Labor productivity: analysis of the current level and identification of opportunities for its growth

Productividad laboral: análisis del nivel actual e identificación de oportunidades para su crecimiento

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Abstract
Increasing labor productivity is an essential condition for increasing the level of socio-economic development. Special attention is paid to the innovation component of growth and the transition to a digital economy. Understanding the importance of regulating the level of labor productivity, government agencies are developing and implementing programs to stimulate its growth. The article analyzes the current level of labor productivity and analyzes the methods used for its assessment in international comparison.
key words: labor productivity, innovations, labor resources

Resumen
Aumentar la productividad laboral es una condición esencial para aumentar el nivel de desarrollo socioeconómico. Se presta especial atención al componente de innovación del crecimiento y la transición a una economía digital. Al comprender la importancia de regular el nivel de productividad laboral, las agencias gubernamentales están desarrollando e implementando programas para estimular su crecimiento. El artículo analiza el nivel actual de productividad laboral y analiza los métodos utilizados para su evaluación y comparación en el contexto internacional.
Palabras clave: Productividad laboral, innovaciones, recursos laborales.

1. Introduction

Labor productivity as a growth factor is not new not only in the industrial sector of the economy, but also in the service delivery sector. In earlier studies, much attention was paid to scientific and technological progress, ways of effective production modernization, rationing labor and organizing work space. Currently, the term progress is not so popular, it was replaced by "innovations", particularly technological, organizational, personnel, and others. One way or another, all of the above is often aimed at a more efficient use of resources, an increase in output while reducing the costs of its production (service delivery). This, ultimately, makes labor productivity. It should be noted that researchers possess two main approaches to understanding the nature of productivity and its place in the system of productivity indicators. Some authors most frequently associate labor productivity with

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production and labor intensity, while others mostly associate the concept of labor productivity with efficiency. The concept of total factory productivity, which assesses the cumulative contribution of resources and economic growth under the influence of scientific and technological progress, is also widespread.

Such scientists, as V. Petty, A. Smith, J. Locke, D. Riccardo, G. Emerson, K. Marx, M. Porter, F. Taylor, Fayolle and many others, were seriously engaged in the problem of labor productivity.

Labor productivity is one of the main indicators of the effectiveness of socio-economic development. It can be characterized by content and volume. In terms of volume, labor productivity indicators can be used for the whole country, for a certain region, for a particular enterprise or workplace. The content of labor productivity is expressed by specific indicators: gross output per employee, the volume of products produced per day, and even the number of details per hour worked.

Throughout the twentieth century, the attention of labor productivity management was focused on increasing physical volume through the effective use and modernization of equipment. Today, the focus is shifting towards managing the performance of intellectual labor, in particular, by monitoring the performance of knowledge workers and developing a system for their motivation. The factors, that are paid special attention to, differ, as well. There are many classifications of productivity growth factors, depending on the criteria they are based on.

The purpose of the article is to study the current level of labor productivity and search for opportunities to stimulate its growth.

2. Methodology

At the first stage of the study, a comparative analysis of the labor productivity indicators of some countries was carried out. It is noted that currently several methodologies are used for calculating this indicator. So, the data given in scientific sources devoted to the regulation of labor productivity may differ. The article presents data on the OECD method.

At the second stage, the relationship between the labor productivity index and the global competitiveness index is given. These results were obtained by the authors using correlation and regression analysis.

The analysis made it possible to conclude that it is necessary to regulate labor productivity at the state level. At the third stage, the Russian experience in the regulation of labor productivity was considered as an example. We presented targets and evaluated the possibility of achieving them.

At the fourth stage, the systems for stimulating the growth of labor productivity, which have proved their effectiveness, were considered.

The final stage of the study is devoted to the peculiarities of stimulating the labor productivity of workers in the intellectual sphere, since this issue is becoming increasingly important with the development of the digital economy. The analysis carried out in the article made it possible to conclude that there are significant reserves for the growth of labor productivity of workers in the intellectual sphere. The study uses theoretical and empirical methods that contribute to the solution of the problem under consideration.

The study is based on the analysis of data provided in periodicals (magazines "Expert", "Vedomosti", "RBC"), targeted development programs and official websites (Passport of the Priority Program "Labor Productivity and Employment Support", Federal Center of Competences), as well as on large personnel portals (Headhunters).

3. Results

The emergence of the digital economy does not only change the types of professional activity, but also the very nature of the working processes, methods of communication, monitoring, and control. Nevertheless, like 10 years ago, the issues of increasing labor productivity both at a specific workplace and in the whole country are relevant.

According to the OECD study, Luxembourg became the leader in terms of labor productivity in 2017 with an indicator of 107.5 thousand dollars / person. In the G7 countries, labor productivity in 2017 amounted to $ 51.2 thousand / person, in the USA - $ 59.8 thousand / person, while in Russia, for example, this figure was $ 25.7 thousand. / person.

Figure 1
Labor productivity in 2017, dollars / hour
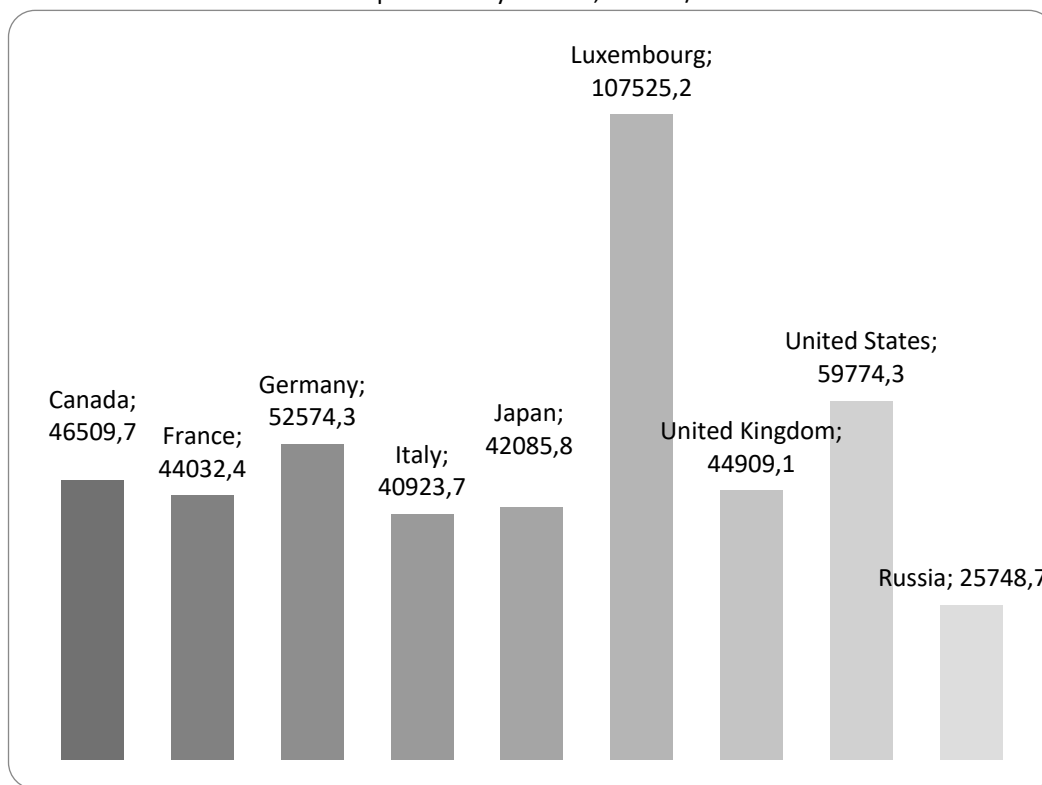
Source: OECD, Level of GDP per capita and productivity

It should be noted that international comparisons data may differ significantly, since different approaches are used to determine labor productivity indicators. The following calculation methods are frequently used in international comparisons:

1. The OECD (Organization for Economic Cooperation and Development) methodology, in which labor productivity is calculated by dividing GDP by an hour of working time;

2. The ILO (International Labor Organization) methodology, which provides the calculation of labor productivity by dividing GDP at constant prices by the total number of employees;

3. The method of Rosstat, which includes an index of labor productivity, defined as the quotient from dividing the indices of actual GDP and changes in total labor costs.

Labor productivity is closely interrelated with the main socio-economic indicators, including the index of global competitiveness (Fig. 2).

The role of labor productivity management is hard to overestimate, that is why every state controls the level of this indicator, and develops programs to stimulate productivity growth. For example, in Russia, as the main tasks set forth in the May decrees of the President, the growth of labor productivity in medium and large enterprises of basic non-oil sectors of the economy is declared to be not less than 5% per year by 2024 [16].

However, according to forecasts of the Ministry of Economic Development (Fig. 3), by 2023 labor productivity growth rates are expected to be 3.1%. If this trend continues and there no incentive measures or development programs appear these rates will not be enough to achieve the benchmark set by the state authorities of Russia.
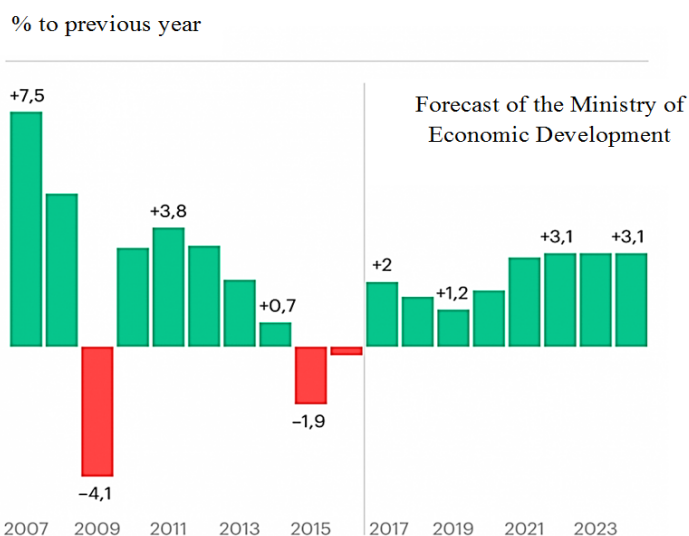
Figure 2
The relationship between labor productivity and the global competitiveness index
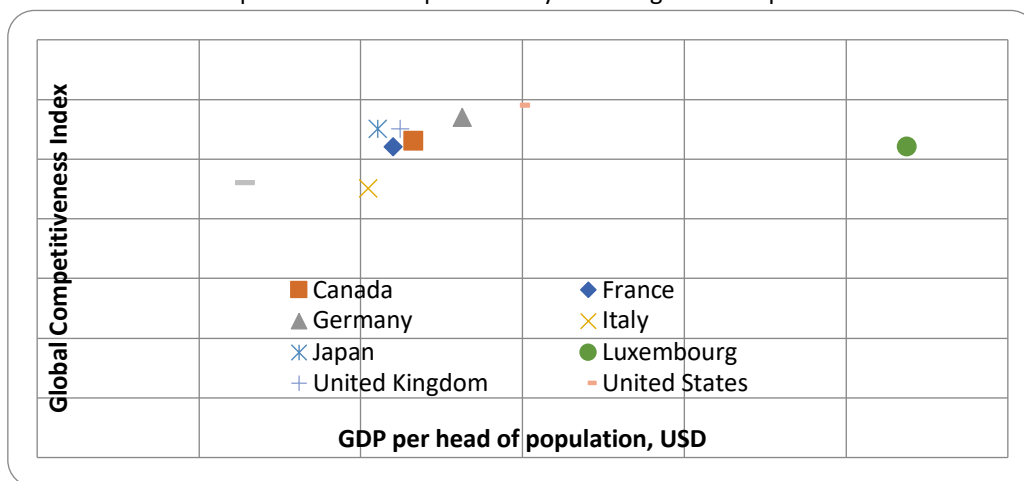
Compiled by the authors on the basis of the data: OECD, Level
of GDP per capita and productivity, Global Competitiveness Index 2017-2018
(https://www.weforum.org)

Figure 3
Dynamics of labor productivity growth rates in Russia

Source: RBC data, 2018 [3].

To facilitate the growth of labor productivity in the economy as a whole, in 2017, the Presidium of the Presidential Council of Strategic Development and Priority Projects developed and approved the Passport of the Priority Program "Labor Productivity and Employment Support", providing the development of regional labor productivity management programs aimed at increasing its level [12]. The study of the Analytical Center under the Government of the Russian Federation notes that the current strategic programs use different targets to measure the level of labor productivity, which makes it impossible to compare data not only in the sectoral context, but even in the dynamic. To manage the level of labor productivity at the regional and state level effectively, it is necessary to create a unified system of indicators that allows to evaluate the achievement of benchmarks and to ensure the comparability of data for qualitative analysis and development programs based on its development programs.

In 2018, also the Federal Center of Competence [17] was created and launched. It is a platform that provides an opportunity for constituent entities for the diagnostic of the main indicators of labor productivity and systematizing the best practices in labor productivity management.

Turning to the description of modern systems used for the growth of labor productivity and efficiency in general industrial enterprises, it is worth noting that there is productivity of embodied labor (machines, equipment used in production) and productivity of living labor (direct labor of workers). Management systems differ according to an aspect which is focused on.

The following systems are the most common.

6 Sigma (Six sigma) was developed in the 1980s by Motorola and is aimed at improving business processes by reducing various types of defects and losses. To achieve this goal, the DMAIC approach is used (define, measure, analyze, improve, control).

Lean Manufacturing (Lin, Lean, Lean Manufacturing, TPS) originated in 1920 by Henry Ford and was successfully developed in the 1950s by Tayot Company. The system is aimed at increasing efficiency by reducing the seven main types of losses (Excess movement, Excessive transportation, Excessive processing, Waiting time, Excessive production, Excessive stocks, Defects and recycling).

SMED (Single Minute Exchange of Dies, "quick mold change") was developed in the 1950s and 60s. This is a system aimed at quick readjustment, start-up, setting up equipment, including transferring internal operations to external ones.

TPS (Toyota Production System, (1867-1930)) - a system based on the concepts of "Jidoka and Andon" and "Just in Time" (Just-In-Time or JIT), as well as using the Kanban production management method (Kanban) and systems of constant improvements (kaizen or kaizen).

Kaizen was designed by Masaaki Imaia in 1986. It is a system of continuous improvement, which formed the basis of the creation and development of the concept of Total Quality Management

Kanban (kanban) is a system for optimizing the planning of operations. This system involves the use of special information "cards". It is a component of the JIT production system.

The Gastev Cup is a system of the scientific organization of labor, in which the concept of organizational culture was first defined and the foundations of social engineering were laid. This system was developed by A. K. Gastev and was widely used in Soviet times. It is the basis of the concepts of "Just in Time" and "Lean Production"

The 5S system is a work space organization system that includes 5 steps: seiri (sorting, deleting unnecessary), seiton (determining its place for each thing), seiso (keeping clean), seiketsu (process standardization), shitsuke (improving order and discipline).

These systems can significantly increase the growth rate of labor productivity. The experience of their implementation in large industrial enterprises, reviewed by A. Matveyeva [8], shows that the restructuring of the production system takes about three years.
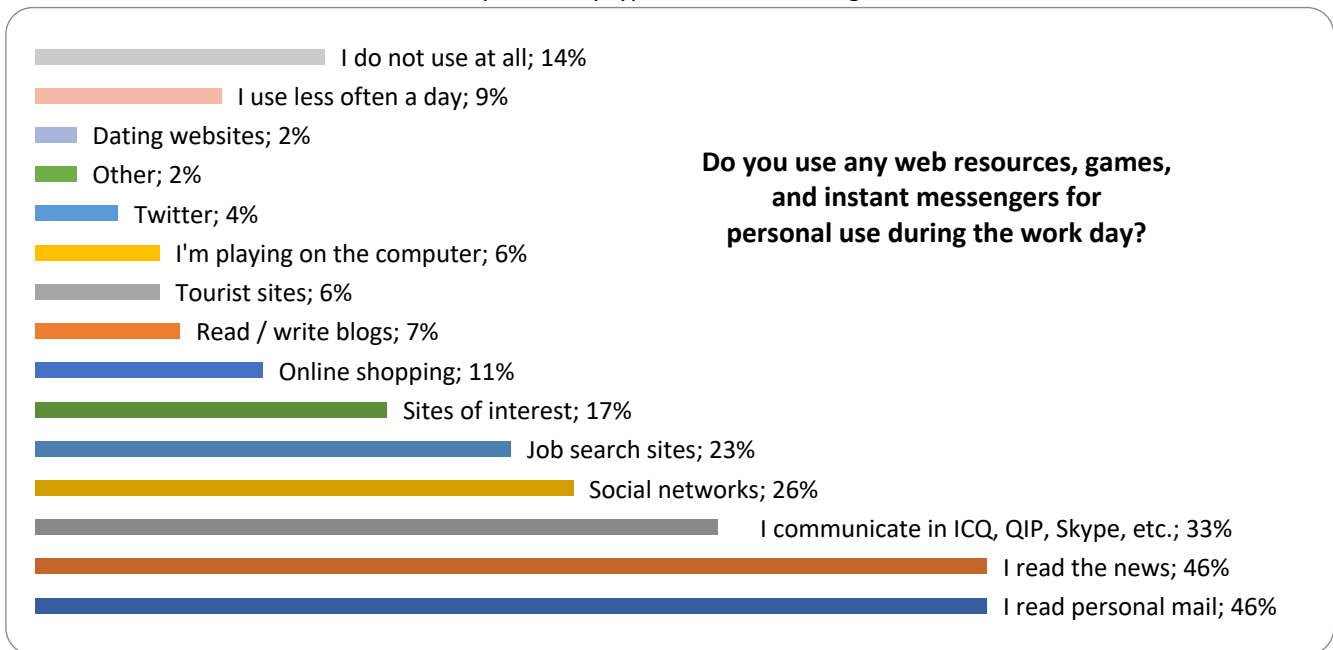
In addition to the systems above, in order to increase efficiency and increase labor productivity, ERM, ERC, ERP systems are actively used, as well as work force management, talent management and KPI.

The development of measures that allow workers to stimulate not only physical but also intellectual labor for a more efficient use of working time is of great importance in the management of labor productivity

According to a study conducted by a Headhunter [9], 46% of employees check personal mail or view news during working hours, 33% send private messages and sit in various messengers, 26% of respondents communicate in social networks during work (Fig. 4).

Non-targeted use of working time for the majority of respondents (64%) ranges from 15 minutes to one hour (Fig. 5). It should be noted that for effective work the concentration of an employee on the task being performed is important, and in order to change the focus of attention with estimated ranging from 15 up to 23 minutes are required.

Figure 4
Survey results by type of misuse working time

I do not use at all; 14%
I use less often a day; 9%
Dating websites; 2%
Other; 2%
Twitter; 4%
I'm playing on the computer; 6%
Tourist sites; 6%
Read / write blogs; 7%
Online shopping; 11%
Sites of interest; 17%
Job search sites; 23%
Social networks; 26%
I communicate in ICQ, QIP, Skype, etc.; 33%
I read the news; 46%
I read personal mail; 46%

Do you use any web resources, games, and instant messengers for personal use during the work day?
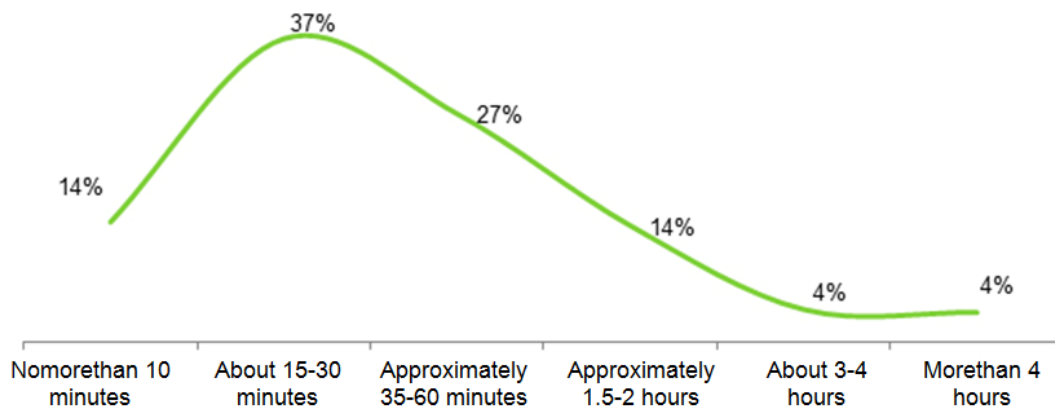
Source: HeadHunter Survey [8].
* among those surveyed whose work is related to working at a computer.
** you could choose several options.

Figure 5
The results of the survey on the duration of the misuse of working time

How much time do you spend during one working day on using all the resources you specified for personal purposes?

Source: HeadHunter Survey [8]

* among those surveyed whose work is related to working at a computer.
** You could choose several options.

The results of a study conducted by the portal Zarplata.ru also confirm the data [1]. According to the survey, 64% of employees regularly check social networks, and 10% of respondents spend up to two hours a day on questions that are not related to work. Analysis of the Yandex requests statistics [10] showed that work topics give way to entertainment and, in particular, to games on weekdays after 15:00. After 5:00 pm, work related requests almost completely disappear. In the TOP of popular topics searched at the end of a working day there are games, recipes and cartoons. At the same time, 35% of workers believe that non-targeted expenditure of working time does not affect productivity in any way, 21% of respondents believe that they contribute to its increase, and only 29% of respondents reported a decrease in productivity [9].

The development of information and communication technologies simplifies the process of controlling the work of employees significantly. The employer can obtain all the information of interest through the software installed on the employee's computer, which significantly reduces the cost of collecting information. The American Management Association points out that over 80% of large companies in the US use oversight opportunities for monitoring their employees (including wiretapping, reading correspondence, analyzing launched applications and viewing Internet traffic routes). [6, p. 425].

Surveillance of personnel actions has several debatable aspects:

1) legal,

2) ethical.

According to the Russian legislation, the employee is obliged to follow the internal regulations and observe labor discipline. On the other hand, everyone has the right of privacy. There is no doubt that a balance between total control, which restrains the creative process, and a waste of working time is needed

A possible way to solve this problem was proposed by the authors in the article "Social-labor monitoring and productivity management of knowledge workers".

4. Conclusions

Summing up the research, the following conclusions can be drawn:

- labor productivity has a significant impact on the level of socio-economic development and it is closely related to the competitiveness of the country's economy;

- currently there is no unified methodology for assessing the level of labor productivity, which allows intersectoral comparisons, as well as comparisons in dynamics of the labor productivity level. For a qualitative monitoring of the labor productivity level and the establishment of development programs, it is necessary to create a unified system of indicators that makes it possible to evaluate the achievement of benchmarks for productivity and ensure the comparability of data;

- for the growth of labor productivity in specific enterprises, it is recommended to use management systems that have proven their effectiveness. The most of them are based on the Toyota system;

- analysis of the effectiveness of the use of working time has showed that the majority of respondents are characterized by inappropriate use of a certain amount of working time. This allows us to conclude that there is a significant oportunity for the growth of the productivity of knowledge workers.

Acknowledgments

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