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Study on Labor Integration of Groups of People, Facing Serious Difficulties in Gaining Employment in The Labor Market of Bulgaria

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Abstract. *The survey aims to identify the factors influencing the different levels of unemployment in Bulgaria through the use of statistical methods and official statistical information regarding the labor market for the period 2015-2019. To achieve the research goals, a regression model was developed, disclosing the relationship between a dependent variable (total unemployment rate) and a system of independent variables reflecting the influence of factors for the analyzed period. The nature of the dependencies is established, statistically significant factors are selected and ranked, the degree of influence for each of them is determined, the adequacy of the model is checked and the results obtained are fully analyzed. Based on the findings achieved, conclusions are formulated and measures are proposed aimed at a general reduction of the unemployment rate in the country, as well as to increase the opportunities for employment of various categories of unemployed persons with disabilities.*

Keywords: unemployment rate, unemployment of persons with disabilities, regression analysis, dependent and independent variables, regression coefficients

1. Introduction

The social and demographic aspects of the unemployment constitute a topical issue, which continues to be serious regardless of its economic context and should be constantly studied and analyzed. The unemployment is a phenomenon, leading to public and individual damages. The high unemployment rates represent a factor that augur further economic instability on a national level, and at an individual level it leads to loss of motivation and getting into a state of discouragement for those who have lost their jobs due to circumstances beyond their control. In 2015 according to Eurostat data the unemployment rate in Bulgaria was 9,2% going into gradual decline in the next few years . Therefore, the systematic research and analysis of the unemployment-related circumstances are of particular importance to avoid or minimize its negative consequences. The application of measures for curbing the unemployment and promoting employment is very important because it is these two components of the labor market that are closely related to the opportunities for "socially fair distribution of labor in society and preservation of social peace in it" (Petrov, 2014) especially in the conditions of unfavorable economic situation. Despite the fact that the interactions on the labor market have been widely studied and analyzed, they are still a subject of a scientific interest by a number of authors, as the focus should also be put on some specific problems of the labor market. The implementation of research projects relating to the unemployment and creation of management plans for dealing with work problems requires application of a differentiated approach to different categories of unemployed persons on the labor market according to different factors. Approximately 20 years ago in Bulgaria Genoveva Mihova in her work entitled "The unemployment in vulnerable groups in Bulgaria" emphasized the need for a more critical analysis not only of the unemployed persons in the country in general, but a more thorough study of the so called "vulnerable" groups in the labor market as well (Mihova, 2003, p.10). She was the one, who has made the first study in Bulgaria on the social and demographic aspects of the unemployment in the vulnerable groups. The present study is also directed to analysis of the factors, influencing the employment of specific target groups, facing serious difficulties in the labor market such as the people with disabilities. Unfortunately, both the literary sources in our country,

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related to this target group, and the published current data on their employment in the labor market are quite limited, which to some extent makes the analysis incredibly difficult, but not impossible.

According to the European Disability Forum all the necessary steps to achieve an equal level of employment for all, including for the people with disabilities, should be underpinned on a number of coordinated principles **(EDF, 2000**).

2. Statement of the study

The unemployment constitutes a multi-layered problem and affects large number of people, therefore, its more thorough and specific study requires examining two aspects of the unemployment: overall unemployment and unemployment of disadvantaged groups. The time period of the study is the period 2015-2019. By analyzing the overall unemployment rate we will obtain information on the overall state of the labor market and the analysis of the specific groups will give information regarding the groups, facing difficulties to gain employment, and on this basis we will analyze the reasons for their status and propose measures to help them find a job.

The main purpose of the study is mainly focused on identification of the factors affecting the unemployment rate of people with disabilities, who are regarded as a group, facing serious difficulties in gaining employment in the labor market. Many people with disabilities may have the ideal skills, but may also be deprived of training to help them achieve them. (Employers Handbook, 2009, p.198) The significant factors, affecting the unemployment rate for this group will also be identified, and the nature of their interrelation, as well as the extent to which they affect each other from a quantitative point of view. Finally, the obtained results will be analyzed.

On the basis of the analysis of the results obtained from each stage of the study, recommendations and practical measures will be defined aimed at reduction of the overall unemployment rate on a national level and increasing the employment integration of the people with disabilities. Access by vulnerable populations to social and economic infrastructure is the foundation of any community development initiative in the world, because it lays the foundation upon which other aspects of human development can be built. **(Amanze & Nkomazana, 2020)**

The present study is based on the working hypothesis that a suitable scientific instrument for achieving the defined purposes of the study is the regression analysis, which gives satisfactory results in identifying the factors, influencing the study on the two levels of unemployment during the analyzed period and the exact quantitative assessment of the degree of influence of each factor. On the basis of this information, science-based recommendations for improving the existing situation can also be defined.

In order to determine the factors, affecting the overall unemployment rate and the work integration of people from vulnerable groups, facing serious difficulties to gain employment, we will use the method of regression analysis. To this end, we will develop two regression models. By applying the first model we will identify and measure the influence of the factors on the overall unemployment rate in the country. By using the second model we will identify and measure the influence of the factors for the employment of the most vulnerable group in the labor market, i.e. people with disabilities. All data, used in the development of the regression models for the registered unemployed persons, is official monthly data for the entire country, recalculated as annual data by the authors, provided by the web page of the Employment Agency, Section “Statistics and Analyses”. Table 1 contains summarized data on the unemployment of vulnerable groups in the labor market.

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Table1 Data on the unemployment of vulnerable groups during the period 2015-2019, calculated on the basis of the monthly data of the Employment Agency

Year	Registered for 6-12 months (number)	Registered over a year	Unemployed youth under the age of 29 (incl. 24)	Unemployed persons without qualification or specialty	Unemployed persons with elementary or lower education	Unemployed persons aged 50 and older (number)	Unemployed persons with disabilities (number)
2015	22723	146010	51680	184776	158000	130701	16923
2016	33242	118279	37998	156710	132396	115822	15760
2017	33242	87706	33600	129305	107903	93316	13466
2018	39279	65074	26785	108098	88661	79973	13627
2019	37725	47871	23998	98440	80216	73558	11873

Regretfully, there is no available official data on different groups of unemployed persons with disabilities. Such data can only be found on the official website of the **Employment Agency, Section "Statistics and Analyses"** – periodical, annual, monthly data and analyses of the unemployment of these target groups. The data on unemployed persons with disabilities, differentiated by defined indicators for the analyzed period, is given in Table 2 and Table 3. The data used is taken from the monthly statistics of the Employment Agency and are recalculated on an annual basis for the purposes of the study.

Table.2 Data on unemployment of definite target groups from the persons with disabilities, period 2015-2019 – part 1(Source: Employment agency - monthly newsletters)

Year	Total number of unemployed persons with disabilities	Unemployed persons with disabilities - feminine	Unemployed persons with disabilities - male	Unemployed persons with disabilities under the age of 29	Unemployed persons with disabilities aged over 50 years	Unemployed persons with disabilities with higher education
2015	16923	8443	8480	992	10228	**1403**
2016	15760	7855	8159	766	9782	**1403**
2017	13466	**8149**	**8319**	711	8319	1431
2018	13627	**8149**	**8319**	**823**	8433	1480
2019	11873	**8149**	**8319**	**823**	7586	1299

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Table3 Data on unemployment of definite target groups from the persons with disabilities, period 2015-2019– part 2 (Source: Employment agency - monthly newsletters)

Year	Unemployed persons with disabilities with secondary education	Unemployed persons with disabilities with secondary vocational education	Unemployed persons with disabilities with elementary or lower education	Unemployed persons with disabilities without qualification or specialty	Unemployed persons with disabilities with worker's specialty	Unemployed persons with disabilities – specialists
2015	**7565**	**1475**	5266	6714	**4708**	**3073**
2016	**7565**	**1475**	4762	6270	**4708**	**3073**
2017	7912	1536	4123	5354	4906	3207
2018	7958	1529	4189	5446	4953	3228
2019	6826	1361	3803	4879	4266	2783

In order to determine the factors, affecting the unemployment rate of one of the most vulnerable groups in the labor market – persons with disabilities, we will build a new regression model, following the same reasoning as in model (1). By this model we will try to determine with relatively high accuracy the factors, affecting the unemployment rate of this specific target group, the nature of the relationship between them and the degree of influence of each of them. For this purpose, we form the following regression equation.

$$Yi = Z_0 + \varphi_1 Z_1 + \varphi_2 Z_2 + \varphi_n Z_n + \mu \qquad (1)$$

Where:

- Y_i – a dependent variable, reflecting the number of unemployed persons with disabilities for each year of the analyzed period 2015-2019.
- Z_i– an independent variable, reflecting the factors, affecting the dependent variable X_7, (i = 1,2,…4);
- Z_0 – a constant, reflecting the influence of other factors, not included in the model;
- φ_i– regression coefficients, reflecting the relationship between the dependent and independent variables (i = 1,2,…4);
- μ- is a random element in the model. This value reflects the influence of random factors on the dependent variable.

The independent variable Z_1 represents the distribution of the number of the registered unemployed persons with disabilities, distributed by sex for each year of the analyzed period 2015-2019. Hence, it can be presented in the following form:

$$Z_1 = (Z_{11}; Z_{12}) \qquad (2)$$

Where:

- Z_{11}– number of registered female unemployed persons with disabilities;
- Z_{12}- number of registered male unemployed persons with disabilities;

Each of these two variables acquires values, corresponding to the number of registered unemployed persons with disabilities, for each year of the analyzed period 2015-2019. This means:

$$Z_{11} = (Z_{111}; Z_{112}; Z_{113}; Z_{114}; Z_{115})$$

Where $Z_{111}, Z_{112}, Z_{113}, Z_{114}, Z_{115}$ are values of registered female unemployed persons with disabilities, respectively, for 2015;2016;2017;2018 and 2019.

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Similarly:

$$Z_{12} = (Z_{121}; Z_{122}; Z_{123}; Z_{124}; Z_{125})$$

Where Z_{121}, Z_{122}, Z_{123}, Z_{124}, Z_{125} are values of registered male unemployed persons with disabilities, respectively, for 2015;2016;2017;2018 and 2019.

The independent variable Z_2 represents the number of registered unemployed persons with disabilities, divided by age:

$$Z_2 = (Z_{21}; Z_{22}) \qquad (3)$$

Where:

- Z_{21} - number of registered unemployed persons with disabilities aged between 25-29 years;
- Z_{22} - number of registered unemployed persons with disabilities aged over 50 years.

Similarly to the above, each of these variables Z_{21} and Z_{22} takes values of the registered unemployed persons with disabilities, for each year from the period 2015-2019.

The independent variable Z_3 represents the distribution of the number of the registered unemployed persons with disabilities, divided by education degree:

$$Z_3 = (Z_{31}; Z_{32}; Z_{33}; Z_{34}) \qquad (4)$$

Where:

- Z_{31} - number of registered unemployed persons with disabilities with higher education ;
- Z_{32} - number of registered unemployed persons with disabilities with general secondary education;
- Z_{33} - number of registered unemployed persons with disabilities with secondary vocational education;
- Z_{34} - number of registered unemployed persons with disabilities with elementary or lower education.

As in the previous model, the variable Z_3 takes five values Z_{3ij}, (i= 1,2,..,4;j=1,2,…,5) corresponding to the number of the registered unemployed persons with disabilities from these four educational groups (people with higher education; people with general secondary education; people with secondary vocational education and people with elementary or lower education) for the years 2015, 2016, 2017, 2018 and 2019.

The independent variable Z_4 represents the distribution of the registered unemployed persons with disabilities, divided by qualification – people without qualification or specialty; people with worker's qualification and specialists. Thus, this variable gets the following analytical form:

$$Z_4 = (Z_{41}; Z_{42}; Z_{43}) \qquad (5)$$

Where:

- Z_{41} - number of registered unemployed persons with disabilities without qualification or specialty
- Z_{42} - number of registered unemployed persons with disabilities with worker's qualification;
- Z_{43} - number of registered unemployed persons with disabilities – specialists.

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Each one of these variables Z_{41},Z_{42} and Z_{43} takes values of the number of the registered unemployed persons with disabilities, divided by qualification, for each year from the period 2015-2019.

By using the statistical analysis software SPSS 21.0 we solve the developed regression model, and the analysis of the obtained results gives us grounds to draw the following conclusions:

After entering the data in the statistical program SPSS and calculating them, it is obvious that from all the independent variables, included in the regression model (1), the statistically significant regression coefficients are obtained for four of them . The results of the statistical calculations are presented in the following table:

Table 4 Independent variables with statistically significant regression coefficients, included in the model (Source: Authors research)

Model	Variables Entered	Variables Removed	Method
1	v12, v3, v5, v4[a]	None	Enter

a. Tolerance = ,000 limits reached.

b. Dependent Variable: v1

- V_{12}, is the regression coefficient of the independent variable Z_{43}, reflecting the number of the registered unemployed persons with disabilities – specialists;
- V_3, , is the regression coefficient of the independent variable Z_{12}, representing the number of the registered male unemployed persons with disabilities;
- V_5, is the regression coefficient of the independent variable Z_{22} or the registered unemployed persons with disabilities aged over 50 years;
- V_4, is the regression coefficient of the independent variable Z_{21}, reflecting the number of the registered unemployed persons with disabilities under the age of 29.

To the statistically significant values in the model we have to add the constant (Z_0), whose regression coefficient V_1 is also defined as statistically significant. As noted above, it reflects the influence of other random factors, not included in the model, on the dependent variable. This conclusion requires a more sustained study in this direction in order to identify those factors, which will be a research task of the authors in the near future.

The data from the calculated coefficients of multiple correlation between regression coefficients shows that a large part of the variance of the independent variables can be explained by the regression equation, which gives us reason with a relatively acceptable probability to conclude that the regression model developed by us offers a plausible explanation as to the relationship between the variables. In order to ensure the full reliability of the calculations made, the adequacy of the model will be tested through the procedure for statistical testing of hypotheses.

Table 5 provides information on the coefficients of the statistically significant independent variables included in the regression model. As mentioned above, here again we will use the standardized regression coefficients in the analysis.

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Table 5 Regression coefficients of statistically independent significant variables in the model (Source: Authors research)

0Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	-15036,280	,000	
	v3	1,470	,000	,083
	v4	-,489	,000	-,026
	v5	1,796	,000	,984
	v12	,524	,000	,046

a. Dependent Variable: v1

As can be seen from the data in the table, the highest value has the regression coefficient V_5 with a value equal to .984. corresponding to the independent variable Z_{22},, representing the number of registered unemployed persons with disabilities aged over 50 years. As mentioned above, the registered persons with disabilities are a disadvantaged group on the labor market, and when the subsequent increase in the pre-retirement age is added to this factor, the chances for employment potential of these persons significantly decrease. It is possible that the persons in this group are discouraged and have a lower motivation to seek employment. The supported and protected employment for people with disabilities is an appropriate way to support and activate this disadvantaged group in the labor market.

The next significant standardized regression coefficient is V_3 with a value of ,083 corresponding to the independent variable $Z_{12,}$, representing the registered unemployed persons with disabilities - men. This conclusion is a bit surprising, but it most probably is a result of the common understanding that the desk work or work involving mental activities rather than physical is more suitable for women than for men, and employers are more likely to hire women to such positions.

At the next level of significance is the standardized regression coefficient V_{12}, corresponding to the independent variable Z_{43}, - the registered unemployed persons with disabilities - specialists. It is possible that these people fall here due to the fact that there is no mandatory quota principle for hiring persons with disabilities for all employers in our country. This again leads to the conclusion that many employers have prejudices against people with disabilities even if they are educated and professional.

The last significant standardized regression coefficient V_4 is that of the independent variable Z_{21}, including the number of registered unemployed persons with disabilities under the age of 29 years. Here the situation is repeated as in the basic model, where the possible reasons for the inclusion of this group among the significant values are indicated.

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Once more, we use the procedure of statistical hypothesis test to test the adequacy of the regression model and formulate the two known hypotheses: **(Saykova, 2001, p.178)**

- H_0 - null hypothesis;

- H_1 – alternative hypothesis.

In this case H_0 has the following content: Between the statistically significant regression coefficients in the developed model there is a correlation, which means that the model does not adequately reflect the relationship between the independent and dependent quantities - the model is not adequate. $H_1$is the alternative hypothesis, which states - there is no existing correlation between the regression coefficients, which means that the model relatively adequately reflects the relationship between the independent and dependent quantities - the model is adequate. The critical values of the correlation coefficients are given in **(K. Kalinov, 212 p.557).** At the level of significance of the statistical error $\alpha = 0.05$ and 5 degrees of freedom, which levels are typical for most studies in the social sphere, the critical value of the correlation coefficients is equal to 0.7545. The next step in the study is to perform a statistical check of the adequacy of the model. For this purpose, the procedure for statistical testing of hypotheses will be used and the summarized data in Table 6 will be used.

Table 6 Summary data on the correlation between the independent variables and the dependent variable

	V_1	V_6	V_{10}	V_{16}
V_{17}	-,921	,989	,997	,967

As could be observed from the data above, all coefficients are greater than the indicated value of 0.7545, which means that the alternative hypothesis H1 is confirmed and the zero hypothesis is rejected, i.e. the model is adequate. It is important to note that the coefficient of the factor V1 in Table 6 has a sign "-", which is an indicator that reflects the nature of the relationship, not its value.

Regardless of this, there is an indication that when increasing the volume of statistical information included in the model, its adequacy will increase, which gives us good grounds to conclude that the choice of this scientific research tool is appropriate. The lack of sufficient and up-to-date data on the employment of persons with disabilities is a particular problem, which has been mentioned many times in a number of international reports. The last survey on the employment of persons with disabilities was conducted in 2011 by the National Statistical Institute as an additional module - Employment of persons with disabilities.

Thus, the accepted working hypothesis is proved in its second part - in terms of solving research problems in the second stage of the study.

3. Conclusions

Based on the research and the analyzes of the obtained results, two groups of conclusions can be drawn - for the factors, influencing the overall unemployment rate in the country and for the labor integration of groups with serious difficulties in the labor market:

- The most significant impact on the overall level of unemployed persons with disabilities has the number of registered unemployed persons with disabilities aged over 50 years. As mentioned above, the registered persons with disabilities are a disadvantaged group on the labor market, and when the subsequent increase in the pre-retirement age is added to this factor, the chances for employment potential of these persons significantly decrease. In this regard, the development and

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implementation of national programs for supported and protected employment of such persons with disabilities would significantly support their labor integration. Also, the application of tax relief for social enterprises, in which persons with disabilities are a certain part of the staff, would be stimulating for this target group, which is governed by Article 36 of the **Law on people with disabilities**.

- The Bulgarian employers are still reticent to the employment of various categories of persons with disabilities. The analysis highlighted as significant the groups of persons with disabilities - men; the group of persons with disabilities - specialists and again, youth unemployment but now among persons with disabilities under 29 years of age. Factors that are generally positive for the employment of a person such as a high level of education and the presence of specialization are unusable when the person has some kind of disability due to the prejudice of employers. In this regard, it is necessary to use broad information campaigns among employers to overcome and eliminate these prejudices and thus to reach a higher level of employment of these subgroups of persons with disabilities. The integration of people with disabilities is a two-way process, and access to the labor market must be seen as the responsibility of both parties. **(Maria's World Foundation, 2015.)**

- The lack of up-to-date and general data, related to the labor integration in the labor market of persons with disabilities in Bulgaria leads to the conclusion that its dynamics is not an object of research, and that the necessary measures are not taken to build adequate support for disability-related labor market inequality. In light of this, the publication of more up-to-date data in this direction is an absolutely necessary prerequisite for the implementation of a policy to support the employment of persons with disabilities.

References

Amanze, J. N., & Nkomazana, F. (Ed(s).). (2020). *Disability is not inability: A Quest for Inclusion and Participation of People with Disability in Society.* Malawi: Mzuni Press.

Employers' handbook. (2009). *Увеличаване на работните места за лица с увреждания.*

Employment agency - monthly newsletters. (Date of Access 2021, September 19) *Информация за безработицата, активната политика по заетостта и реализацията на оперативната програма „Развитие на човешките ресурси".* Retrieved from: https://www.az.government.bg/stats/2/

European Disability Forum. (Date of Access 2021, September 19) Retrieved from: https://socialaffairsru.weebly.com/european-disability-forum.html

Eurostat, *Newsrelease euroindicators*. (Date of Access 2021, September 19) Retrieved from: https://ec.europa.eu/eurostat/documents/2995521/7149413/3-02022016-AP-EN.pdf/545157bf-6284-498f-a984-e031a89719c9

Kalinov, K. (2013). *Статистически методи в поведенческите и социални науки*. София: НБУ

Law on people with disabilities, Effective from January 1, 2019. (Date of Access 2021, September 19) Retrieved from: https://www.lex.bg/bg/laws/ldoc/2137189213

https://doi.org/10.29114/ajtuv.vol5.iss2.251
Vol.5 Issue 2 (2021)
Published: 2021-12-31
ISSN 2603-316X (Online)

Maria's World Foundation. (2015). *Information for employers*. Retrieved from: https://www.mariasworld.org/bg/info-za-rabotodateli.html (Date of Access 2021, September 19)

Mihova, G. (2003). *Безработицата при рисковите групи в България.* София: Акад. Издателство „Проф.Марин Дринов“

Petrov, T. (2014). *Наръчник по социална политика.* Варна: ТУ-Варна

Saykova, I., Stoykova - Kanalieva, A., & Saykova, Sv. (2001). *Статистическо изследване на зависимости*. Университетско издателство „Стопанство“