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## **Labour Productivity and Organizational Performance of Banks in Russia**

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**Abstract:** This paper presents the findings of a case study on labour productivity in the banking industry in Russia. Quantitative data for two hundred banks was collected from the report of the Central Bank of the Russian Federation. The sample used is entirely composed of different types of banks and representatively represent the structure of the Russian banking industry, including international and local banks, large and small banks, government-owned and private banks. The collected quantitative data allowed calculating labour productivity. Findings indicate that labour productivity statistically differs for banks depending on their organizational characteristics, including size, ownership, location of headquarter, and number of years of operation in Russia. Overall finding shows that labour productivity has a positive influence on organizational performance of banks in Russia. The finding conforms to earlier studies on the linkage between labour productivity and organizational performance of banks in other countries.

**Keywords:** *Labour productivity, organizational performance, banking industry, Russia.*

### **Introduction**

The linkage between labour productivity and organizational performance of business organizations has become one of the key research topics in the human resources management studies since 1980. Theoretical researches assumed that human resources practices positively influence on labour productivity and this help to achieve strategic goals of business organizations (Beer et al., 1984; Boxall, 1992; Guest et al., 2003; Rosemond & Lartey, 2011) and reach high level of organizational performance (Schuler & MacMillan, 1984; Sink & Tuttle, 1989; Becker & Huselid, 1998). Several international empirical researches has found the positive linkage between labour productivity and performance of business organizations (Rosemond & Lartey, 2011), including banks (Jaffari, Shah Hussain, Aziz, 2012; Ahmad, Kausar, Sharif, 2014).

Though there is a number of papers worldwide devoted to labour productivity, and analysis of its influence on organizational performance, this topic is still an actual one for the researchers. There is no unified methodological approach for testing the linkage between labour productivity and organizational performance of business organizations in different industries. In addition in the academic literature there are only few papers on this topic in the developing countries. As an example, there is lack research in Russia, especially devoted to a specific

industry. The current research is aimed to analyse labour productivity in the Russian banking industry and its influence on performance of banks.

This paper consists of several parts. In the first part an overview of existing approaches to measuring labour productivity and description of the Russian banking industry are presented. In the next sections methodology of the research, as well as the main findings are outlined. Finally, the conclusion of the research is made.

## Literature Review

### Russian Banking Industry

Russian banking industry consists of many banks. According to the report of the Central Bank of the Russian Federation (CBR), there were 859 banks as of January 1, 2015. Banking is one of the main industries in Russia. The ratio of the total banking system assets to GDP equalled 110% in 2014. This indicator increased from 74.6% in 2011. The biggest share of the total banking system assets belongs to state-owned, international and large private banks. Detailed information on the types of credit organizations and its share of the total banking system assets is presented in the below table 1.

*Table 1: Credit Organizations in Russia*

Credit Organizations	The number of credit organizations	The share of the total banking system assets
State – owned banks	25	50,4%
International banks	112	17,8%
Large private banks	128	26,6%
Medium and small banks of the Moscow region	291	2,4%
Regional medium and small banks	341	2,4%
Non-banking credit organizations	59	0,3%
<b>Total</b>	956	100%

*Source: Central Bank of the Russian Federation*

The data from the above table is important for creating a stratified random sample of the research, which will be described in a methodology section of the paper.

Only 2% of the economically active population of Russia is working in the banking industry. According to the Russian Federal State Statistics Service data, 70.2% of banking workers in Russia have high education. In other sectors of the Russian economy the level of education is lower. Banking industry is attractive for well-educated workers as it offers high level of employee remuneration. Though the level of employee education and remuneration is high in the Russian banking industry, market experts assume that labour productivity remains quite low in comparison with the developed countries (McKinsey, 2009). There could be different reasons for that, but probably leadership of banks in Russia do not invest in increasing labour productivity as there is no research evidence on the linkage between labour productivity and organizational performance of banks. The current research will help to clarify if labour productivity has a positive correlation with organizational performance of banks in Russia.

## **Measuring Labour Productivity in the Banking Industry**

Labour productivity is an indicator commonly used for analysis of efficiency and effectiveness of resources allocation in the economic activity. It is an important measure not only at country level, but also at industry and company level. There are many empirical studies about labour productivity conducted in the USA, Canada, Europe, and some developing countries.

Though first research of labour productivity appeared long ago, still there are debates on the calculation of this indicator, especially in the service sectors, including banking industry. According to Oster and Antioch (1995) there are different approaches to measurement of labour productivity of banks, including:

- ratio of operating expenses to average assets;
- ratio of operating expenses to net income;
- ratio of operating income to employee expenses;
- ratio of net income to average assets.

Some researchers use CIR indicator (Cost Income Ratio) to evaluate productivity. This is a ratio of administrative expenses (including employee expenses, materials and amortization) to operational income. The greater the CIR indicator is the lower labour productivity (Burger & Moormann, 2008). Nevertheless, such approach is often criticized, because values of CIR indicator cannot be compared for different countries as the cost of labour differs [Rouster, 2012]. Analysis of the Russian literature demonstrated that usually labour productivity is considered as the ratio of net operating income to headcount, where net operating income equals the difference between operating income and operating expenses [Banki.ru, 2014]. This approach to calculation of labour productivity is used in the current research.

## **Linkage between Labour Productivity and Organizational Performance of Banks**

The current empirical research is aimed to analyse if there is a linkage between labour productivity and performance of banks in Russia. For the purpose of this research it is necessary to determine organizational performance indicators, which are used for the banking industry.

According to Fethi and Pasiouras (2010) there are many approaches to analyse organizational performance of banks. Having reviewed 196 studies they found out that there is a big variety of performance indicators for banking industry, and one of the reasons for that is existence of different types of banks, including investment banks, corporate banks, retail and universal banks. Each type of banks has its specificity and there can be different approaches to analysis of organizational performance of all types of banks. Organizational results of commercial banks, for example, can be assessed based on the amount of deposits, credits, and profitability (Asmild, Paradi, 2004). Other indicators in banking industry are market value, share price and earnings per share (Luo, 2003). Nevertheless, the mostly common used organizational performance indicators for banks are the net profit (Soomro, Gilal, Jatoi, 2011; Umasankar, 2012), return on equity (Orlando, Nancy, 2001; Sheng-Hung, Chien-Chang, 2010), and return on assets (Pena, Villasarelo, 2010). ROA and ROE are indicators, which give an idea as to how efficient management is at using its assets and equity to generate earnings. Each of the indicators is used depending on the purpose of the research.

Based on the literature review the research design was developed, where labour productivity is considered as independent variable and organizational performance of banks (ROA and ROE) are dependent variables. Methodology of the research is described in the next section of this paper.

## Methodology

### Research Hypotheses

There are two hypotheses of the research.

H1. Labour productivity statistically differs for different types of banks, depending on their organizational characteristics (size, ownership, location of headquarter in Russia, nationality of capital (local/ international), number of years of operation in Russia, and total assets).

H2. Labour productivity has a positive influence on organizational performance of banks in Russia.

Testing the above hypotheses requires developing the research design, which includes the sample selection, selection of data collection and methods used for the data analysis.

### Sample Selection

The sample of the research consists of 200 banks (23% of all banks), operated in Russia. It includes banks with different organizational characteristics, including type of business, headcount, type of ownership, etc.. Details of the sample of the research are outlined in the table 2.

Table 2: Sample of the Research

№	Characteristics of Banks	Sampling Fraction, %
1	<b>Number of Years of Operations in Russia</b>	
	Less than 6	4
	6-12	7,5
	13-17	3,5
	18-22	59,5
	More than 22	25,5
2	<b>Ownership</b>	
	Government-owned	8
	Private	92
3	<b>Nationality of Capital</b>	
	Local (Russian)	82
	International	18
4	<b>Type of Business</b>	
	Universal	85,4
	Corporate	5,9
	Investment	4,3
	Retail	4,4
5	<b>Location of Headquarter</b>	
	Moscow	61,5
	Regional City	38,5
6	<b>Headcount</b>	
	Less than 500 employees	43
	501 - 1000	18
	1001 - 5000	28,5
	5001 - 10000	5
	More than 10000	5,5

### Data Collection

Research of the linkage between labour productivity and organizational performance of banks in Russia involves calculation of labour productivity, return of assets (ROA) and return of equity (ROE).

Labour productivity is defined as

$$P = \text{Net Operating Income} / \text{Headcount} \dots \dots \dots \text{eq}(1)$$

Net Operating Income is given as

$$\text{Net Operating Income} = \text{Operating Revenue} - \text{Operating Expenses} \dots \dots \dots \text{eq}(2)$$

ROA and ROE are defined as

$$\text{ROA} = \text{Net Income} / \text{Total Assets} \dots \dots \dots \text{eq}(3)$$

$$\text{ROE} = \text{Net Income} / \text{Total Equity} \dots \dots \dots \text{eq}(4)$$

All the required quantitative data for the calculation of the above indicators is available in financial statements of banks. According to the Russian legislation, all banks have to submit their financial reports to the Central Bank of the Russian Federation. This simplified the data collection as all financial statements are published on the CBR website. The data collected and source of information for this data are indicated in the table 3.

*Table 3: Data Collected and Source of Information*

Purpose	Data Collected	Source of Information
Analysis of organizational characteristics of banks	Size, ownership, location of headquarter, nationality of capital (local/international), and number of years of operation in Russia	Websites of banks
Labour productivity calculation	Operating Revenue	Website of the Central Bank of the Russian Federation
	Operating Expenses	
	Headcount	Financial statements of banks
ROA and ROE calculation	Net Income	Website of the Central Bank of the Russian Federation
	Total Assets	
	Total Equity	

## Data Analysis

In order to test H1 the author used the correlation analysis:

- 1) Kruskal-Wallis test (for determining if there are statistically significant differences between nominal variables and labour productivity);
- 2) Kendall rank correlation analysis (for measuring the association between labour productivity and other measured quantities).

Testing of the second hypothesis is based on the line regression analysis, where labour productivity is independent variable, and return of assets (ROA) and return of equity (ROE) are dependent variables. Both correlation and regression analysis are done in the STATA software. The research findings are described in the next section of this paper.

## Results

### Labour Productivity in the Russian Banking Industry

Based on the collected data as of 1 January 2014 labour productivity was calculated for 200 banks in Russia. The author calculated average, minimum, maximum, and median for labour productivity in different types of banks. Results are presented in the table 4.

*Table 4: Labour Productivity in Different Types of Banks in Russia\**

Type of Bank	Average	Minimum	Maximum	Median
Government-owned	1038,92	58,77	3826,31	778,82
Non-government owned	763,06	0,00	9028,17	380,66
Local	628,29	0,00	5021,15	335,07
International	1483,51	0,00	9028,17	868,62
Corporate	1128,88	32,36	4349,41	673,05
Retail	440,93	0,00	1375,66	307,97
Universal	669,68	0,00	4695,85	370,73
Investment	3912,27	437,25	9028,17	3609,36

\*Thousands of Russian Roubles per employee

The results shows that on the average labour productivity in government-owned banks (P=1038,92) is greater than in non-government owned banks (P=763,06). This is not common for developing countries as usually non-government owned banks have greater values of labor productivity (Altug S., Filiztekhin, 2006).

Labour productivity also differs for local (P=628,29) and international banks (P=1483,51) in Russia. International banks are more productive, because they can have greater experience worldwide and implement best practices in Russia. Among banks of different types of business, the highest labour productivity is in investment banks (P=3912,27) and corporate banks (P=1128,88). The lowest labour productivity is in retail banks.

### Correlation Analysis: Labour Productivity and Organizational Characteristics of Banks

In order to test the first hypothesis of the research, correlation analysis was completed. Sub-hypotheses for each organizational characteristic of banks were tested at a significance level of 5% ( $p=0,05$ ). If the significance level for the tested hypothesis is lower, than it can be accepted. Results of the Kruskal-Wallis test and the Kendall rank correlation analysis are presented in the table 5.

Table 5: Correlation Analysis

Method of Analysis	Organizational Characteristic of Bank	Labour Productivity
Kruskal-Wallis test	Ownership (government-owned/ non-government owned)	$\chi^2=4,043$ $p=0,044$
	Nationality of capital (local/ international)	$\chi^2=7,965$ $p=0,005$
	Type of business (corporate/ retail/ universal/investment )	$\chi^2=7,388$ $p=0,061$
	Location of headquarter (Moscow/ regional city in Russia)	$\chi^2=9,083$ $p=0,003$
The Kendall Rank Correlation Coefficient	Number of years of operation in Russia	$\tau=0,156$ $p=0,002$
	Total assets	$\tau=0,204$ $p=0,000$

Hypothesis that labour productivity statistically differs for banks depending on their ownership can be accepted ( $p=0,044 < 0,05$ ). Labour productivity is greater in government-owned banks. Correlation analysis also confirmed that labour productivity differs for banks with different nationality of capital ( $p=0,005 < 0,05$ ). It is statistically greater for international banks than in local banks. The hypothesis that labour productivity differs for different types of banks should

be rejected as  $p = -0,061$ , which is less than  $p = 0,05$ . Correlation analysis showed that location of headquarter is important for a bank in Russia ( $p = 0,003$ ) as if the headquarter is in the capital of country (Moscow), labour productivity is higher than if the quarter is located in any other city of Russia.

Correlation analysis for quantitative organizational characteristics is based on the calculation of Kendall rank correlation coefficient. The analysis demonstrated that labour productivity statistically depends on number of years of operation in Russia ( $p = 0,002 < 0,05$ ). The more years a bank is presented in Russia, the greater labour productivity it has. This means that improving expertise on the Russian market allows banks to increase its productivity. Labour productivity has a positive correlation with total assets of banks ( $p = 0,002 < 0,05$ ). As total assets determine the size of bank we can conclude that labour productivity is greater for bigger banks.

Based on the results of correlation analysis we can conclude that the first hypothesis of the research that labour productivity statistically differs for different types of banks is proved for all organizational characteristics of banks, except the type of business.

### Regression Analysis: Labour Productivity and Organizational Performance of Banks

The method of least squares was used for regression analysis to test the second hypothesis that there is a positive influence of labour productivity on organizational performance of banks in Russia. The linear least squares fitting technique is the simplest and most commonly applied form of linear regression and provides a solution to the problem of finding the best fitting straight line through a set of points. Based on the analysis of two regression models for ROA (with permanent and random effects), it was concluded that the model with random effects has better characteristics. Results of the regression analysis of ROA are indicated in the table 6.

Table 6: Regression Analysis: ROA

	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
Human Capital Return on Investment (HC ROI)	0.001708	0.000591	2.890000	0.00400	0.000549 0.002866
Labour Productivity (P)	0.000004	0.000001	3.640000	0.00000	0.000002 0.000006
Nationality of capital (N)	0.007570	0.002809	2.690000	0.00700	0.002064 0.013075
Const	0.000279	0.003476	0.080000	0.09360	-0.006534 0.007091

R-sq: within = 0.1951    Obs per group: min = 1  
between = 0.6907    avg = 24.8  
overall = 0.195    overall = 156  
Wald chi2(4) = 47.01  
corr (u<sub>i</sub>, X) = 0    Prob > chi2 = 0

In the regression analysis the author has also included human capital return on investment indicator (HC ROI), which was calculated for the same sample (Prosvirkina, 2014). This indicator is also used by PricewaterhouseCoopers in the Human Resources Effectiveness Surveys (Saratoga, 2014) and is given as:

$$HC ROI = (Revenue - Non-people costs) / (Number of FTE * Average Remuneration) \dots eq(5)$$

According to the results of regression analysis, the regression equation for ROA is the following:

$$ROA = 0.000279 + 0.001708 * HCROI + 0.000004 * P + 0.007570 * N$$

All of the dependent variables have positive influence on ROA, which means that the higher each variable is the higher is ROA. Nevertheless, HC ROI, labour productivity, and nationality of



capital can only describe ROA on 0,1951 (R-square), and other factors, not included in the research, influence ROA on 0,8049. Though, the research demonstrates the positive influence of labour productivity on ROA, this influence is quite small as coefficient equals 0.000004.

Regression analysis for ROE shows that model with permanent effects statistically better suits than the model with random effects. The results of the regression analysis for ROE are outlined in the table 7.

Table 7: Regression Analysis: ROE

	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]	
Human Capital Return on Investment (HC ROI)	0.009219	0.003304	2.790000	0.00600	0.002702	0.015736
Labour Productivity (P)	0.000021	0.000005	3.810000	0.00000	0.000010	0.000032
Nationality of capital (N)	0.024920	0.011402	-2.19000	0.03000	-0.047411	-0.00242
Const	0.017312	0.006018	2.880000	0.00400	0.005442	0.029183

R-sq: within = 0.1965    Obs per group: min = 2  
between = 0.0125        avg = 33  
overall = 0.1796        overall = 175  
Wald chi2(4) = 11.49  
corr (u\_i, X) = 0        Prob > chi2 = 0

This means that the regression equation for ROE is the following:

$$ROE = 0.017312 + 0.009219 * HCROI + 0.000021 * P + 0.024920 * N$$

Results of the regression analysis shows that HC ROI, labour productivity, and nationality of capital has a positive influence on ROE. Nevertheless, this influence is quite small for labour productivity, the coefficient equals 0,000021. R-square for this regression is 0.1965, which means that other factors, not included in the research, describe ROE on 0,8035. The second hypothesis of the research that labour productivity has a positive influence on organizational performance of banks can be accepted.

Based on the statistical analysis of labour productivity of 200 banks in Russia we can conclude the following:

- 1) Labour productivity is greater in government-owned banks than in non-government owned banks.
- 2) Labour productivity is greater in international banks than in local banks.
- 3) There is a significant correlation between labour productivity and number of years of operation in Russia. The more years a bank is presented on the Russian market, the greater labour productivity it has.
- 4) Labour productivity is greater for banks, which headquarter is located in the capital of Russia, and not in any other regional city.
- 5) Labour productivity is correlated with the size of bank: the bigger the bank is, the greater labour productivity it has.



5) There is a positive linkage between labour productivity and return on assets, and return on equity. Though, the influence of labour productivity on the organizational performance of banks (ROE, ROA) is very little in Russia.

In the next session of the paper discussion of the results and conclusion are presented.

## Conclusion

The purpose of this research is to analyse labour productivity in the Russian banking industry as well as to identify if it statistically differs for different types of banks and also investigate if there is a linkage between labour productivity and organizational performance of banks. In order to meet the objective of the research several techniques are used in the analysis. Correlation analysis is used for investigating the difference in labour productivity of banks with different organizational characteristics. Regression analysis is employed to identify the linkage between labour productivity (independent variable) and organizational performance of banks, which is characterised by return on assets and return on equity (dependent variables). The study found that labour productivity statistically differs for banks depending on their organizational characteristics, including size, ownership, location of headquarter, and number of years of operation in Russia. The second finding is that labour productivity has a positive influence on organizational performance of banks in Russia. This means that leadership of banks in Russia should work on increasing labour productivity in order to reach high level of organizational performance.

The limitation of the research is that only two indicators (ROA and ROE) are considered as organizational performance of banks. Future studies can include other indicators, for example net profit, share price or earnings per share. In addition future research can be extended and devoted to identifying factors, which help to increase labour productivity in banks, operated in Russia.

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