

**Joint Conference: 20th PCSF and 12th CSIS-2020**  
**20<sup>th</sup> conference Professional Culture of the Specialist of the Future**  
**12<sup>th</sup> conference Communicative Strategies of Information Society**

**EFFECTIVENESS AND VIABILITY OF INCREASING  
PRODUCTIVITY IN MARKET CONDITIONS**

Anatoly Platonov (a)\*, Sergey Bazhenov (b), Yury Davy (c)

\*Corresponding author

(a) Ural Federal University, 620002, 19 Mira street, Ekaterinburg, Russia, a.m.platonov@urfu.ru

(b) Ural State Economic University, 620002, 19 Mira street, Ekaterinburg, Russia, naukaservis@rambler.ru

(c) Ural Federal University, 620002, 19 Mira street, Ekaterinburg, Russia, yury.davy@urfu.ru

*Abstract*

The paper is devoted to increasing labor productivity in Russian companies that operate in market economy conditions. Authors review key approaches for increasing productivity applied in market and command economy. A concept for productivity increase is proposed based upon evaluation of overall financial and economic results of productivity improvement, and assessment of effort market viability in terms of producing competitive goods and services. Authors applied common scientific methods of analysis and synthesis, system and complex approaches, comparison, expert assessments, and generalization. Results include a methodology for improving integral labour productivity considering increase in effectiveness and viability that starts from the level of workplace and covers both company level and the level of markets for goods and services. The proposed methodology includes three levels of specific techniques for managing life cycles of products and services – i.e. levels of hard, soft- and intangible technologies, and outlines formation of required organizational, economic and motivational conditions for implementation of the said technologies, and combination of the tools for increasing integral labour productivity at each level. Authors substantiated applicability of the approach under conditions of increased competition in the area of production and consumption of competitive goods and demanded services. Obtained novel results will assist in formation of effective and efficient methods for improving integral productivity in technical, technological, organizational, economical and financial spheres of company operations in market conditions.

2357-1330 © 2020 Published by European Publisher.

**Keywords:** Final efficiency, goods, services, integral labour productivity, markets, market viability.



## 1. Introduction

In soviet highly centralized and directive-controlled economy the task of increasing labour productivity was raised to national level (Abalkin, 2017; Balatskiy & Ekimova, 2019). It was given and solved using an all-clear formula – “produce more goods and services with low production costs”. Under socialist production conditions and using the leading economic theories of that times (Fedchenko, 2016; Mitrofanova, 2010) the task was solved on the internal microeconomic level by lowering production costs in techno-technological and organizational chain of “workplace – workshop – enterprise”. As a result that caused serious fallbacks in economical competition against the developed capitalist countries.

After turning towards market economy Russian companies tried to enter global markets of goods and services, and achieve breakthroughs in the global system of completion. However, complex market financial and economic mechanisms that were unknown in directive economy went into play. These were mechanisms of local and international competition in the levels of managing labour efficiency, and in the fields of increasing goods and services production, and managing costs, prices, and profits of the companies (Fedchenko, 2016; Gubanova & Klesch, 2017; Kurbatova et al., 2018). The companies had to master these mechanisms using the generally-accepted management standards and production efficiency requirements.

More than twenty years have passed. Different countries, both large and small (Balatskiy & Ekimova, 2019), demonstrated decent results in the field of sustainable economic development, by increasing productivity, and improving competitive characteristics of the produced goods and services (Wang & Heyes, 2020). At the same time, Russian economy was unable to achieve significant breakthrough (Maslenikov, 2017; Smirnova et al., 2018). The gap with developed countries in key socio-economic indicators remains, especially in the area of increasing labour productivity (Balatskiy, 2019; Bufetova, 2017; Rastvortseva, 2018). In times of a directive economy and almost total absence of market relations it was natural to search for productivity increase solutions mostly in the production sphere. Therefore, professional literature of Soviet times contained a number of definitions related to productivity presented in corresponding terms (Fedchenko, 2016, Smirnova et al., 2018). These definitions usually reflected techno-technological approach to productivity increase. The former was considered a part of enterprise internal economic task related to production of goods or services within the “costs-results” paradigm. The same approach remained during the transition to market economy (Fedchenko, 2016; Smirnova et al., 2018). Companies considered the problem to be mainly technical and technological. However, obtaining profits became the main purpose of operations. The factors of demand and supply forecasting, buyers’ capacity, and other “borderline” financial and economic factors were ignored. Today under conditions of global economy these aspects related to productivity require more attention. They represent an external macroeconomic task for producers of goods and services oriented at various consumers, and shall be considered within a framework of ‘producer results – consumer market – producer revenue’ relationship. In this case the processes of increasing productivity must be viewed considering resulting financial and economic outcomes, and viability of the efforts. Similar approach was presented in Zajtseva (2011) and Kireev (2017), but the effectiveness of labour war reviewed only in production sphere. On the opposite, the authors consider final results to be a level of revenue obtained by producer of goods and services from selling the product on the market. With regard to costs results can be

either positive, or negative. Under market viability the authors understand relations among the producer and consumers arising out of exchange based upon supply and demand, and taking into account global competition factors, financial and economic instability and sanctions' pressure.

Real competitive collision between effectiveness and viability of increasing productivity appears even on the national level, but on the international markets the challenges are even more severe. At the same time the key modern metric in assessing productivity increase is the growth of export for competitive goods and services (Bufetova, 2017; Rastvortseva, 2018). That means that companies must increase productivity while obtaining profits, thus, in order to achieve breakthrough Russian companies require new concepts and methodologies, considering increasing productivity among the production chain, and including tools for managing business efficiency with regards to market conditions, and changes in product supply and demand.

## **2. Problem Statement**

Generally accepted technical and organizational reasons for low productivity in Russian companies include lack of staff and management motivation, low level of organizational and production culture, defective labour management, and undeveloped benchmarking, to name the few (Dolzhenko & Malyshev, 2019; Mikheeva, 2016). All of these reasons share the common base of attitude towards initial stages of product life cycles centered on costs and outcomes, and stress on production, while ignoring final outcomes of activities and viability of the actions. Any efforts aimed at increasing productivity have to consider final economic and financial results of operations, for it makes no sense to increase productivity, while producing goods and services that have no demand for, or cannot compete on the market because of low quality. Therefore, the overall problem of increasing productivity cannot be solved inside the company just by means of introducing new equipment or innovative technologies. Solution requires interaction with external environment outside of the enterprise boundaries.

## **3. Research Questions**

Research goal was to formulate a new method for assessing efficiency and viability of increasing labour productivity in market conditions.

## **4. Purpose of the Study**

In order to achieve the goal, authors had to perform the following tasks:

- Outline the methods for increasing effectiveness and viability of efforts aimed at improving labour productivity in production and sales of goods and services;
- Formulate organizational and economic conditions required to implement the said methods;
- Determine the finance and cost-related tools that can be applied to increase productivity on the stage of goods and services' consumption.

## **5. Research Methods**

Authors applied common scientific methods of analysis and synthesis, system and complex approaches, comparison, expert assessments, and generalization.

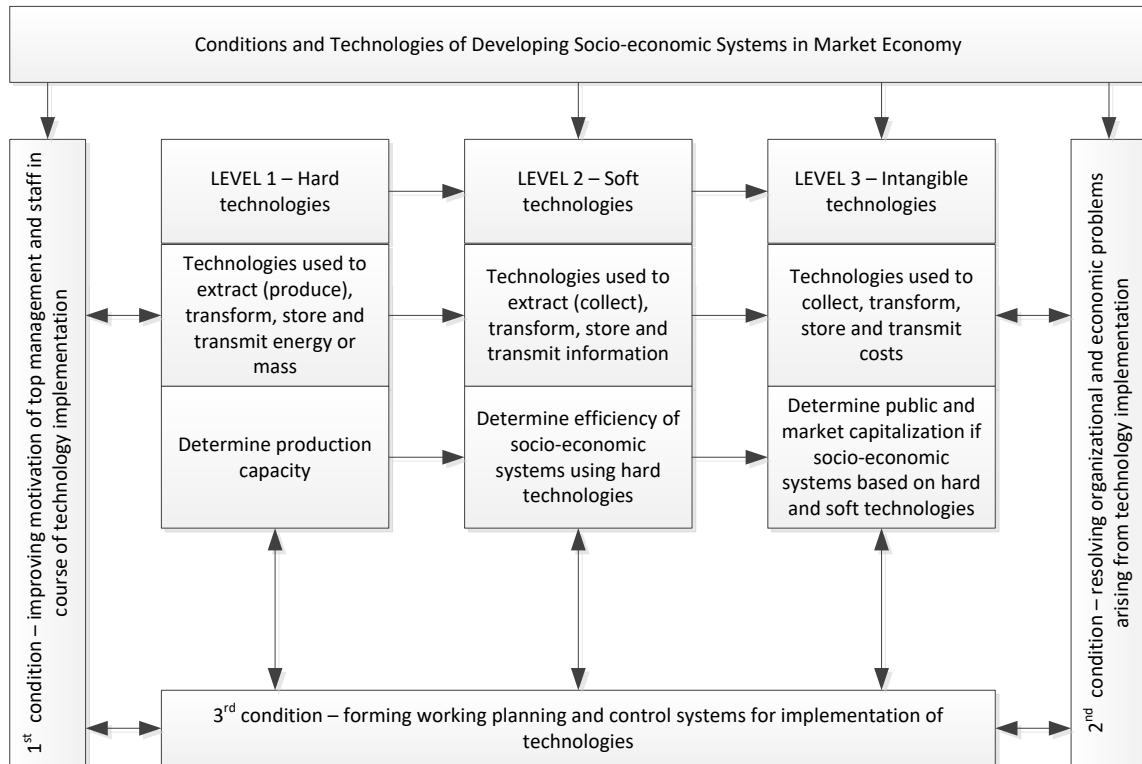
## **6. Findings**

### **6.1. Methods for increasing labour productivity**

Authors consider that the concept of integral labour productivity using three layers of technologies – namely hard, soft and intangible technologies (Chernyshov, 2013) is productive and requires further development. The concept allows including micro – and macroeconomic aspects of increasing productivity in market conditions. Based on this concept authors developed a method for increasing integral productivity that is implemented in certain conditions of company operations (Figure 1).

First of all, productivity increase requires motivating top management and personnel to implement productivity increase measures. Second condition is the efficient resolution of issues that occur in course of continuous operations. Third and final condition is the formation and support of multiple information systems for planning and control of technology implementation.

Technology levels listed above correspond with certain types of operational activities. Level of hard technologies is linked to techno-technological and organizational level of production. Second level of soft technologies is linked to planning, distribution, and production efficiency control functions. The third level of intangible technologies is connected to market and value exchanges. Each technology plays its part in increasing integral productivity. Hard technologies affect production capacity, soft ones – social efficiency of production, and intangible technologies improve social capitalization of the companies. Integral productivity, thus, becomes a product of three institutional factors – production capacity, efficiency of internal development, and capitalization, and is obtained within a corresponding external environment.



**Figure 01.** Technologies for increasing integral productivity and conditions for their implementation

First level of technologies features production technologies and mechanisms, equipment and devices used to extract or produce, transform, store and transmit energy and matter. Second level of soft or informational technologies includes software applications, platforms, and services for collection, transformation, storage, and distribution of information, and tools for planning, distributing and controlling resources and financial flows required for efficient production and consumption of goods and services. Third level includes financial and cost management technologies, mechanisms and tools used to determine, store, and transfer costs incurred on the stage of consuming products and services on globally-distributed markets. It is necessary to note that soft technologies became the connecting data and financial link between the spheres of hard and intangible technologies required to determine integral productivity. Today technologies of levels 1-3, being more or less developed, coexist in the companies independently and in different combinations.

## 6.2. Tools for increasing integral productivity

The tools for providing overall effectiveness and market viability of increasing labour productivity can be arranged in form of a hierarchy. Hard-technology tools are well-known, and include technological documentation, process manuals, quality metrics, and production tasks. They allow solving internal techno-technological issues related to increasing productivity at the level of workplaces and workshops within the “cost-results” ideology.

Soft technology tools include, for example, computer software used to form various forms of different budgets. Companies use applications for managing projects and project portfolios, like Oracle Primavera and Project Expert. Table 1 lists the commonly used tools, as described by the group of experts

including top managers from large-scale construction companies of Ekaterinburg. Inefficient use of these tools causes negative results with regard to effectiveness and viability of increasing productivity in Russia. In expert opinion tools like analysis of big data, complexity reduction, open innovations, etc., that are popular in international business, did not gain recognition in Russia, despite the fact that soft technologies allow lowering transactional costs of the companies and assist in additional increase of productivity.

**Table 01.** Most popular soft technologies

No	Name
1	Balanced scorecard
2	Benchmarking
3	Big data analytics
4	Business process reengineering
5	Change management programs
6	Complexity reduction
7	Core competencies
8	Customer relationship management
9	Customer segmentation
10	Decision rights tools
11	Downsizing
12	Employee engagement surveys
13	Mergers and acquisitions
14	Mission and vision statements
15	Open innovation
16	Outsourcing
17	Price optimization models
18	Satisfaction and loyalty management
19	Scenario and contingency planning
20	Social media programs
21	Strategic alliances
22	Strategic planning
23	Supply chain management
24	Total quality management
25	Zero-based budgeting

Third level of technologies are intangible technologies, that complete the triad of tools for forming and implementing measures aimed at increasing integral productivity. The range of these tools is wide, and they are used to finalize company efforts in the area of increasing productivity and either prove or disapprove the effectiveness, efficiency, and viability of these efforts. The tools listed in table 2 include technologies for market analysis, managing financial assets, trade spots functioning, capital management, etc. They were designed and are widely used in company economy and finance management in developed countries and provide effectiveness and viability of the integral productivity increase processes. However, Russian companies, except for few large corporations, do not actively implement of finance and cost management technologies that determine final effectiveness and market viability of increasing labour productivity. Therefore, it is impossible to discuss breakthroughs in this area. However, experts noted wider application of escrow accounts in construction and cautious entrance of middle business to financial markets with their stocks and bonds.

**Table 02.** Key intangible technologies

no	Application area	Tools
1	Market analysis technologies	<ul style="list-style-type: none"> <li>- Sources of analytical data (Barronis; Bloomberg; Marketwatch, Tradingview (aggregators of financial analytics);</li> <li>- Informational resources (online quotes) e.g. quote-spy.com;</li> <li>- Informational resources for technical analysis of assets price dynamics – open resources, e.g. Finam.ru</li> </ul>
2	Financial assets management	<ul style="list-style-type: none"> <li>- Stocks and bonds (traditional assets) that increase the speed of business functioning;</li> <li>- Futures and option contract based on network infrastructure, including the use of former for hedging financial risks;</li> <li>- CFD contracts;</li> <li>- Crypto currencies markets (for online trading and investing into more than 800 currencies) based on block-chain technologies.</li> </ul>
3	Trade spots	<p>Traditional payment systems for money transfer and leases, stock purchases and currency exchange.</p> <p>Electronic trade spots, including stock, currency, and commodity exchanges.</p> <p>New trading spots for traders and investors (including investment and private crediting):</p> <ul style="list-style-type: none"> <li>-crowd investment exchanges with remote access;</li> <li>-crowd funding remote exchanges;</li> <li>-crypto-currency exchanges.</li> </ul>
4	Capital management technologies	<ul style="list-style-type: none"> <li>-Portfolio investments;</li> <li>-Investments through mutual investment funds;</li> <li>-Trust management;</li> <li>-PAMM accounts;</li> <li>-Escrow accounts;</li> <li>-Monitoring technologies, where investor monitors deals and follows the professionals;</li> <li>-Smart contract format used to remove intermediaries between the seller and the buyer;</li> <li>- Technologies for direct investor access to stock exchange, when the blockchain platform is used instead of a broker (for transfers, exchange, and other deals).</li> </ul>

Using this logic one can note that the results of increasing labour productivity measured as a ratio of results to costs distributed in time are actualized not on the level of hard and soft technologies, but on the competitive markets of goods and services, i.e. on the level of intangible technologies used to manage market prices (Alexankov et al., 2018; Korneychuk & Bylieva, 2018). That requires active participation from the consumers of goods and services. It is also necessary to keep in mind the so-called “productivity paradox” (Dementyev, 2019) when the overall company productivity temporarily drops despite substantial investments into modernization of technologies and production lines. Altogether, implementation of productivity increase measures requires development of company programs of using the tools listed above that allow assessing their effectiveness and viability in the areas of goods and services production and consumption (Ahmad et al., 2020).

The point can be also made that most of the Russian companies did not go through the crucible of objective marketing assessment of production efficiency. Regretfully, the companies possess neither

motivation and stimuli, nor skills and competences required to determine viability and efficiency of productivity increase efforts. Differently from the Western companies, the Russian ones do not seek assistance of the consultants in this area, despite the fact that skillful implementation of cost and pricing – related technologies increases said viability and positive impacts of improving productivity.

## 7. Conclusion

Research of the issues related to increasing productivity in Russian companies demonstrated that viability and effectiveness of productivity improvement efforts are among the key factors of company success in market competition conditions. Productivity is not only defined at a workplace. It gains technological assessment on company level, and gets a financial and economic dimension on the markets of goods and services. Markets become a place, where collisions related to real increase of productivity appear, and are resolved. The costs and production results appear in different points of time, and usually the final evaluation of results occurs in different point of space from the place of producing goods and services.

Based on the existing level of productivity in Russia, the authors proposed a new concept for determining efficiency and viability of improving integral productivity, different in terms of reviewing the whole complex of production processes, management efficiency, and market consumption of goods and services, and defined a methodology of improving productivity based on interacting and interrelated hard, soft, and intangible technologies. The authors outlined special role of intangible technologies, or finance and cost-related management tools, in defining the overall effect and viability of increasing productivity and demonstrated low levels of recognition for these technologies in Russian companies. That allowed defining an analytical approach to definition of an integral productivity as a combination of company production capacity, socio-economic efficiency and market capitalization of the company. The growth of interest towards productivity increase shall cause gradual improvement in this area. Companies that are interested in increasing integral productivity, shall be able to obtain methodological, and, if necessary, financial aid, which can be provided by the state through the “Labour Productivity and Employment Assessment” National project.

## References

- Abalkin, L. M. (2017). *Ekonomicheskaya istoriya SSSR. Ocherki* [Economic history of the USSR. Essays]. INFRA-M [in Rus.]
- Ahmad, S. B. S., Mazhar, M. U., Bruland, A., Andersen, B. S., Langlo, J. A., & Torp, O. (2020). Labour productivity statistics: a reality check for the Norwegian construction industry. *International Journal of Construction Management*, 20(1), 39–52. <https://doi.org/10.1080/15623599.2018.1462443>
- Alexankov, A. M., Trostinskaya, I. R., & Pokrovskaya, N. N. (2018). Industry 4.0 requirements for quality of human capital and competencies formed within educational institutions. *The European Proceedings of Social & Behavioral Sciences EpSBS*, XXXIV, 26-34. <https://doi.org/10.15405/epsbs.2018.02.4>
- Balatskiy, E. V. (2019). Global'nye vyzovy chetvertoy promyshlennoy revolyutsii [Global challenges of the fourth industrial revolution]. *Terra Economicus*, 17(2), 6-22. <https://doi.org/10.23683/2073-6606-2019-17-2-6-22> [in Rus.].



- Balatskiy, E. V., & Ekimova, N. A. (2019). Rossiya v mirovoi sisteme proizvoditelnosti truda [Russia in the global system of labour productivity]. *Mir novoj jekonomiki*, 3, 14-28. <https://doi.org/10.26794/2220-6469-2019-13-3-14-28> [in Rus.]
- Bufetova, A. N. (2017). Prostranstvennye aspekty dinamiki proizvoditel'nosti truda v Rossii [Spatial aspects of labour productivity dynamics in Russia]. *Mir ekonomiki i upravleniya*, 17(4), 142-157. <https://doi.org/10.25205/2542-0429-2017-17-4-142-157> [in Rus.]
- Chernyshov, S. (2013, December 18). Institutionalniye istiny: proizvoditel'nost [Institutional truths: Productivity]. *Expert ONLINE*. <https://expert.ru/2013/12/18/institutsionalnyie-istiny/> [in Rus.]
- Dementyev, V. E. (2019). Paradox proizvoditelnosti v regionalnom izmerenii [Productivity paradox in regional dimension]. *Ekonomika regiona*, 15(1), 43-56. <https://doi.org/10.17059/2019-1-4> [in Rus.]
- Dolzhenko, S. B., & Malyshev, D. S. (2019). Evaluation of labour productivity in Russian and Italian enterprises. *Journal of the Ural State University of Economics*, 20(1), 95–111. <https://doi.org/10.29141/2073-1019-2019-20-1-7>
- Fedchenko, A. (2016). Metodicheskiye podhody k issledovaniyu proizvoditel'nosti truda [Methodological approaches to labour productivity studies]. *Ekonomika truda*, 3(1), 41-62. <https://doi.org/10.18334/et.3.1.35153> [in Rus.]
- Gubanova, E. S., & Klesch, V. S. (2017). Metodologicheskiye aspekty analiza urovnya neravnomernosti socialno-ekonomicheskogo razvitiya regionov [Methodological aspects of analyzing the level of inequality in socio-economic development of the regions]. *Economicheskkiye i socialniye peremeny: Fakty, tendentsii, prognoz*. 10(1), 58-75. <https://doi.org/10.15838/esc/2017.1.49.4> [in Rus.]
- Kireev, V. E. (2017). Proizvoditelnost, dohodnost' i intensivnost' truda: Rossiya i strany OESR [Labour productivity, performance and intensity: Russia and OECD countries]. *Vestnik URFU. Seriya ekonomika n upravlenie*, 16(2), 308-326. <https://doi.org/10.15826/vestnik/2017.16.2.016> [in Rus.]
- Korneychuk, B., & Bylieva, D. (2018). The use of business games in Russian higher education: prerequisites and obstacles. *The European Proceedings of Social & Behavioural Sciences*, LI, 13-22. <https://doi.org/10.15405/epsbs.2018.12.02.2>
- Kurbatova, M. V., Kagan, U. S., & Vshivkova, A. A. (2018). Regionalnoye razvitie: Problemy formirovaniya i realizatsii nauchno-technicheskogo potentsiala [Regional development: problems of forming and utilization of a scientific and technical potential]. *Terra economicus*, 16(1), 101-117. <https://doi.org/10.23683/2073-6606-2018-16-1-101-117> [in Rus.]
- Maslenikov, M. I. (2017). Tehnologicheskie innovatsii i ih vliyanie na ekonomiku [Technological innovations and their economic impact]. *Ekonomika regiona*, 13(4), 1221-1235. <https://doi.org/10.17059/2-17-4-20> [in Rus.]
- Mikheeva, N. N. (2016). Comparative analysis of labor productivity in Russian regions. *Regional Research of Russia*, 6(2), 105–114. <https://doi.org/10.1134/S2079970516020076>
- Mitrofanova, M. Yu. (2010). K voprosu o proizvoditelnosti truda [To a question on labour productivity]. *Vestnik Chuvashskogo universiteta*, 1, 430-433. [in Rus.]
- Rastvortseva, S. N. (2018). Proizvoditelnost' truda i fondovooruzhennost' v obespechenii ekonomicheskogo rosta rossiyskih regionov [Labour productivity and capital-labour ratio role in providing economic growth of Russian regions]. *Socialnoye prostranstvo*, 1(13). <https://doi.org/10.15838/sa/2018.1.13.1> [in Rus.]
- Smirnova, E. A., Tarasova, E. A., & Postnova, M. V. (2018). Metodicheskiye aspekty izmeneniya proizvoditelnosti [Methodology aspects of measuring productivity]. *Ekonomika truda*, 5(4), 1263-12376. <https://doi.org/10.18334/et.5.4.39640> [in Rus.]
- Wang, W., & Heyes, J. (2020). Flexibility, labour retention and productivity in the EU. *The International Journal of Human Resource Management*, 31(3), 335–355. <https://doi.org/10.1080/09585192.2016.1277370>
- Zajtseva, T. V. (2011). Glavnoe na puti –naity nuzhniy koridor: koridor rezultativnosti truda. Chast 1. Sravnitel'niy analiz podhodov k upravleniyu lud'mi v processe truda [Corridor of Opportunities to a Corridor of Work Effectiveness and Productivity. Part 1. Comparative analysis of approaches to managing work effectiveness and productivity]. *Kadrovik. Kadrovyy management*, 10, 27-44. [in Rus.]