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# STATISTICAL ANALYSIS OF THE KEY INDICATORS OF SMALL BUSINESS (ON THE EXAMPLE OF ADJARA)

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**Abstract.** The article aims at investigating and analyzing the changes trends of small business key indicators in the Adjara region and forecasting, as well as the disadvantages that impede small business development in the region on the background of such critical phenomena as unemployment, low revenue and lack of production, small business development helps to solve these problems through the creation of additional job places, through the overcoming of sectorial and territorial monopolies and introducing innovations to evaluate the economic potential of the region and properly determine the business strategy, the key indicators of small business should be studied and evaluated. In the research the section of the given article econometric-statistical analyses of small business key indicators in Adjara is conducted based on statistical data of 2006-2017 years. The study aims at underlining the government policy supporting an advantageous small business environment and conditions, which is a precondition for regional development.

**KEYWORDS:** SMALL BUSINESS, BUSINESS INDICATORS, CORRELATION ANALYSES, STATISTICAL ANALYSES, REGIONAL DEVELOPMENT POLICY.

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## INTRODUCTION

Small business is one of the most important sectors of the national economy. It determines the economic growth rate of the country and the structure of the gross national product. On the background of such critical phenomena as unemployment, low revenue and lack of production, small business development helps to solve these problems through the creation of additional job places, through the overcoming of sectorial and territorial monopolies and introducing innovations. In general, many socio-economic problems can be solved.

The experience of developed economies shows that small business development can become a real factor in the stable economy because this sector determines economic growth and the structure of the gross national product (Chania, 2016a: 7).

At the outset, we agree that the terms «small business» and «small entrepreneurship» are identified in this article because these two terms are similarly understood in almost all economic dictionaries, although not all scientists unify these two in one term. Under the Georgian legislation, «Entrepreneurship» is defined and regulated by the “Law on Entrepreneurs”, although it does not explain the concept of «business»(Legislative...).

The role and importance of entrepreneurial activities, its problems and actuality has been studied in the works

of classical economics as well as by foreign and Georgian scientists.

The transition to the market economy has become more actual and the necessary for its development. Moreover, in recent decades it has attracted attention from the government, which has been the basis of many research and scientific works in this field. Several Georgian researchers dedicated the work to the importance of small entrepreneurship and development (Chitanava, Mekvabishvili, Gvelesiani, etc.). This is the starting point for solving the socioeconomic and social problems of the society, which plays an immense role in promoting small business and creating a favorable environment that directly influences the development of small business.

Small entrepreneurship enhances more flexibility to the market economy, mobilizes financial resources of the population, reduces monopoly trends of economics, promotes scientific-technical progress and is an important factor for structural transformations of the economy in general [Chania, 2016b].

It should be noted that for determining the role of small business in the economic system, it is important to develop regional business, as the country’s business sector development is impossible without the business development in its regions. That is why the government policy should be prioritized to expand the existing business potential in the regions and create new opportunities. Despite the impression

**Table 1.** Dynamics of the Adjara business sector's key indicators

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>Production Turnover, million Lari</b>	728,5	911,2	1008	1030,8	1175,2	1928,8	2375,6	2753,8	3424,1	4155,5	4755,8	5176,9
Small enterprises	355,5	487,6	478,2	540,9	616,2	1179,4	1326,7	1628,8	1966,9	2095,7	2413,0	2410,5
% share	49%	54%	47%	52%	52%	61%	56%	59%	57%	50%	51%	47%
<b>Production Output, million Lari</b>	405,3	518,4	584,4	613,9	714,6	1125,2	1541,4	1635,8	2043,4	2426,3	3079,6	3155,0
Small enterprises	117,3	152,8	179,1	222,7	274,5	503,7	655,5	721,6	936,7	1048,1	1298,8	1496,4
% share	29%	29%	31%	36%	38%	45%	43%	44%	46%	43%	42%	47%
<b>Number of employees</b>	32271	30523	29229	31325	31847	39975	44691	49759	54655	57555	66597	70087
Small enterprises	13779	12799	11801	14093	14879	21411	24284	27273	29635	31766	37947	40419
% share	43%	42%	40%	45%	47%	54%	54%	55%	54%	55%	57%	58%
<b>Average Monthly Wage</b>	219,9	270,5	383,0	399,1	441,4	477,8	536,7	577,3	644,9	821,5	845,4	848,5
Small enterprises	168,0	174,5	234,7	284,5	285,9	339,5	364,7	428,1	467,9	573,5	517,1	644,9

Source: Calculations by author based on Geostat data.

of the regional development plans, considering that small business developments the source of improvement of the economic environment, several hindering factors impede the development of small businesses. These problems lay in the utilization of resources and their rational use, as well as in the implementation of small business promotion programs, legislative regulations, etc.

### MAIN TEXT

In order to evaluate the business sector's economic importance, we need to analyze the key indicators of the business sector in the region, which reflect the main trends of economic activity of the region. These indicators include production turnover, the volume of output, number of employees and average monthly wage for employees (The key indicators...) (table 1).

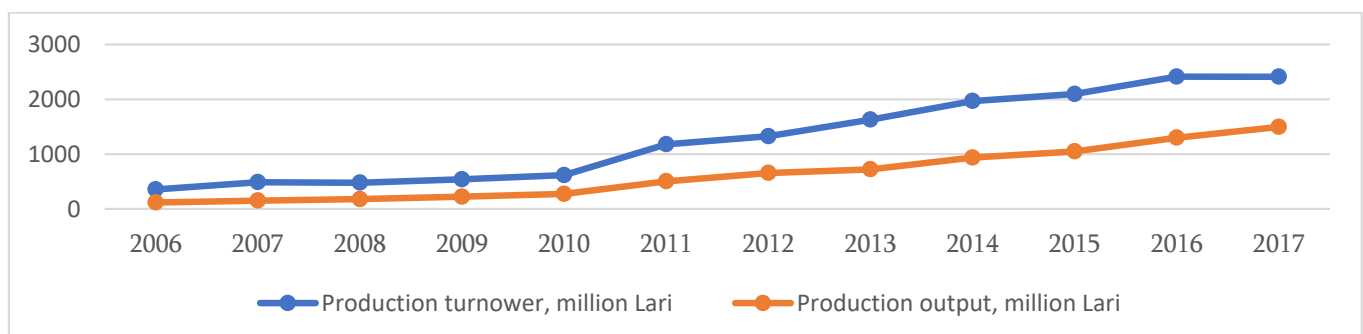
Table 1 represents the dynamics of the main indicators of the business sector, as well as their shares in the overall volume of the business sector.

**Turnover and output of enterprises.** As shown in table 1, more share of turnover and output in the business sector

comes from small enterprises. In 2018, 13778 enterprises operating in the business sector of the Adjara region, including 99% - a small enterprise defined by the new methodology, while in 2016 the share of small enterprises was 88%. This indicator shows that in the region, small business has much priority. The volume of small enterprises turnover and output produced in recent years has an increasing trend (figure 1).

According to the data of the National Statistics Office of Georgia, Adjara is on the second place according to the turnover, the production and employment of business sectors followed Tbilisi, their values are 6,0%, 8,4%, 9,9% respectively and the third place in terms of wages of employees after Tbilisi and Mtskheta-Mtianeti (Statistical Publication, 2018).

**Employment and wages.** The number of employees in small enterprises is an important criterion for small business activity assessment. According to the regional statistical data (<https://www.geostat.ge/regions/>), population in Adjara was 349 thousand in January 1, 2019. In 2018, economically active labor force was 186.3 thousand, while the employed was 169.5 thousand, which is more by 1,7% then in the previous year. Accordingly, the level of activity was 68.2%, the employment rate was 62,1% and the unemployment rate

**Fig. 1.** Production turnover and output of small enterprises in Adjara for 2006-2017

Source: National Statistics Office of Georgia

**Table 2.** The number of employees according to enterprises size

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>Adjara</b>	<b>32271</b>	<b>30523</b>	<b>29229</b>	<b>31325</b>	<b>31847</b>	<b>39975</b>	<b>44691</b>	<b>49759</b>	<b>54655</b>	<b>57555</b>	<b>66597</b>	<b>70087</b>
Large	8540	7873	7801	7935	7373	9610	9526	11322	11974	13437	15457	14454
Medium	9952	9850	9626	9298	9596	8954	10881	11163	13045	12351	13193	15215
Small	13779	12799	11801	14093	14879	21411	24284	27273	29635	31766	37947	40419

Source: National Statistics Office of Georgia

was 9.1%. According to the data of 2017 thousand employed in the business sector was 70,1 in Adjara, which is 42,1% of the total employees. Among them, small businesses employed - 40.4 thousand - about 58 % of the employed business sector. Based on the data of the business sector, most of employees are employed in small enterprises (table 2).

The trend on the basis data of the table 2 shows that the share of the employee in small enterprises is higher compared to medium and large enterprises. In recent years there has been an increasing tendency of employee in small enterprises, which once again confirms the flexibility and efficiency of small entrepreneurship in regards to the employment (figure 2).

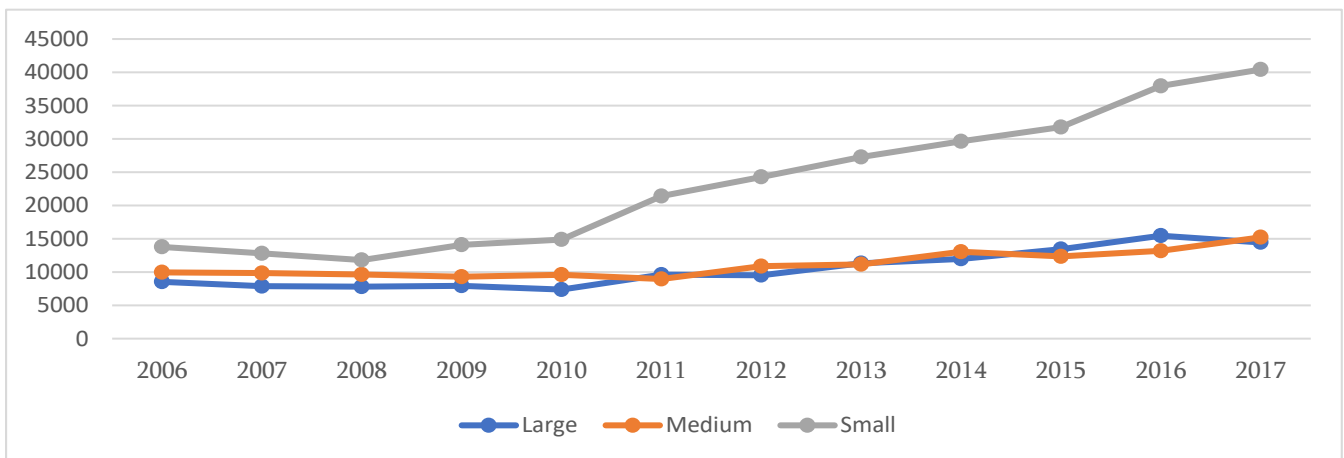
As for the average monthly salary of the employees according to the size of the enterprises, it was found

that workers in small enterprises have the lowest salary. According to the data of 2017, their average salary was 644,9 GEL, which is less than salary in the large and medium-sized enterprises approximately by 43% and 38% (table 3).

The chart based on the data of table 3 shows the difference between the wages by size of enterprises and the relevant trends (figure 3).

Relatively low wages in small enterprises are likely to result in less turnover and employment levels. However, only these reasons do not cause small wages.

Correlation-regression analysis. As one of the characteristics of small business development, we can consider the output and take it as a dependent variable. Although many socio-economic factors affect the output, in this case, let us consider only two factors as independent

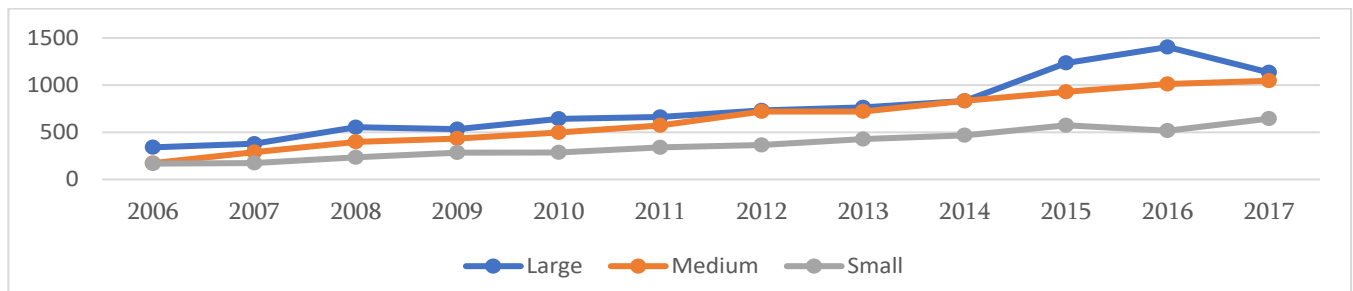
**Fig. 2.** Dynamics of Employees in Adjara Business Sector according to enterprises size for 2006-2017 period

Source: National Statistics Office of Georgia

**Table 3.** Average monthly wages for employees according to enterprise size

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>Adjara</b>	<b>219,9</b>	<b>270,5</b>	<b>383,0</b>	<b>399,1</b>	<b>441,4</b>	<b>477,8</b>	<b>536,7</b>	<b>577,3</b>	<b>644,9</b>	<b>821,5</b>	<b>845,4</b>	<b>848,5</b>
Large	340,4	378,5	553,2	532,9	642,1	662,2	731,5	763,9	832,8	1234,6	1403,3	1134,1
Medium	173,4	289,7	398,6	433,4	497,1	573,1	720,4	720,3	833,1	928,2	1011,0	1045,7
Small	168,0	174,5	234,7	284,5	285,9	339,5	364,7	428,1	467,9	573,5	517,1	644,9

Source: National Statistics Office of Georgia

**Fig. 3.** Wages of employees according to the enterprises size

Source: National Statistics Office of Georgia

**Table 4.** Results of regression analysis

Regression Statistics	
Multiple R	0,997072
R Square	0,994152
Adjusted R Square	0,992852
Standard Error	84,34581
Observations	12

ANOVA					
	Df	SS	MS	F	Significance F
Regression	2	10884289	5442145	764,9677	8,9454E-11
Residual	9	64027,93	7114,215		
Total	11	10948317			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-1420,68	87,19976	-16,2922	5,49E-08	-1617,9356	-1223,41648
Employed	0,048441	0,005367	9,025585	8,34E-06	0,03630008	0,06058259
Wage	1,36175	0,365077	3,730036	0,004697	0,53588857	2,18761101

Source: Regression analysis by author based on Geostat data.

variables (number of employees and wages). Estimate of these factors impact on the dependent variable by multiple linear regression analysis (table 4).

The linear regression equation for output, the number of employees and the average monthly wage, will be written as follows:

$$y = -1420.68 + 0.048 \cdot \text{employed} + 1.36 \cdot \text{wage}$$

Derived from the economic interpretation of multiple regression coefficients, the employees increase by 1 unit can bring the result of more than 48 thousand GEL production in a year, while increasing the wages by 1 Lari can bring the result of more output than 1 360 thousand GEL, which is not so small value, accordingly it is recommended to implement key factors growth policy for small business development.

The results of regressive analysis indicate that the number of employees and wages are statistically significant factors at a level of 5% (p value<0,05).

The coefficient of determination ( $R^2$ ) and adjusted coefficient of determination (Adjusted  $R^2$ ) indicates, that model truly represent set of data and it can be used for

forecasting of dependent variable. The accuracy of chosen regression equation evolution of dependent variable based on current data, is proved by the Fisher statistics (F), which is significant in results (significance  $F < 0,05$ ). So, selected regression model with two explanatory variables, is adequate and about 99,3% of output's variance is explained by the selected model (Ananiashvili, 2014:175).

For to determination of the degree of correlation between the key indicators of small business let us calculate the paired correlation coefficients (table 5).

The values presented in Table 5 indicate that there is a strong positive linear correlation between all the independent and dependent variables, although the production output and the number of employees has the high correlation coefficient (=99,4). There is a strong correlation between the output and wage (=96,8). Linearity of these correlation, can be represented by graphical interpretation (figure 4).

Figure 4 shows linearity between output and employee, also between output and wage.

**Forecasting of small business key indicators.** For the purpose of determining small business perspectives, let us

**Table 5.** The correlation matrix

	Production turnover	Production output	Number of employees	Average monthly wage of employees
Production turnover	1			
Production output	0,984818244	1		
Number of employees	0,989125825	0,993900733	1	
Average monthly wage of employees	0,961788482	0,968086726	0,956477826	1

Source: calculations by author

forecast the volume of output through extrapolation, which is based on the time series of the small enterprises output. Let us assume that the trend will not change in the future. In case of unchanged tendency, the extrapolation method can determine the main trend of development during the forecast period (Gelashvili, 2017:14). Use the linear function model:

$$y(t) = a + bt,$$

where a and b are unknown parameters and they are defined by OLS (Ordinary Least Squares) method based on statistical data changed in t time period. OLS chooses the parameters of a linear function by the minimizing the sum of the differences between the observed and predicted values of dependent variables.

Based on data from table 6 we get a forecasting equation like  $\hat{y} = a + bt$ :

$$\hat{y} = -198,571 + 128,078t$$

We can construct the graphs of actual and estimated values by this model (figure 5).

Obviously, the growth trend of output in the future is maintained, though it is needed to estimate the deviation of the values derived from the model for the observation period (table 7).

According to this model, forecast values of production output in future 5 years are:

Forecast values in the last two years of the time period are less than actual values, which is prior condition of not trusty forecasting. The forecast value in 2024 will increase by about 40% of value compared to 2019. This is the forecast growth for five years. This fact again ensures us to say that there are many problems that impede the optimal development of small businesses.

Forecast value of production output in 2020 is 1722.599 million GEL and 2234.911 million GEL in 2024. Let us determine the forecast confidence interval for  $y^*$  predicted value (Ananiashvili, 2014:125):

$$\hat{y}^* - t_{cr} \cdot S_{\hat{y}^* - y^*} < y^* < \hat{y}^* + t_{cr} \cdot S_{\hat{y}^* - y^*},$$

where  $S_{\hat{y}^* - y^*}$  is the unbiased estimator of forecasting error's variance:

$$S_{\hat{y}^* - y^*}^2 = S_e^2 \left[ 1 + \frac{1}{n} + \frac{(t^* - \bar{t})^2}{n \text{Var}(x)} \right] \quad \text{and} \quad S_e = \sqrt{\frac{1}{n-2} \sum_{i=1}^n e_i^2}.$$

In results of calculations the standard error is  $S_e = 114.9055$  and  $S_{\hat{y}^* - y^*}^2 = 20974.44$

known critical value of Student's t-distribution with 95% confidence level and  $n-2=10$  degrees of freedom  $t_{cr} = 2.228$ . So, we get:

$$1722.599 - 2.228 \cdot 144.825 < y^* < 1722.599 + 2.228 \cdot 144.825$$

i.e.

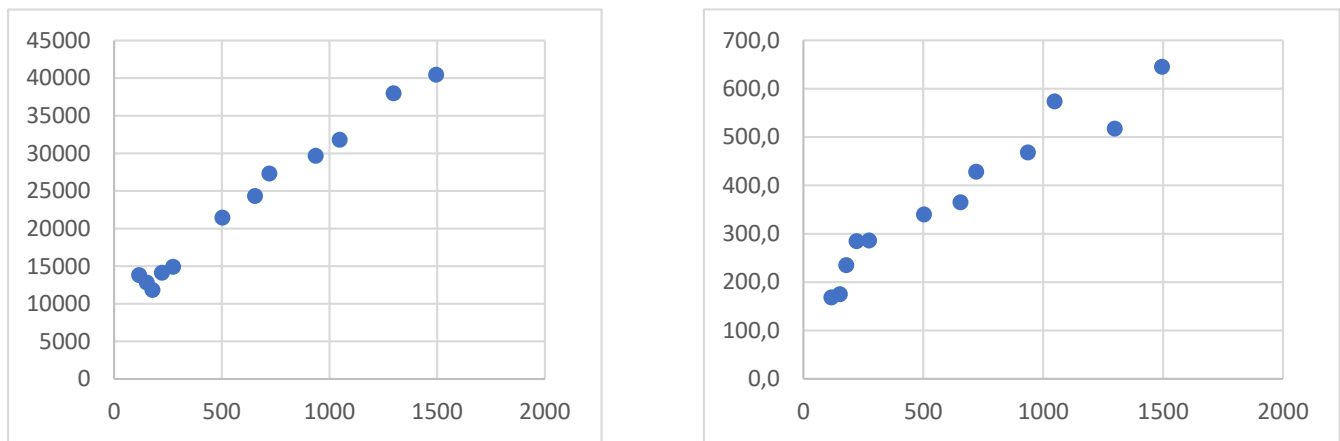
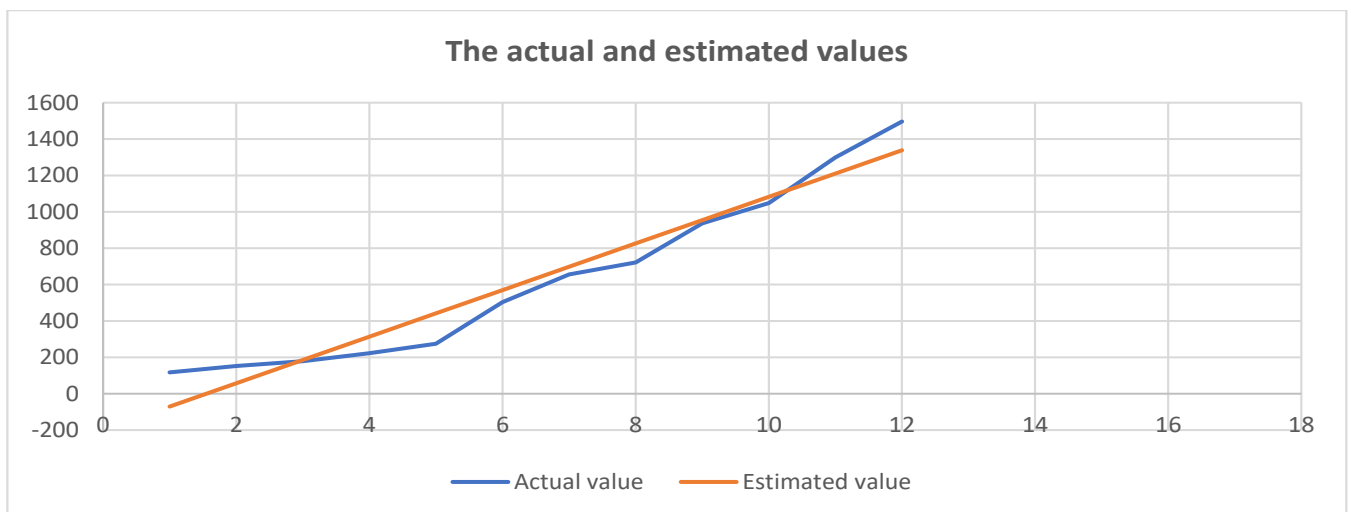
$$1399.93 < y^* < 2045.27$$

Thus, the interval of output probability forecasting value for 2020 year is from 1399.93 GEL to 2045.27 GEL. Note that the interval is large enough and one of the main reasons is the large difference between  $t^*$  and  $\bar{t}$ .

**Table 6.** Production output (million GEL) for 2006-2017 period

Year	Serial number of years, t	Production output, y	Year	Serial number of years, t	Production output, y
2006	1	117,3	2012	7	655,5
2007	2	152,8	2013	8	721,6
2008	3	179,1	2014	9	936,7
2009	4	222,7	2015	10	1048,1
2010	5	274,5	2016	11	1298,8
2011	6	503,7	2017	12	1496,4

Source: National Statistics Office of Georgia

**Fig. 4.** Graphical interpretation of linear correlations**Fig. 5** The actual and estimated values of production output.

**Promote small business development.** In the 2019 regional report «Doing Business 2019» on the World Bank's official web site, presented by European and Asian countries (ECA), Georgia was ranked 6th in the world ranking list, while in 2018 was ranked 9th (Doing...). The fact is that business development is going on in Georgia, but despite the improvement of entrepreneurial environment, small

and medium enterprises has some difficulties in many areas that negatively affect competition. In this regard, much has been written in the works of Georgian researchers, NGO research and projects, as well as in reporting projects with some recommendations. Recommendations relate to the improvement of institutional structure and operating environment of small and medium enterprises, the

**Table 7.** Results of extrapolation

t	Y	$\hat{y}$	$y - \hat{y}$
1	117,3	-70,493	187,793
2	152,8	57,585	95,215
3	179,1	185,663	-6,563
4	222,7	313,741	-91,041
5	274,5	441,819	-167,319
6	503,7	569,897	-66,197
7	655,5	697,975	-42,475
8	721,6	826,053	-104,453
9	936,7	954,131	-17,431
10	1048,1	1082,209	-34,109
11	1298,8	1210,287	88,513
12	1496,4	1338,365	158,035

Source: Calculations by author

availability of financing of small and medium enterprises, raising entrepreneurial culture, internationalization, the introduction of innovations and technologies in small and medium enterprises (OECD...).

In the framework of the Association Agreement with the European Union «Small and Medium Entrepreneurship Development Strategy for 2016-2020» was developed (Small...).

As for the assistance of business in the regions of Georgia, the Ministry of Regional Development and Infrastructure of Georgia developed a Regional Development Program 2018-2021, in which one of the priorities is supporting small and medium enterprises (Regional...).

The initiative of the Government of Georgia is to carry out the state program «Produce in Georgia» aimed at facilitating small and medium businesses in regions of Georgia through financial and technical support. The project is implemented in all regions except Tbilisi ([www.enterprisegeorgia.gov.ge](http://www.enterprisegeorgia.gov.ge)). Within this project, 596 projects have been realized in total of 5 million GEL in Adjara.

It is written in the Strategic Development Plan of 2016-2021 of the Autonomous Republic of Adjara: «Despite the well-developed financial system and state programs, low availability in the region is on financial resources. Companies enjoy the old technologies and have little opportunities for production. Companies do not have experience in marketing and has problems with producing relevant to existing markets and go to new markets. The reason for this is the low level of business education and qualification of workforce «[Strategic...].

Adjara has a resource potential to create a favorable business environment for small business development. This is contributed by its geographical location, natural diversity and etc. For this reason, the Government of Adjara should lead more active stimulating policy for small entrepreneurs.

Within the framework of supporting business activities, Adjara also supports small and medium tourism business

**Table 8.** forecast values of output for 2019-2024 period

Year	Serial number of years, t	Forecast value, $\hat{y}$
2019	14	1594,522
2020	15	1722,599
2021	16	1850,678
2022	17	1978,756
2023	18	2106,834
2024	19	2234,911

Source: Calculations by author

programs. Within the same framework there will be launched the program «Successful Ideas», which will be implemented in cooperation with UNDP in 2019 (Adjara Government report 2018-2019).

## CONCLUSION AND RECOMMENDATIONS

Based on the results of the survey, we can evaluate the potential of small enterprises output in the Adjara region, detect the current trend and make future forecasts; For this reason, the research has more practical importance to characteristic the economic situation of the region and to develop small businesses. During the research, the time series regression analysis based was used on data of the National Statistics Office of Georgia and the Ministry of Finance and Economy of Adjara. Statistical significance and validity of the two-factor regression model has been estimated.

It should be noted that this model is not a universal, perfect model. It does not include socio-economic factors (lack of appropriate information) that impact regional business development which is the subject of future research and study.

In research forecasted the output volume produced by small enterprises for the next 5 years, use extrapolation method and estimated the accuracy of the predictions. According to the last two years of the time series, the forecast values are less than actual values which is a prerequisite of unreliable predictions. This again gives us the right to say that there are a number of problems that prevent the optimal development of small businesses. While maintaining the current tendency, however the output has a growing tendency, the forecasted value in 2024 will increase by about 40% than compared to 2019. Such a forecast average growth for five years is a positive fact but it is not enough to greatly increase economic growth and the population welfare level.

Based on the model assessment, the volume of products

produced by small enterprises is in positive correlation with the selected factors, i.e. the number of employees and their wages is directly proportionate to the output. This gives the formation of following recommendations to positive correlation with the selected factors, i.e. the number of employees and their wages is directly proportionate to the output. This gives the formation of following recommendations to regional business support:

It is recommended to increase the salaries of employees and the creation of additional jobs, with special emphasis on labor market demand-oriented workforce development, employee training, and, therefore, to increase the wages. According to the types of economic activity in the region, the sharp differentiation between salaries indicates low productivity of labor.

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