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THE PERSPECTIVES OF LABOR OPTIMIZATION IN THE INTERESTS OF EMPLOYEES AND EMPLOYERS FROM THE POSITIONS OF EFFICIENCY AND QUALITY

Abstract: *The purpose of this paper is to substantiate the perspectives and to develop recommendations for the optimization of labor in the interests of employees and employers from the positions of efficiency and quality for the scientific support for implementing SDG 8. To determine the sustainability of human resources management in the interests of employees and employers from the positions of efficiency and quality, a proprietary methodology has been developed. It is based on the hierarchy process, which allows taking into account the significance of each factor. It has been determined that human resources management in countries of BRICS is relatively sustainable (53.19 points). In countries of G7, human resources management is sustainable (65.55 points). The recommendations for systemic optimization of labor in the interests of employees and employers from the positions of efficiency and quality in the period until 2030 are offered. The implementation of the authors' recommendations allows for the growth of quality by 85.72% and the growth of labor efficiency by 152.76%. As a result, the level of satisfaction of employees' interests grows by 8.99%, and the level of satisfaction of employers' interests grows by 50.16%. The novelty of this research consists in the determination and substantiation of universal milestones that allow balancing the interests of employees and employers – these include labor quality and efficiency. A comprehensive vision of the sustainable management of human resources, which stimulates – for the first time – the simultaneous increase of quality and labor efficiency, is offered.*

Keywords: *Optimization of labor; Employee; Employers; Efficiency; Quality*

1. Introduction

The Sustainable Development Goals (SDGs) are to ensure the clarity of priorities and make the existing economic practices and relations clearer. Contrary to this, their adoption increased the uncertainty in the economic spheres that are regulated by them – primarily, the ones belonging to SDG 8. Despite the succinct formulation and the seeming simplicity during the surface consideration, the provision of "decent work and economic growth" (UN, 2021) is – during thorough consideration – a complex and contradictory task.

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In some cases, SDG 8 could be treated as the creation of favorable conditions for implementing human potential and manifesting corporate social responsibility. However, it is ignored to which extent an employee's human potential is in demand in business, and whether a business's investments in its development and realization will be returned. During the formal approach, gender-neutral jobs and reduction of inequality of employees' incomes could undermine the systems of labor stimulation, leading to artificial equaling of wages, despite the significant differences between them. Here the emphasis is made on "decent work", which is achieved in the interests of employees, against the interests of employers.

In other cases, SDG 8 envisages the establishment of high norms of labor or stimulation of high labor efficiency, which leads to the depletion of employees' human potential. The increased requirements to employees reduce their satisfaction with labor, and the work takes more of their free time. Posting the most qualified and experienced employees on the managing offices hinders the career growth of employees, but improves the financial indicators of business (profitability, return).

High requirements and strict selection of personnel lead to increased ("unhealthy") competition between employees in the labor market but allow selecting the best personnel and implementing the ambitious plans of development of business. Automatization (based on robotization and artificial intelligence) increases the competitive positions of business but leads to mass personnel cuts and the increase of the unemployment rate. Here the emphasis is made on "economic growth", which is achieved in the interests of employers but against the interests of employees.

Thus, though SDG 8 is focused on one sphere of the economy – labor market – it includes two separate economic practices: the practice of labor activities, at which employee forms the offer in the labor market, and the practice of entrepreneurial activities, at which entrepreneur (or hired manager om his behalf) presents the demand in the labor market and acts as an employer. Being antagonistic powers, demand and offer in oppose each other in the labor market. The problem is the uncertainty of the causal connections of human resources management in modern business and the low effectiveness of this management.

In this paper, the following research question (RQ) is set: how is it possible to successfully implement SDG 8 in practice, with simultaneous satisfaction of employees' and employers' interests. The hypothesis of this research (H_0) is as follows: labor quality and efficiency are universal milestones of sustainable management of human resources, which allow balancing and observing (at the same time) the interests of employees and employers, thus ensuring the practical implementation of SDG 8.

The goal of this paper is to substantiate the perspectives and to develop recommendations for the optimization of labor in the interests of employees and employers from the positions of efficiency and quality for the scientific support for implementing SDG 8. The originality of this research is due to the systemic optimization of the labor market with the coverage of many factors. This allows suggesting comprehensive recommendations and selecting the key factors of implementing SDG 8.

The uniqueness of this paper consists in the complex consideration of the interests of employees and employers and the provision of their balance during the sustainable management of human resources. The novelty of the research is as follows: it determines and substantiates the universal milestones, which allow balancing the interests of employees and employers – these include labor quality and efficiency. The authors offer a comprehensive vision of sustainable management of human resources,

which – for the first time – stimulates the simultaneous increase of quality and labor efficiency.

This Introduction is followed by the Literature review and description of materials and methodology. Then, in the Results, the following research tasks, which are aimed at testing the hypothesis and achievement of the set goal, are solved:

- modeling the influence of the factors of sustainable management of human resources on labor quality and efficiency;
- modeling the dependence of the level of satisfaction of employees and employers' interests on quality and labor efficiency;
- systemic optimization of labor in the interests of employees and employers from the positions of efficiency and quality;
- evaluating the sustainability of human resources management in the interests of employees and employers from the positions of efficiency and quality in countries of BRICS and G7 in 2020.

Conclusions sum up this paper.

2. Literature Review

Quality – as a manifestation of sustainable management of human resources – has been studied in detail in the existing scientific and economic literature. Jamali and Sagirani (2021) developed quality assurance testing to improve the quality of the human resource management system. Khdour et al. (2021) studied human resource management practices and total quality management in insurance companies (based on evidence from Jordan).

Pai et al. (2021) developed a lean system, human resource management, total quality management, and operation performance (based on evidences from small and medium enterprises). Zhang (2020) offered human resource data quality management based on multiple regression analysis. Avetisyan et al. (2020) tied the acquirer's human resource management quality to cross-border acquisition divestment probability.

Wang and Srivastava (2020) compiled an enterprise human resource quality management model based on grey relational analysis. Decha et al. (2020) demonstrated the role of service quality, employee satisfaction and loyalty on the effective human resource management in the pharmacies in Thailand and proved the mediating role of customer satisfaction. Alkhallidy (2020) determined the role of human resources management in achieving competitive advantage using the requirements of total quality management (based on an applied study at the electrical industries company).

Rawashdeh et al. (2021a) drew a connection between electronic human resources management perceived usefulness, perceived ease of use and continuance usage Intention and the mediating role of user satisfaction in Jordanian hotels sector. Rawashdeh et al. (2021b) study the relationsip between the quality knowledge management and organizational performance via the mediating role of organizational learning. Ibatullina, A.A., Safiullin, A.R. (2021) offered a concept of project management at the meso-level on the basis of network planning of works with the development of methods of labor costs optimization.

The essence of labor efficiency – as a manifestation of human resources management – has been studied in the following works. Popkova and Sergi (2020) considered human capital and AI in industry 4.0 (convergence and divergence in social entrepreneurship in Russia). Popkova et al. (2020) studied corporate social responsibility amid social distancing during the COVID-19 Crisis: BRICS vs. OECD Countries. Popkova et al. (2021) offered recommendations towards digital society management and 'capitalism 4.0' in contemporary Russia.

Popkova and Sergi (2021) determine the possible paths to the development of social

entrepreneurship in Russia and central Asian countries (standardization versus de-regulation). Bekker et al. (2019) study the dynamics of the duration of working hours according to Karl Marx. Ivanova and Smirnova (2019) considered the working force in the theory of Karl Marx and the present via a system approach. Hintzmann et al. (2021) drew a connection between intangible assets and labor productivity growth. Börsch-Supan et al. (2021) studied big data at work, drawing a connection between age and labor productivity in the service sector.

Calcagnini et al. (2021) studied labour flexibility, internal migration and productivity in Italian regions. Andrews and Hansell (2021) considered productivity-enhancing labour reallocation in Australia. Walheer (2021) studies the tie between labor productivity and technology heterogeneity. Undozerov (2021) suggested a technique for accounting for the decrease in labor productivity due to workspace overcrowding. Lu et al. (2021) showed how can information technology use improve construction labor productivity (based on an empirical analysis from China).

Adkins and Ylöstalo (2021) performed a series of experiments with wellbeing and studied the connection between basic income, immaterial labour, and changing forms of productivity. Elshennawy and Bouaddi (2021) determined the sources of firm-level heterogeneity in labour productivity in Egypt's manufacturing sector. Warne and Xu (2021) studied productivity divergence in view of state policy, corporate capture and labour power in the USA.

Damioli et al. (2021) determined the impact of artificial intelligence on labor productivity. De Araújo et al. (2021) substantiated the reduction of labor productivity losses through a productivity stratification indicator. Bogoviz (2020) determined the perspective directions of state regulation of competition between human and artificial intellectual capital in Industry 4.0. Ragulina et al. (2019) developed a model of automatization of the labor resources market in the age of the internet of things based on conceptual substantiation and risk management. Bogoviz et al. (2019) determined the perspectives of growth of labor efficiency in the conditions of the digital economy.

The Literature review has demonstrated that the issues of quality and labor efficiency have been studied in detail, though separately. The critical analysis of the existing publications on the studied issues has shown their drawbacks, which include the following:

- fragmentary study of the factors of quality and labor efficiency and the underdevelopment of a comprehensive idea of the influence of these factors;
- unilateral consideration of the sustainable management of human resources either from the positions of employees' interests or employers' interests with the absence of a systemic scientific vision of this management.

The above drawbacks predetermine a research gap, consisting in the uncertainty of the causal connections of human resources management – lack of clarity regarding which factors should be influenced and how they should be influenced to increase quality and labor efficiency, observing the interests of employees and employers at the same time. This research gap is to be filled by this paper, which is devoted to determining the perspectives of the systemic optimization of labor in the interests of employees and employers from the positions of efficiency and quality.

3. Materials and methodology

To test the offered hypothesis, we use regression analysis as a method of economic statistics, which allows for the most precise and correct determination of connection between a lot of variables. The research is performed based on a sample of data, which

includes the countries of BRICS and G7. The advantage of the sample is the fullest coverage of the global economic system's participants based on the experience of developed and developing countries, which makes the sample representative. The logic of the research (research model) is demonstrated in Figure 1.

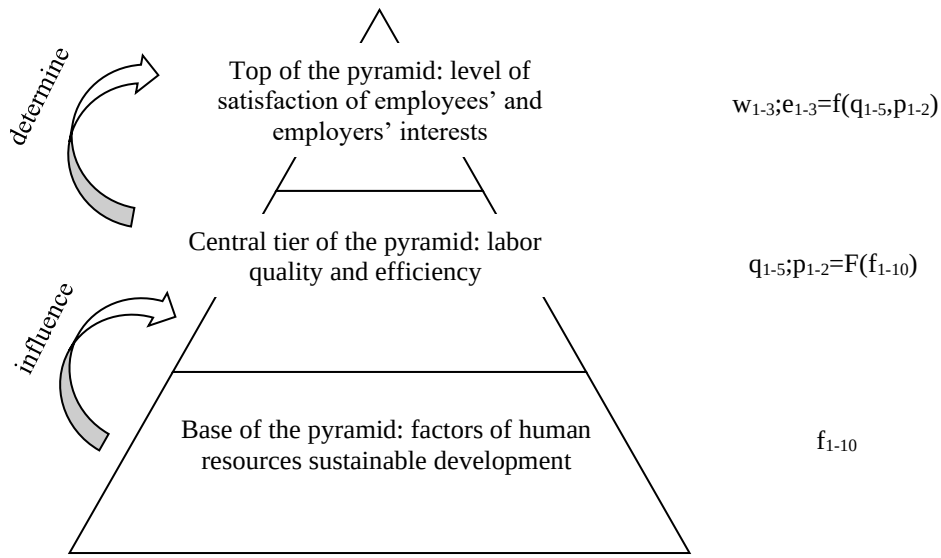

Figure 1. Research model
Source: authors

As shown in Figure 1, sustainable management of human resources (implementation of SDG 8) is a conventional pyramid, which base is the factors of sustainable management of human resources (f_{1-10}):

- multistakeholder collaboration (f_1);
- gender-neutral wages (f_2);
- flexibility in wages (f_3);
- share of protected employment (f_4);
- support for redundant employees (f_5);
- stimulation of unions (f_6);
- professionalism of managers (f_7);
- fair wages (f_8);
- keeping employees (f_9);
- digital skills of personnel (f_{10}).

The statistics of the above factors in countries of the sample are given in Table 1.

Labor quality and efficiency are located at the central tier of the pyramid. They depend on the above factors of sustainable management of human resources – i.e., $q_{1-5};p_{1-2}=F(f_{1-10})$. Quality is characterized by the following indicators:

- quality certificates ISO 9001 (q_1);
- knowledge intensive employment (q_2);
- research talent (q_3);
- environmental certificates ISO 14001 (q_4);
- global brand value, top 5,000 (q_5);
- Labor efficiency is characterized by the following indicators:
- growth rate of PPP$ GDP/ worker (p_1);
- output per worker, GDP in constant prices of 2011, $ thousand in PPP (p_2).

The data on the above indicators in countries of the sample are given in Table 2.

Table 1. The statistics of the factors of human resources sustainable management in countries of BRICS and G7 in 2020 (points 0-100).

Category	Country	Multistakeholder collaboration	Gender-neutral wages	Flexibility in wages	Share of protected employment	Support for redundant employees	Stimulation of unions	Professionalism of managers	Fair wages	Keeping employees	Digital skills of personnel (Digital skills among active population)
		f_1	f_2	f_3	f_4	f_5	f_6	f_7	f_8	f_9	f_{10}
BRICS	Brazil	44.3	78.6	54.8	72.4	76.0	44.1	58.6	40.4	29.3	34.8
	India	53.3	7.2	62.8	23.3	75.6	58.4	62.5	51.3	52.6	57.2
	China	57.3	72.9	60.5	56.2	51.3	59.6	59.0	60.5	57.7	61.0
	Russia	49.5	79.3	78.2	94.7	72.1	56.5	49.6	58.9	51.1	65.8
	South Africa	52.6	73.8	41.1	90.3	89.0	36.4	59.3	46.0	31.3	37.9
G7	Germany	70.0	87.2	60.1	94.1	63.3	66.8	71.8	69.8	61.0	67.8
	Italy	45.6	72.9	38.2	83.0	99.0	49.4	46.6	35.5	33.3	52.9
	Canada	63.8	94.7	72.4	89.3	87.5	67.5	75.3	65.0	60.9	67.9
	UK	65.5	93.0	74.0	87.0	89.0	66.1	71.7	62.2	66.4	65.6
	USA	73.9	81.6	77.9	96.2	1.0	70.6	78.9	71.1	71.8	72.2
	France	58.3	89.1	66.3	92.6	81.3	54.1	67.6	52.0	44.5	58.2
	Japan	61.6	70.3	79.2	91.6	99.4	79.9	78.1	58.9	41.7	57.2

Source: compiled by the authors based on Institute of Scientific Communications (2021b), World Economic Forum (2021)

Table 2. The statistics of labor efficiency and quality in countries of BRICS and G7 in 2020.

Category of countries	Country	Quality					Efficiency	
		ISO 9001 quality certificates/bn PPP$ GDP	Knowledge-intensive employment, %	Research talent, % in business enterprise	ISO 14001 environmental certificates/bn PPP$ GDP	Global brand value, top 5,000, % GDP	Growth rate of PPP$ GDP/ worker, %	Output per worker, GDP in constant prices of 2011, $ thousand in PPP*
		q_1	q_2	q_3	q_4	q_5	p_1	p_2
BRICS	Brazil	4.9	23.5	26.6	0.9	33.8	0	32.677
	India	3.0	15.7	34.0	0.7	61.5	5.0	19.693
	China	11.7	-	61.3	5.4	118.3	6.6	29.363
	Russia	1.1	44.1	44.2	0.2	49.6	1.9	56.659
	South Africa	4.1	23.4	17.3	1.1	87.5	-0.4	43.805
G7	Germany	11.5	45.2	60.4	1.9	143.4	0.3	104.752
	Italy	36.6	36.4	43.6	6.3	87.3	0.1	108.643
	Canada	2.7	43.7	56.7	0.5	133.2	0.5	94.634
	UK	9.7	49.2	40.6	4.2	167.2	0.4	92.646
	USA	1.1	48.0	71.3	0.2	203.3	1.1	127.046
	France	7.1	45.6	62.3	2.0	178.0	0.7	111.772
	Japan	7.4	24.8	74.4	4.1	146.2	-0.1	77.490

*PPP – purchasing power parity

Source: compiled by the authors based on ILO (2021), WIPO (2021)

The level of satisfaction of employees' and employers' interests is located at the top of the pyramid. It is determined by quality and efficiency of labor – i.e., w_{1-3};$e_{1-3}=f(q_{1-5},p_{1-2})$. Employees' interests are reflected by the following indicators:

- Human Development Index (w_1);
- Quality of Life Index (w_2);
- Happy Life Index (w_3);
- Employers' interests are reflected by the following indicators:
- Ease of Doing Business Rank (e_1);
- economic growth rate (e_2);
- Global Competitiveness Index 4.0 (e_3).
- The data on the above indicators in countries of the sample are given in Table 3.

Table 3. The statistics of observation of employees' and employers' interests during the management of human resources in countries of BRICS and G7 in 2020.

Category of countries	Country	Employees' interests			Employers' interests		
		Human Development Index, fractions of 1	Quality of Life Index, points 1-100	Happy Life Index, points 1-10	Ease of Doing Business Rank, 1-190	Economic growth rate, %	Global Competitiveness Index 4.0, points 1-100
		w_1	w_2	w_3	e_1	e_2	e_3
BRICS	Brazil	0.761	103.87	6.300	124	1.954	60.9
	India	0.939	184.30	6.985	63	1.415	81.8
	China	0.647	115.41	4.015	31	7.791	61.4
	Russia	0.883	143.81	6.223	28	0.800	71.5
	South Africa	0.922	169.42	7.278	84	1.843	79.6
G7	Germany	0.758	99.87	5.191	22	6.000	73.9
	Italy	0.824	104.05	5.648	58	1.500	66.7
	Canada	0.920	166.73	7.054	23	1.606	81.2
	UK	0.920	176.77	6.892	8	2.121	83.7
	USA	0.891	156.10	6.592	6	1.749	78.8
	France	0.705	135.75	4.722	32	2.198	62.4
	Japan	0.915	176.46	5.886	29	0.846	82.3

*the lower the indicator's value, the better (measured in positions)
Source: compiled by the authors based on Institute of Scientific Communications (2021a), World Bank (2021)

Regression analysis is repeated several times for each resulting variable until only the factor variables that positively influence it are selected. Each time, the factor variables that negatively influence the resulting variable are eliminated. The offered hypothesis is considered proved if we find the optimal combination of the factors of sustainable management of human resources that will ensure the growth of quality, labor efficiency, and employees' and employers' interests which exceeds 5% (on average).

To determine the sustainability of human resources management in the interests of employees and employers from the positions of efficiency and quality, we have developed and use the proprietary methodology. It is based on the hierarchy process, the choice of which is explained by the fact that it allows ranking the indicators by the significance level. Unlike the simple arithmetic value of the factors (from Table 1), the proprietary methodology takes into account the significance of each factor and thus reflects – in the most precise and correct way – the level of favorability of the factors' influence on

observation of the interests of employees and employers from the positions of efficiency and quality during the implementation of SDG 8.

According to the proprietary methodology, at the first step of the evaluation algorithm, we sum up the regression coefficients that reflect the contribution of quality (q_{1-5}) and efficiency (p_{1-2}) to the observation of the interests of employees (e_{1-3}) and employers (w_{1-3}). For each indicator of quality and efficiency, we calculate its contribution (c_β). We find the aggregate contribution (TC_β) and determine the ratio of each indicator's contribution to the aggregate contribution ($\beta=c_\beta/TC_\beta$).

At the second step, we sum up regression coefficients (b) that reflect the contribution of the factors of sustainable management of human resources (f_{1-10}) to quality (q_{1-5}) and labor efficiency (p_{1-2}) in view of (through multiplying) the values β from the first step. For each factor, we calculate its contribution ($c_\delta=b^*\beta$). We find the aggregate contribution (TC_δ) and determine the ratio of each factor's contribution to the aggregate contribution of all factors ($\delta=c_\delta/TC_\delta$) – rank. Double ranking allows for the systemic consideration of each factor's influence on labor quality and efficiency and their significance for satisfying the interests of employees and employers.

At the third stage, we calculate the product of each factor's value and the assigned rank ($Sust_f$). Since all factors have the same measuring units, this allows comparing the compatible results and evaluating (objectively) the optimality of each factor's influence on the sustainability of human resources management. As a result, we determine the integral influence of all factors ($I_{Sust}=\sum Sust_{f1-10}$). For the purpose of treatment of the results, we created the following scale to evaluate the favorability of each separate factor's influence and the influence of the totality of factors:

- $Sust_f<30$ / $I_{Sust}<30$ – factor's influence is unfavorable / human resources management is not sustainable;
- $30\leq Sust_f<65$ / $30\leq I_{Sust}<65$ – factor's influence is moderately favorable / human resources management is relatively sustainable;
- $65\leq Sust_f<90$ / $65\leq I_{Sust}<90$ – factors' influence is favorable / human resources management is sustainable;
- $Sust_f>90$ / $I_{Sust}>90$ – factor's influence is very favorable (optimal) / human resources management demonstrates high sustainability.

4. Results

4.1 Modeling of the influence of the factors of sustainable management of human resources on labor quality and efficiency

For the purpose of modeling the influence of the factors of sustainable management of human resources on labor quality and efficiency, we have performed a regression analysis of data from Table 1-2 for the full sample of countries. The results are shown in Table 4.

As shown in Table 4, an increase of multistakeholder collaboration (f_1) by 1 point leads to the growth of global brand value, top 5,000 (q_5) by 4.60 % of GDP and the growth of the production volume per 1 employee (GDP in constant prices of 2011, p_2) by USD 1.55 thousand. An increase of gender-neutral wages (f_2) by 1 point leads to an increase of research talent (q_3) by 0.15%, an increase of ISO 14001 environmental certificates (q_4) by USD 0.01 billion, and an increase of global brand value, top 5,000 (q_5) by 0.46% of GDP. An increase of the share of protected employment (f_4) by 1% leads to an increase of knowledge-intensive employment (q_2) by 0.47% and an increase of production volume per employee, GDP (p_2) by USD 0.98 thousand. An increase of support for redundant workers (f_5) by 1 point leads to an increase of cost estimate of ISO 9001 quality certificates (q_1) by USD 0.12.

Table 4. Regression statistics of the influence of the factors of sustainable management of human resources on labor quality and efficiency

Regression statistics	q1	q2	q3	q4	q5	p1	p2
Multiple R	0.3976	0.7890	0.8481	0.0892	0.8829	0.3096	0.7933
Y-intercept	-0.19	-31.55	-34.33	1.66	-183.46	-1.06	-94.25
f1	0	0	0	0	4.60	0	1.55
f2	0	0	0.15	0.01	0.46	0	0
f3	0	0	0	0	0	0	0
f4	0	0.47	0	0	0	0	0.98
f5	0.12	0	0	0	0	0	0
f6	0	0	1.03	0	0	0	0
f7	0	0	0	0	0	0	0
f8	0	0	0	0	0	0	0
f9	0	0.06	0	0	0	0.05	0
f10	0	0.41	0.20	0	0	0	0

Source: calculated and compiled by the authors

An increase of the level of stimulation of unions (f_6) by 1 point leads to the growth of research talent (q_3) by 1.03 %. An increase of the activity of keeping employees (f_9) by 1 point leads to an increase of knowledge-intensive employment (q_2) by 0.06 % and growth rate of PPP$ GDP/ worker (p_1) by 0.05 %. An increase of digital skills of personnel (f_{10}) by 1 point leads to an increase of knowledge-intensive employment (q_2) by 0.41 % and an increase of research talent (q_3) by 0.20 %.

4.2 Modeling of the dependence of the level of satisfaction of employees and employers' interest on labor quality and efficiency

For the purpose of modeling the dependence of the level of satisfaction of the employees and employers' interests on labor quality and efficiency, we have performed a regression analysis of data from Table 2-3 for the full sample of countries. The results are shown in Table 5.

Table 5. Regression statistics of the dependence of the level of satisfaction of employees and employers' interests on labor quality and efficiency

Regression statistics	w1	w2	w3	e1	e2	e3
Multiple R	0.43	0.21	0.25	0.06	0.62	0.31
Y-intercept	0.80	128.69	5.52	40.46	0.17	66.79
q1	0	0	0	0.22	0.02	0
q2	0	0	0.02	0	0	0.10
q3	0	0	0	0	0	0
q4	0	0	0	0	0.18	0
q5	0	0.13	0	0	0.01	0.03
p1	0	0.68	0	0	0.52	0
p2	0	0	0	0	0	0

Source: calculated and compiled by the authors

As shown in Table 5, an increase of the cost estimate of ISO 9001 quality certificates (q_1) by USD 1 billion leads to an increase of the ease of doing business index (e_1) by 0.22 points and an increase in economic growth rate (e_2) by 0.02%. An increase of the share of knowledge-intensive employment (q_2) by 1 leads to the growth of the Happy Life Index

(w_3) by 0.02 points and the growth of the Global Competitiveness Index 4.0 (e_3) by 0.10 points. An increase in the cost estimate of ISO 14001 environmental certificates (q_4) by USD 1 billion leads to an increase of economic growth rate (e_2) by 0.18%.

An increase of global brand value, top 5,000 (q_5) by 1% of GDP leads to an increase of the Quality of Life Index (w_2) by 0.13 points, an increase of economic growth rate (e_2) by 0.01%, and an increase of the Global Competitiveness Index 4.0 (e_3) by 0.03 points. An increase in the economic growth rate of PPP$ GDP/ worker (p_1) by 1 % lead to an increase of the Quality of Life Index (w_2) by 0.68 points and an increase of economic growth rate (e_2) by 0.52%.

4.3 Systemic optimization of labor in the interests of employees and employers from the positions of efficiency and quality

The systemic optimization of labor in the interests of employees and employers from the positions of efficiency and quality is performed based on the obtained results of the regression analysis (Tables 4 and 5). It reflects the maximum possible growth of quality and efficiency of labor by means of the maximization of the values of all selected factors of sustainability of human resources management (Figure 2) and the resulting growth of the satisfaction of the interests of employees and employers (Figure 2).

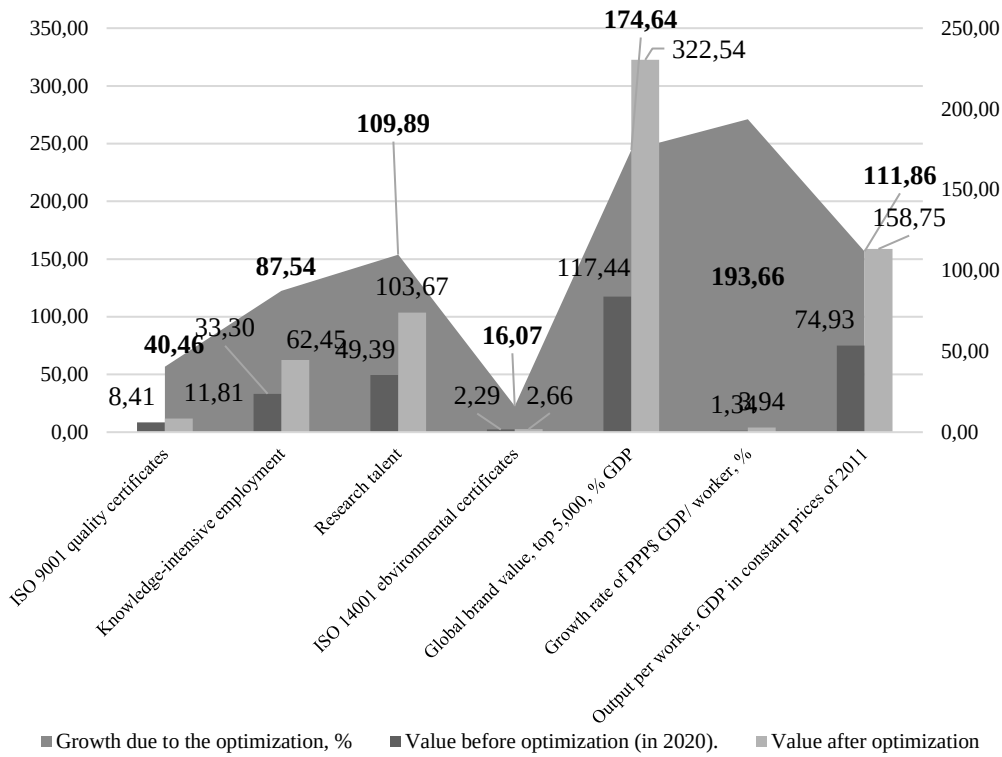

Figure 2. The maximum possible growth of quality and efficiency of labor by means of the maximization of the values of all selected factors of human resources management sustainability

Source: calculated and built by the authors

For the systemic optimization of labor in the interests of employees and employers from the positions of efficiency and quality, we recommend increasing the following aspects in the period until 2030:

- multistakeholder collaboration (f_1) by 72.49%;
- gender-neutral wages (f_2) by 33.24%;
- share of protected employment (f_4) by 23.6%;
- support for redundant workers (f_5) by 35.67%;
- stimulation of unions (f_6) by 69.16%;
- keeping employees (f_9) by 99.47%;
- digital skills of personnel (f_{10}) by 71.80%.

As shown in Figure 2, the maximization of the values of all selected factors of human resources management sustainability allows increasing quality, which is manifested in an increase of the following indicators:

- cost estimate of ISO 9001 quality certificates (q_1) from USD 8.41 billion to USD 11.81 billion, i.e., by 40.46%;
- share of knowledge intensive employment (q_2) from 33.30% to 62.45%, i.e., by 87.54%;
- research talent (q_3) from 49.395 to 100%, i.e., by 109.89%;
- ISO 14001 environmental certificates (q_4) from USD 2.29 billion to USD 2.66 billion, i.e., by 16.07%;
- global brand value, top 5,000 (q_5) from 107.44 % of GDP to 322.54% of GDP, i.e., by 174.64%;

Labor efficiency also grows, which is manifested in an increase of the following indicators:

- growth rate of PPP$ GDP/ worker, % (p_1) from 1.34% to 3.94%, i.e., by 193.66%;
- output per worker, GDP in constant prices of 2011, $ thousand in PPP (p_2) from USD 74.93 thousand to USD 158.75 thousand, i.e., by 111.86%.

On average, growth of quality equals 85.72%. The average growth of labor efficiency equals 152.76%.

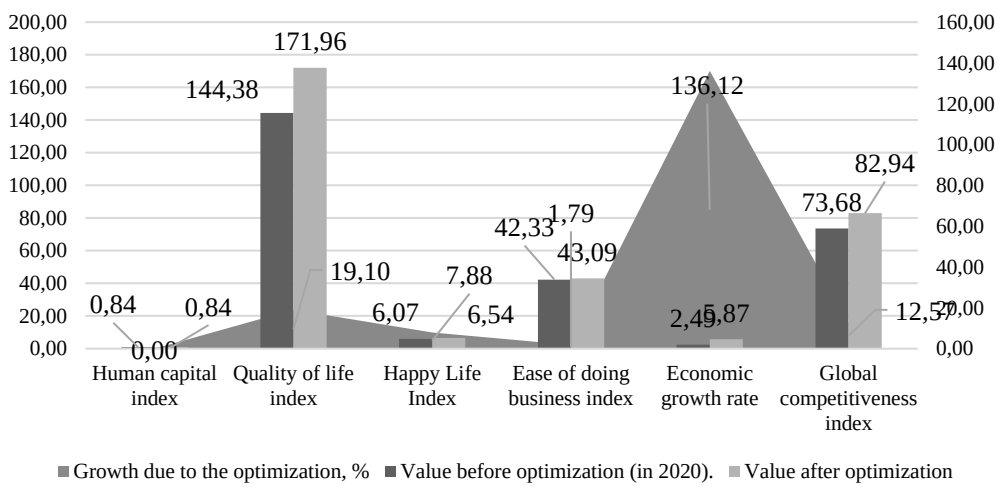

Figure 3. Advantages for employees and employers due to the growth of labor quality and efficiency

Source: calculated and built by the author

As shown in Figure 3, the advantages of implementing the authors' recommendations to increase quality and efficiency include the increase of the following indicators:

- Quality of Life Index (w_2) – from 6.07 points to 6.54 points, i.e., by 7.88%;
- Happy Life Index (w_3) - from 42.33 points to 43.09 points, i.e., by 7.88%.

Advantages for employers include the increase of the following indicators:

- index of ease of doing business (e_1) – from 42.33 points to 43.09 points, i.e., by 1.79%;
- economic growth rate (e_2) – from 2.49% to 5.87%, i.e., by 136.12%;
- Global Competitiveness Index 4.0 (e_3) – from 73.68 points to 82.94 points, i.e., by 12.57%.

On average, the level of satisfaction of employees' interests grows by 8.99%, and the level of satisfaction of employers' interests grows by 50.16%.

4.4 Evaluation of the sustainability of human resources management in the interests of employees and employers from the positions of efficiency and quality in countries of BRICS and G7 in 2020.

The evaluation of the sustainability of human resources management in the interests of employees and employers from the positions of efficiency and quality in countries of BRICS and G7 in 2020 is conducted based on the data from Tables 4-5 (Tables 6-8).

Table 6. Evaluation of the sustainability of human resources management in the interests of employees and employers from the positions of efficiency and quality in countries of BRICS and G7 in 2020: step 1

Quality and efficiency	c_β (sum of regression coefficients b)	$\beta=c_\beta/TC_\beta$
q_1	0.24	0.13
q_2	0.12	0.06
q_3	0.00	0.00
q_4	0.18	0.09
q_5	0.17	0.09
p_1	1.20	0.63
p_2	0.00	0.00
-	TC_β= 1.91 (sum for the column)	1.00

Source: calculated and compiled by the authors

As shown in Table 6, at the first step, we sum up regression coefficients (b). For example, for q_1: $c_\beta=0.22+0.02=0.24$. $TC_\beta=0.24+0.12+0.18+0.17+1.20=1.91$. $\beta=c_\beta/TC_\beta=0.24/1.91=0.13$.

As shown in Table 7, at the second step we sum up regression coefficients (b). For example, for f_1:

$c_\delta=b*\beta=4.6*0.09+1.55*0=0.41$.
$TC\delta=0.41+0.04+0.03+0.02+$

$+0.04+0.03=0.557$.

Rank: $\delta=c_\delta/TC_\delta=0.41/0.557=0.74$.

As shown in Table 8, the average value of f_1 in countries of BRICS equals 51.40 points. $Sust_f=51.40*0.41=37.78$ points (the factor's influence is moderately favorable). Since in countries of BRICS $30\leq I_{Sust}<65$, human resources management is relatively sustainable. In countries of G7, the average value of f_1 equals 62.67 points. $Sust_f=62.67*0.41=46.07$ points (the factor's influence is moderately favorable). Since in countries of G7 $65\leq I_{Sust}<90$, human resources management is sustainable.

Table 7. Evaluation of the sustainability of human resources management in the interests of employees and employers from the positions of efficiency and quality in countries of BRICS and G7 in 2020: step 2

Factors of quality and efficiency	$c_\delta=b*\beta$	Rank: $\delta=c_\delta/TC_\delta$
f_1	0.41	0.74
f_2	0.04	0.08
f_3	0.00	0.00
f_4	0.03	0.05
f_5	0.02	0.03
f_6	0.00	0.00
f_7	0.00	0.00
f_8	0.00	0.00
f_9	0.04	0.06
f_{10}	0.03	0.05
-	$TC\delta=0.557$	1.00

Source: calculated and compiled by the authors

Table 8. Evaluation of the sustainability of human resources management in the interests of employees and employers from the positions of efficiency and quality in countries of BRICS and G7 in 2020: step 3

Factors of quality and efficiency		BRICS		G7	
		Average	$Sust_f$	Average	$Sust_f$
Multistakeholder collaboration	f_1	51.40	37.78	62.67	46.07
Gender-neutral wages	f_2	62.36	4.69	84.11	6.33
Flexibility in wages	f_3	59.48	0.00	66.87	0.00
Share of protected employment	f_4	67.38	3.57	90.54	4.80
Support for redundant employees	f_5	72.80	1.97	74.36	2.01
Stimulation of unions	f_6	51.00	0.00	64.91	0.00
Professionalism of managers	f_7	57.80	0.00	70.00	0.00
Fair wages	f_8	51.42	0.00	59.21	0.00
Keeping employees	f_9	44.40	2.80	54.23	3.43
Digital skills of personnel	f_{10}	51.34	2.37	63.11	2.92
$I_{Sust}=\sum Sust_{f1-10}$		-	53.19	-	65.55

Source: calculated and compiled by the authors

5. Conclusion

Thus, the results of the performed research have demonstrated large perspectives for labor optimization in the interests of employees and employers from the positions of efficiency and quality. The key factors of sustainable management of human resources are multistakeholder collaboration (rank: 0.74, the sum of all ranks=1), gender-neutral wages (0.08), share of protected employment (0.05), support for redundant employees (0.03), keeping employees (0.06), and digital skills of personnel (0.05).

The conducted evaluation of the sustainability of human resources management in the interests of employees and employers from the positions of efficiency and quality in countries of BRICS and G7 in 2020 has shown that human resources management in countries of BRICS is relatively sustainable (53.19 points out of 100). In countries of G7, human resources management is sustainable (65.55 points).

The recommendations for systemic optimization of labor in the interests of

employees and employers from the positions of efficiency and quality in the period until 2030 are offered; they envisage the increase of the following indicators: multistakeholder collaboration – by 72.49%; gender-neutral wages – by 33.24%; share of protected employment - by 23.6%; support for redundant workers – by 35.67%; stimulation of unions – by 69.16%; keeping employees – by 99.47%; digital skills of personnel – by 71.80%.

The practical implementation of the authors' recommendations allows for the average growth of quality by 85.72% and the average growth of labor efficiency by 152.76%. As a result, the average level of satisfaction of employees' interests grows by 8.99%, and the level of satisfaction of employers' interests grows by 50.16% on average.

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