
Haltiwanger, J., Jarmin, R.S. ⁵	economic activity that results from billions of everyday online connections among people, businesses, devices, data, and processes
Richter, K.K., Pakhomova, N.V. ⁶	a yet incomplete economy-wide transformation powered by the transition of all information resources and knowledge to the computer platform
Panshin, B.V. ⁷	an economy built around the production of electronic goods and services by high-tech businesses and distribution of these products by means of electronic commerce

Table 1
Scholarly interpretations of the essence of the digital economy

¹ I. Y. Ilina, E. E. Nakhmatova, N. V. Buley, V. A. Matanis, T. N. Vasilyuk, "Women in the professional labor market of Russian University Teachers", *Revista Inclusiones* Vol: 7 num Especial (2020): 507-519.

² M. Antikainen; T. Uusitalo y P. Kivikytö-Reponen, "Digitalisation as an enabler of circular economy", *Procedia CIRP* Vol: 73 (2018): 45-49.

³ N. L. Udaltsova, "Tsifrovizatsiya ekonomicheskikh protsessov v kontekste promyshlennoi revolyutsii 4.0", *Journal of Creative Economy* Vol: 13 num 1 (2019): 49-61.

⁴ D. Tapscott, *The Digital Economy: Promise and Peril in the Age of Networked Intelligence* (New York: McGraw-Hill, 1995).

⁵ J. Haltiwanger y R. S. Jarmin, *Measuring the digital economy* (Cambridge, MA: MIT Press, 2000).

⁶ K. K. Richter, N. V. Pakhomova, "Tsifrovaya ekonomika kak innovatsiya XXI veka: vyzovy i shansy dlya ustoychivogo razvitiya", *Problemy sovremennoi ekonomiki* num 2 (2018): 22–23.

⁷ B. V. Panshin, "Tsifrovaya ekonomika: osobennosti i tendentsii", *Nauka i innovatsii* Vol: 3 num 157 (2016): 17–20.

Summarising the above, in our view, the digital economy constitutes a model of interaction between the actors of economic processes in the information society built around the use of ICT and electronic communication channels to maintain electronic document flow.

According to researchers⁸, the following characteristics are typical for the digital economy: wide adoption of ICT and the Internet in economic processes and their increasing role in social life; maximum automation of business processes by entrepreneurial actors; electronic document flow; technology competence developed by the actors of digital economic relations; GDP growth driven by the digitalisation of the economy and growing share of the digital economy in the GDP; growing share of ICT and information products and services in the GDP; digital platforms underlying business model development; emergence of a single information space around the participants of digital economic relations – businesses, state, and individuals; access to global information resources and covering the requirements in information products and services; global digital market development; information-driven economic integration of countries and peoples.

Discussions of the development of the digital service economy should take note of research by the principal scholars of the post-industrial society. E. g., A. Toffler describes three types of societies, based on the concept of "waves." Each wave pushes the older societies and cultures aside. The First Wave is the traditional agricultural society. The Second Wave is dominated by industrial production. The Third Wave is the post-industrial society, characterised by the dominant share of the service sector in the national product⁹.

An important contribution to economic theory is the concept of the post-industrial society developed by D. Bell and dividing social development into three stages: pre-industrialism, industrialism, and post-industrialism. Methodologically, in his social-historical studies, the researcher proposes a conceptual framework equating a post-industrial economy to a service-based economy¹⁰.

The same approach is taken by another researcher of the new economy, M. Castells, arguing that economic activities evolve from the production of goods to the provision of services. The demise of agricultural employment would be followed by the irreversible decline of manufacturing jobs, to the benefit of service jobs, which would ultimately form the overwhelming proportion of employment. The more advanced an economy, the more its employment and production would be focused on services. Consequently, the digital service economy has conclusively gained traction in the modern world. The researcher points out that the appropriate distinction (between the economic structures of the first and second halves of the 20th century) is not between an industrial and a post-industrial economy, but between two forms of knowledge-based industrial, agricultural, and services production¹¹.

⁸ R. Kling y R. Lamb, *IT and organizational change in digital economies* (Cambridge, MA: MIT Press, 2000); R. Bukht y R. Heeks, "Defining, Conceptualising and Measuring the Digital Economy", *International Organisations Research Journal* Vol: 13 num 2 (2018): 143–172 y A. S. Sagynbekova, "Tsifrovaya ekonomika: ponyatie, perspektivy, tendentsii razvitiya v Rossii", *Teoriya. Praktika. Innovatsii* Vol: 4 num 28 (2018): 255-267.

⁹ A. Toffler, *Tretya volna* (Moscow: AST, 2004).

¹⁰ D. Bell, *Gryadushchee postindustrialnoe obshchestvo. Opyt sotsialnogo prognozirovaniya* (Moscow: Academia, 2004).

¹¹ M. Castells, *Informatsionnaya epokha: ekonomika, obshchestvo i kultura* (Moscow: State University – Higher School of Economics, 2000).

According to T. Stonier, the shift toward the service sector in post-industrial economies has centred on knowledge-related services, that is, business-related and professional services. In theory, it is important to contrast this post-industrial service sector with the pre-industrial one, which consisted principally of household servants and certain categories of unskilled retailing staff¹².

According to D. Rodrick¹³, as one can see from the current trends of the digital economy, the transition to the post-industrial phase fosters the development of the service sector, which becomes a major source of value added. That said, the observed structural change in the economy is not limited to solely the dominance of the non-material (tertiary) sector, but also comprises certain internal shifts in the sphere.

Thus, for most adepts of the post-industrial theory, the main social trend in the transition to the digital economy is the rearrangement of production from material goods to service provision. That said, these objective shifts also show in the employment structure, posing, consequently, new requirements to the workforce and significantly affecting the system of social and labour relations, the labour market itself, and labour processes.

According to C. Degryse¹⁴, the principal effect of digitalisation in the economy is caused in the labour market structure by the development of information technology. Particularly, digitalisation will reconfigure labour requirements in terms of both quantity and quality. Indeed, low-skill activities will be largely automated, with limited to zero human engagement. It is not an unseen phenomenon: industrialisation primarily resulted in the automation of routine and repetitive tasks. What is different at the current stage is that less frequent and more complicated operations are also automated. This will result in lower demand for low-skill and especially mid-skill workers that currently perform such tasks. On the other hand, higher demands are put forth for more creative and hard skills to adapt to new types of work created by digitalisation.

Forecasts are diverging where the scenarios of market development driven by digitalisation are concerned¹⁵. According to estimates by McKinsey Global Institute, "400 million to 800 million jobs may be displaced by automation, which would create demand for millions of jobs by 2030 globally", i. e., 15 to 30% of the global workforce may be displaced depending on the scenario implying either a moderate or fast pace of automation in societies and economies; this means "75 million to 375 million workers globally <...> will likely need to transition to new occupational categories and learn new skills" (3 to 14% of the global workforce). Simultaneously, the authors of the study propose their vision of new job growth. Specifically, they estimate that 300 million to 365 million new jobs could be created in areas such as consumer durables, financial and telecommunication services, housing, health care,

¹² T. Stonier, *Informatsionnoe bogatstvo: profil postindustrialnoi ekonomiki* (Moscow: Progress, 1986).

¹³ D. Rodrik, "Premature deindustrialization", *Journal of Economic Growth* Vol: 21 num 1 (2016): 1-33.

¹⁴ C. Degryse, *Digitalisation of the economy and its impact on labour markets* (Brussels: ETUI, 2016).

¹⁵ O. S. Reznikova; A. K. Ganieva; V. V. Verna; J. N. Korolenko y A. V. Shelygov, "Determinants of the Russian labor market model", *Revista Inclusiones* Vol: 7 num Especial (2020): 260-267; V. Y. Morozov, N. V. Khavanova y I. A. Rozhdestvenskaya, "Labor potential of formation and development of the services sector in the regions of the Russian Federation", *Revista Inclusiones* Vol: 7 num 2 (2020): 414-422 y M. N. Dudin; V. N. Alferov; D. Y. Taburov y G. N. Nikolaeva, "Labor Market and Transformation of Labor Relations in The Light of The Marxist, Libertarian and Neoinstitutional Paradigm", *Ad Alta – Journal of Interdisciplinary Research* Vol: 9 num 2 (2019): 31-38.

and education as a result of rising incomes in the expanding consuming classes in emerging economies. In particular, healthcare and senior care jobs could grow by up to 130 million by 2030; the IT sector could add 20 million to 50 million jobs; 80 million to 200 million jobs could be created in the construction sector, given the growing demand for architects, engineers, carpenters, and other construction workers and machinery operators; up to 10 million additional jobs globally will be associated with energy efficiency; 50 million to 90 million jobs could be created in childcare, cooking, cleaning, and gardening. The researchers estimate that 8-9% of the workforce demand will be in new, currently non-existent occupations; 5% of jobs will be lost as a result their complete automation; in about 60% of occupations, at least one-third of the constituent activities could be automated, implying, accordingly, workforce reductions¹⁶.

The findings laid out in¹⁷ indicate that digitalisation brings about new job creation. E. g., each high-tech job generates 4.9 additional jobs in other sectors in the United States. In China, the e-commerce sector provides 10 million jobs in online retail and related services, equivalent to 1.3% of China's employment. Digitalisation creates new opportunities for entrepreneurship and self-employment.

The objective of this research is to analyse the effects of the digital service economy for the labour market.

Research hypothesis: the development of the digital service economy causes a significant change to the global labour market.

The findings suggest that the research objective is met.

Methods

The research integrated a complex of theoretical and empirical methods. The theoretical approach comprised reviews of monographs, papers, and specialist sources.

As to the empirical methods, an online expert survey was conducted in the form of a non-formalised interview set to establish major structural shifts in the global labour market in the digital service economy.

Fifty experts took part in the survey, including officers of employment centres and IT companies.

Results

According to the experts, the modern global labour market transforms as a result of the active adoption of digital technologies in the workplace, development of digital infrastructure and transition of its subjects to virtual space. All that contributes to structural shifts in the global labour market (Table 2).

¹⁶ J. Manyika; S. Lund; M. Chui; J. Bughin; J. Woetzel; P. Batra; R. Ko y S. Sanghvi. Jobs lost, jobs gained: Workforce transitions in a time of automation (McKinsey Global Institute, 2017).

¹⁷ S. Baller; S. Dutta y B. Lanvin, The Global Information Technology Report 2016. Innovating in the Digital Economy (Geneva: World Economic Forum, 2016).

Item	Structural change	Description	%*
1	Development and steady growth of the digital segment of the labour market	Transfer of jobs in the information space; non-standard agreements for the performance of digital works; flexible or unstructured hours or trust-based working schedules; work process digitalisation.	90%
2	Increasing labour supply in the digital segment of the global labour market	More workers are joining in across the globe. Workers from emerging economies compete with those from the developed world and, besides, are willing to settle for lower pay rates. One example is the IT industry, the domain of digital technology development and the most advanced sector in terms of integration in the global digital space.	85%
3	Widespread virtual migration, which means the performance of tasks by workers in one country for employers in another country without any physical shift in the place of residence or employment	Performance of tasks by workers in one country for employers in another country without any physical shift in the place of residence or employment. E. g., according to ¹⁸ , the market of online assignments for freelancers from Eastern Europe is divided between employers from the USA (54%), the UK (10%), Australia (6%), and Canada (5%). Moreover, customers from developed countries are looking to engage workers from developing countries to bring down costs for their product (service).	80%
4	Digitalisation of social and labour relations between labour market participants	The employer-employee negotiations take place in the digital space powered by digital technology. In many cases, in such relations, the state as the regulator is omitted. Some of the principal characteristics include insufficient regulatory performance in the global labour market; wide geography of global market players subject to diverging national norms governing social and labour relations; major numbers of contractors from developing economies with "shadow" sectors.	80%
5	Transformation of employment structure	Steady employment growth is observed in the service sector. This brings about wider use of non-standard forms of employment, as the service sector, in contrast to the more conventional industrial sector, is more oriented at flexible hours, which provides more opportunities for self-actualisation but also creates higher demands to the workers' competence and educational profiles.	75%
6	Emergence of NEET among youth aged 15-29 (NEET stands for "Not in Education, Employment, or Training")	This social category is not included in the unemployed nor the employed counts. In some countries, the share of youth who are in neither education nor employment exceeds 20%.	65%
7	Spreading of technological unemployment	The digitalisation of the economy comes with technological unemployment, meaning jobs are lost as they are replaced by digital technology. Moreover, workers' professional skills, in most cases basic digital skills, become redundant in the market. One example is the widespread adoption of banking terminals, ticket-selling terminals, online hotel booking or car hire platforms, online translation tools, professional information retrieval systems.	65%

Note: based on the expert survey; * indicates the percentage of expert references

Table 2

Structural shifts in the global labour market in the digital service economy

¹⁸ A. Adams. Technology and the labour market: the assessment. Oxford Review of Economic Policy Vol: 34 num 3 (2018): 349–361.

Discussion

According to 75% of the respondents, the transition to the digital society has brought down the efficiency of archaic forms of production and labour that fail to match the requirements of new techniques and technology. The priority focus has been gradually moving to creative work requiring not only professional knowledge and skills, but also consistent upskilling and refresher training.

According to one of the respondents, "high-tech industries in developed economies need proactive and competent talent, while the domain of closely regulated and standardised labour becomes significantly constrained, employment in services becomes more widespread, and a transition is underway toward the service employment model prevalent in both low-labour-intensity service sectors relying on professional competence (transport, financial services, telecommunications) and highly-intellectual service operations requiring service skills (business and personal services)".

The experts (55% of the respondents) cited the growing urgency of transition from the recreational to the information-driven employment model (considering the structural transformations in the labour market), given the gradual contraction of the demographic basis of labour market operation; they also pointed at technological shifts driven by the globalisation of the world's economic and information space; non-standard forms of employment gaining popularity; rising service sector employment. E. g., according to¹⁹, industry accounted for approximately 16-18% of the total employment in EU countries (EU27) and Norway, while the share of employment in the service sector (public and private) exceeded 70% of the total (86.0% in Luxembourg). This indicates the buildup of steady demand for highly-educated talent with information processing competences and abilities to acquire new knowledge and retrain quickly in developed economies.

The experts (50% of the respondents) point out that the evolution of the essence of labour in the innovation-driven environment has fostered the transformation toward greater reliance of the employment model on non-standard forms of arrangements, greater labour flexibility and mobility and wider use of remote work.

According to the European skills forecast (by sectors, occupations, and qualifications) developed by the CEDEFOP²⁰, the biggest demand in the labour markets is expected for mid-skill talent. This specifically applies to cross-sectoral occupations involved in the development of information communications, services, and healthcare.

Simultaneously, the growing trends toward labour intellectualisation create an environment where the labour market gradually offloads low-skill workers with low income and socially inert. The development of mechanisation and automation of production brings down the share of labour-intensive and hazardous jobs in developed economies. This occurs through the early retirement of pre-retirement-age workers in the most basic occupations and transition of workers to jobs requiring higher-skill operations. This results in gradually rising minimum requirements to the workforce approaching the mid-skill levels.

¹⁹ Report of the HLEG on the Impact of the Digital Transformation on EU Labour Markets. Luxembourg: Publications Office of the European Union. 2019.

²⁰ European Economic and Social Committee. Impact of digitalisation and the on-demand economy on labour markets and the consequences for employment and industrial relations. Retrieved from: <https://www.eesc.europa.eu/resources/docs/qe-02-17-763-en-n.pdf>

These findings converge with earlier research on the specifics of the labour market, though with some remarks²¹. In particular, the experts (65% of the respondents) note that the digitalisation of the economy has recently contributed to the deep integration of national economies and the development of a global digital economic space. Subsequently, conditions are created for the development of a new type of employment, digital employment. In it, digital technology is used across the stages of work processes and shapes social and labour relations between labour market participants.

According to one of the experts surveyed, "digital employment is a flexible form with all requisite characteristics of the type, such as flexible hours; non-standard workplace, mostly in a remote location; lack of long-term labour agreements; low profile of social protection for the employees. Meanwhile, such form provides a wide potential for self-actualisation as the worker is free to decide what kind of work to perform, when and how often to take assignments. Definitely, the higher the employee's professional level and unique competences, the better the standing in the global labour market".

Another advantage of digital employment, according to the experts (55%), is global mobility providing more opportunities both for the employer and the worker. According to one of the respondents, "digital technologies make the labour market truly global. Any worker with Internet access is an actor in the global digital labour market. A digital worker may find a job in another city or country without the need to move. And more, such workers can get decent pay levels".

Digital employment occurs today primarily in two forms, online freelance and online outsourcing. Online freelance relies on individual efforts in finding work assignments. In such a case, all risks of social and labour relations are borne by the freelancer. Job search is facilitated by specialised online platforms. Social protection of such workers is provided by the openness of information on the employer. Online outsourcing involves the engagement of an intermediary in social and labour relations, which intermediary assumes the risks and acts as not only an intermediary, but a guarantor, too²².

A report from the World Economic Forum in Davos specifies the top 10 skills sought for by employers, including: complex problem solving; critical thinking; creativity; people management; coordinating with others; emotional intelligence; judgement and decision making; service orientation; negotiation; cognitive flexibility²³. Notably, the above skills belong to two spheres, intellectual output and flexibility and people management.

²¹ O. S. Reznikova; J. N. Korolenko; G. Y. Enenko; D. V. Tkachenko y V. M. Repnikova, "Improvement of Approaches to Labor Regulation in Service Sector Enterprises", *Journal of Environmental Management and Tourism* Vol: 10 num 4 (2019): 886-891; N. A. Baieva; D. O. Burkin; T. F. Vysheslavova y S. A. Lukinova; "Current Problems Faced by Russia in the State-Legal Policy in Social Partnership in the Labor Field", *Journal of Advanced Research in Law and Economics* Vol: 9 num 5 (2018): 1564-1570 y V. V. Plenkina y I. V. Osinovskaya, "Improving the system of labor incentives and stimulation in oil companies", *Entrepreneurship and Sustainability Issues* Vol: 6 num 2 (2018): 912-926.

²² P. Kuhn, H. Mansour. Is Internet Job Search Still Ineffective? *The Economic Journal* Vol: 124 num 581 (2014): 1213-1233.

²³ The 10 skills you need to thrive in the Fourth Industrial Revolution. The World Economic Forum. Retrieved from: <https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution/>

A specific form of digital employment is innovative self-employment occurring as IT startup development. This is the most advanced type of employment as it provides the maximum potential of self-actualisation for an individual. Such employment brings about innovation development fostering national economic growth, while the objective in such case is to launch an innovative product or service in the market. Nearly all of the above work skills occur in innovative digital employment. It is worth noting that youth is especially active in launching and developing innovative startups transforming both business processes and daily life.

Digital employment will gain specific relevance in the future. According to WEF forecasts, the Fourth Industrial Revolution (IT revolution) will bring advanced robotics and autonomous transport, artificial intelligence and machine learning, advanced materials, biotechnology, and genomics²⁴. All these areas require not just high-skill talent, but talent capable of developing new products and advancing these economic sectors. As long as such advances are driven by IT, they will specifically foster digital employment.

Based on the above, experts find it relevant to categorise digital employment by the levels of complexity as basic and smart employment. Basic digital employment involves performing any types of work powered by digital technology according to set procedures. It includes working in call or CATI centres, translations, blogging, website administration.

The next level of employment might be labelled as "smart", both in the sense borne by the word itself and, on the other hand, based on the abbreviation SMART, which is widely used in project management²⁵. The five criteria, namely, being Specific, Measurable, Attainable, Realistic, and Time-Bound, serve as gauges of efficiency and, particularly, human labour productivity. As to intellectual capabilities, they are cited as the highest priority according to the findings of the Future of Jobs report. Thus, smart employment describes a worker's intellectual engagement to solve the set tasks efficiently. Digital smart employment involves using digital technology to create a new product or enhance an existing one. It may be concerned with a startup, software, or new service development and so on.

The experts believe that digital employment, which is characterised by mobility, is a viable tool to combat global unemployment. The following considerations may support this point:

1. Digital employment is not constrained within territorial boundaries and thus may serve to smooth-out regional disproportions and maintain a balance in the national markets and the global labour market.

2. The present trends toward squeezing out office jobs may pose a serious threat for developed economies. In such circumstances, the main priority for national and regional authorities should be prompt response and setting up the retraining process for the redundant workforce. This would foster the development of the digital educational segment to facilitate the upskilling and retraining of workers. The digital education segment should be addressed from two angles. The first point is that it is going to serve the buildup of talent of

²⁴ The 10 skills you need to thrive in the Fourth Industrial Revolution. The World Economic Forum. Retrieved from: <https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution/>

²⁵ M. Neubert, "The impact of digitalization on the speed of internationalization of lean global startups", *Technology Innovation Management Review* Vol: 8 num 5 (2018): 44-54.

the new formation. The second point is that it will itself generate and consolidate new digital jobs.

3. Basic digital employment can be used as a tool to overcome poverty and mitigate unemployment issues in the least developed countries. Workplace equipment for basic digital employment comes at little cost, as what needs to be provided is only a PC with relevant software, the Internet connection, and a telephone. Another factor is that in many of the least developed countries, a European language is spoken as an official language (English, French, and Portuguese). India may provide a relevant example in setting conditions for digital employment.

4. Basic and smart digital employment may contribute to narrowing the NEET category. Digital employment recreating, in a way, some digital gaming patterns and virtual social media interactions would be potentially appealing for youth. Another point may relate to the fact that youth makes the social group that has grown up with IT as a tool for interacting, entertainment, and self-actualisation.

5. With its innovative aspect, smart digital employment is a competitive advantage and a factor of economic growth and prosperity both nationally and on a global scale.

Conclusion

Digital technology is steadily advancing, being connected in global networks, integrated into various areas of life, and transforming the global economy. Thus, the issue of development and advance of the digital economy and digitalisation is high on the research and practical agenda, considering that it brings about digital transformations in all spheres of life with meaningful economic and social effects.

The need for a developmental shift in the labour market more toward the digital service employment model reflects primarily technological change caused by globalisation of the world's economic and information space and expansion of non-standard employment forms. Intensifying competition in the labour market requires qualitative enhancements of human capital to ensure workforce competitiveness and proper alignment with the conditions of the digital economy.

The findings confirm the research hypothesis that the development of the digital service economy causes a significant change to the global labour market.

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