

Education and Employment of Population with Tertiary Education Attainment in the European Union

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Abstract

Changes in the labor market are due to changes in production processes. Automation and globalization lead to the need to update the skills of the workforce. Finding and accessing jobs is all the easier as people have a high level of education. In a globalized economy, maintaining a high level of competitiveness is a major challenge. Vocational education and training systems can provide the skills, knowledge and competencies needed for new jobs. Vocational education and training programs are thus solutions by which the lack of skills or skills gaps can be filled. For the period 2000-2020, the article presents the comparative situation of the share of the adult population with tertiary education attainment. Their participation in lifelong education and training programs is very important. The comparative situation of participation rate in education and training is also analyzed. The labor market can influence the areas that high school graduates can pursue in higher education. Thus, the article presents the distribution of tertiary education graduates according to field of education.

Keywords: European Union, tertiary education, participation rate in education and training

1. Introduction

For the economic development of a society, people with higher education can add value (Angheluta et al., 2021). Thus, the process of updating skills prevents the emergence of gaps between companies (Popescu et al. 2021). Also, intergenerational educational mobility can influence the increase in the level of education of the adult population (Radulescu et al, 2021).

The complex technological, social and economic processes that take place in the regions where there are infrastructures that facilitate knowledge led to the emergence of sustainable economic systems (Brekke, 2021).

The labor market is having an increasing influence on the skills that people have (Belostecinic et al., 2022). Vocational education and training programs lead to the acquisition of many skills that adults need to cope with technological change (Radulescu et al., 2020).

In more and more countries, economies are based on knowledge (Sarbu et al., 2021). High regional productivity can also be attributed to a higher level of human capital in that region (Bodislav et al., 2021). Thus, the skills and knowledge that people acquire are important in the process of creating values. Urban concentrations increase the possibility of knowledge dissemination, facilitating economic growth and development (Abel & Gabe, 2011). The

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immediate desire to update skills and knowledge also has a strong influence on adult education. Career decisions can also be influenced by the way the transition from school to work takes place. Also, the possibility to participate throughout life in education and training programs specific to a particular field can be an advantage in choosing this field of training (Findeisen et al., 2022).

The way people live and work is changing (Balu et al., 2021). New technologies are influencing the way people engage in certain occupations (Radulescu et al., 2021). Due to these issues, new challenges arise in terms of retraining the staff of a company (Bodislav et al., 2020). Thus, educational practices change. Giving more importance, as well as additional resources, can lead to increased rates of adult participation in education and training programs for them (Negescu Oancea, et al., 2020).

Over time, it has been observed that in the situation where the levels of well-being, respectively of economic development, of some regions tend towards each other then the disparities are reduced or even may disappear. The level of education is one of the factors leading to these convergences (Maynou et al., 2022).

2. Literature Review

Demand for low-skilled jobs has fallen. Jobs have emerged that require increasingly complex tasks. This has been one of the consequences of technological progress. With the changes in the labor market, there are changes in higher education. The application of new technologies, as well as new methods, have led to the transformation and development of higher education (David & Hill, 2021).

The increase in the supply of jobs for graduates has led to an increase in the number of tertiary graduates. It is found that the regions where there is an active interest in higher education, respectively higher education institutions have a generous offer in terms of university education, have a much faster economic development (Borsi et al., 2022).

Thus, higher education systems have required the application of certain measures that take into account the new skills requirements of the labor market. With regard to tertiary education, an important requirement is given to increase the quality of the educational process.

New technological developments pose increased challenges in terms of improving skills. However, educational environments exert different influences on learning practices (Rangraz & Pareto, 2020).

Increasing productivity can be based on increasing people's level of education. The relevance of the skills that graduates have can give them additional opportunities in terms of employment in the labor market. The choice of the educational field that the students follow is an effect of the development of their identity. In addition to socio-demographic, individual and relational factors, developmental trajectories are also influenced by choices regarding the vocational profile, respectively the academic path (Christiaens et al., 2021).

It is found that participation in adult education programs for people with low education brings additional financial benefits to those who do not participate in these programs. However, the participation rate in adult education is higher for those with higher education than for those with low education (Van Nieuwenhove & De Wever, 2021).

The development of digital skills of the adult population can lead to the creation of new

jobs, respectively to economic growth. However, measures are needed to enable the implementation of educational investment planning strategies. Participation in education and training programs in different weights is considered to be an effect of the influence of teachers and trainers (Dulce-Salcedo *et al.*, 2022). Teachers and trainers play an important role in the educational process. The training methods they apply, as well as the way they develop and improve their students' knowledge, can lead to the acquisition of those skills and competencies that will help them to be hired after graduation. Acquiring the skills, knowledge and competencies needed for new jobs can be influenced by improving resilience in tertiary education students. Thus, in this sense, during their acquisition, positive effects are considered to have engaging in enjoyable activities, positive social interactions, focusing attention, acceptance in difficult circumstances, exercise and humor (Tuck *et al.*, 2022). There is a high interest in increasing the academic performance of students based on the effects that nature has on the study environment. Thus, it is considered that time spent in nature may be associated with an increase in the well-being of students with effects on their preparation (van den Bogerd *et al.*, 2020).

Adult participation in adult education programs depends on the skills that countries have and have in order to attract adults from different educational backgrounds (Abel & Deitz, 2012).

Given the demographic changes that societies are going through, as well as the issues related to the home, it can be considered that the participation in the social and economic life of a society is influenced by the access to education and training of its members (Profiroiu *et al.*, 2020). In other words, the more the community pays attention to adult education, the more active the participation of adults in the social and economic processes that take place within this community. In order to facilitate the connectivity between the different learning locations, several measures have been taken regarding the process of digitization of education. Training materials and digital tools have been created and offered to support the teaching and learning process (Antonietti *et al.*, 2022). The innovation that universities can bring, for the regions in which they are located, is based on their cooperation with the local industry (Schlegel *et al.*, 2022).

3. Methodology of Research

Vocational education and training programs are solutions through which the lack of skills or skills gaps can be filled. For the period 2000-2020, the article presents the comparative situation of the share of the adult population with tertiary education attainment. Their participation in lifelong education and training programs is very important. The comparative situation of the participation rate in education and training is also analyzed. The labor market can influence the areas that high school graduates can pursue in higher education. Thus, the article presents the distribution of tertiary education graduates according to field of education.

4. Results and Discussions

An important indicator of the level of education of a community is given by the adult population with tertiary education attainment. Thus, the following table presents the

comparative situation of the share of the adult population with tertiary education attainment (%).

Table 1: Comparative situation of the share of the adult population with tertiary education attainment (%), 2000-2020

Countries	2000			2020		
	total	male	female	total	male	female
European Union	:	:	:	32,8	30,4	35,2
Belgium	27,1	26,5	27,6	42,4	37,9	47,0
Bulgaria	18,2	15,3	21,0	29,2	23,5	35,0
Czechia	11,5	13,2	9,8	24,9	22,5	27,3
Denmark	26,2	25,1	27,3	40,6	35,4	45,8
Germany	23,8	28,9	18,6	31,3	33,6	28,9
Estonia	28,7	21,6	35,1	42,3	32,1	52,5
Ireland	22,0	21,7	22,2	49,9	46,3	53,4
Greece	17,0	18,6	15,5	32,7	30,9	34,5
Spain	22,7	23,5	21,9	39,7	36,7	42,7
France	21,6	21,1	22,0	39,7	36,7	42,5
Croatia	:	:	:	25,2	21,2	29,2
Italy	9,7	9,8	9,5	20,1	17,2	23,0
Cyprus	25,1	27,8	22,5	44,9	39,9	49,6
Latvia	18,2	16,3	19,9	37,8	28,9	46,3
Lithuania	42,4	36,9	47,3	44,1	37,0	51,1
Luxembourg	18,3	20,8	15,7	47,1	46,4	47,8
Hungary	14,1	13,8	14,5	27,2	23,0	31,3
Malta	5,4	6,7	4,0	30,6	28,9	32,5
Netherlands	24,0	26,7	21,2	42,6	42,0	43,3
Austria	:	:	:	34,2	34,4	34,0
Poland	11,4	10,3	12,5	32,9	26,9	38,8
Portugal	8,8	7,5	10,0	28,2	22,8	33,0
Romania	9,3	10,4	8,3	18,7	17,4	20,0
Slovenia	15,9	14,2	17,6	35,9	29,3	43,0
Slovakia	10,3	10,9	9,8	26,8	22,1	31,6
Finland	32,3	29,2	35,5	47,5	39,5	55,7
Sweden	29,7	27,4	32,1	44,6	37,3	52,2

Source: processing according to data published by EUROSTAT, 2022

From EUROSTAT data, compared to 2000, show that in 2020, the share of the total population aged between 25 and 64, with a level of tertiary education, has increased in all countries of the European Union. Growths were higher in: Luxembourg (+28.8%), Ireland (+27.9%), Malta (+25.2%), Poland (+21.5%), Slovenia (+20.0%). In 2020, at the level of the European Union, the share of the total population aged between 25 and 64 years, with a level of tertiary education was 32.8%. The highest values were recorded in: Ireland (49.9%), Finland (47.5%), Luxembourg (47.1%), Cyprus (44.9%), Sweden (44.6%), Lithuania (44.1%), Netherlands (42.6%), Belgium (42.4%), Estonia (42.3%), Denmark (40.6%). The lowest values were recorded in: Romania (18.7%), Italy (20.1%), Czech Republic (24.9%), Croatia (25.2%). The situation is similar for the male population, from the same age group and the same

level of education. Thus, in 2020, the highest values were in: Luxembourg (46.4%), Ireland (46.3%), Netherlands (42.0%). The lowest values were in: Italy (17.2%), Romania (17.4%), Croatia (21.2%).

For females, it is observed that the situation is slightly changed. Thus, at European level, the share is 35.2%. In 2020, in 5 countries of the European Union, the share of the female population aged between 25 and 64, with a level of tertiary education was over 50%: Finland (55.7%), Ireland (53.4%), Estonia (52.5%), Sweden (52.2%), Lithuania (51.1%). At the same time, the lowest values were registered in: Romania (20.0%), Italy (23.0%), Czechia (27.3%), Germany (28.9%).

Regarding the participation rate in education and training, in order to take into account the most complete data from the EUROSTAT website, the interval 2005-2020 was chosen.

Thus, the following table presents the comparative situation of the participation rate in education and training for people aged between 25 and 64 (%).

Table 2: Comparative situation of participation rate in education and training for persons aged between 25 and 64 (%), 2005-2020

Countries	2005			2020		
	total	male	female	total	male	female
European Union	7,7	7,3	8,1	9,2	8,4	10,0
Belgium	8,3	8,2	8,5	7,4	7,6	7,7
Bulgaria	1,3	1,3	1,2	1,6	1,7	1,7
Czechia	5,6	5,2	5,9	5,5	8,0	5,5
Denmark	27,4	23,6	31,2	20,0	39,4	23,6
Germany	7,7	8,0	7,4	7,7	7,7	7,6
Estonia	6,0	4,5	7,3	17,1	13,1	21,1
Ireland	7,4	6,2	8,6	11,0	7,5	12,6
Greece	1,9	2,0	1,8	4,1	3,2	4,0
Spain	10,8	9,8	11,7	11,0	12,1	12,0
France	5,9	5,6	6,2	13,0	5,4	14,6
Croatia	2,1	2,0	2,1	3,2	3,0	3,8
Italy	5,8	5,4	6,2	7,2	6,5	7,4
Cyprus	5,9	5,4	6,3	4,7	8,2	4,5
Latvia	7,8	4,8	10,6	6,6	7,0	8,4
Lithuania	6,1	4,3	7,8	7,2	5,2	8,7
Luxembourg	8,5	8,5	8,5	16,3	14,2	17,3
Hungary	3,9	3,2	4,6	5,1	3,1	5,7
Malta	5,2	5,8	4,7	11,0	6,4	12,6
Netherlands	15,4	15,1	15,8	18,8	17,7	19,8
Austria	12,9	12,3	13,6	11,7	14,9	12,7
Poland	4,9	4,3	5,4	3,7	5,7	4,3
Portugal	4,1	4,0	4,2	10,0	5,7	10,4
Romania	1,6	1,5	1,6	1,0	1,4	1,0
Slovenia	15,3	13,6	17,2	8,4	18,5	9,5
Slovakia	4,6	4,3	5,0	2,8	3,7	3,0
Finland	22,5	19,0	26,1	27,3	27,1	31,7
Sweden	17,4	13,0	21,9	28,6	31,3	35,5

Source: processing according to data published by EUROSTAT, 2022

It is observed that in 2020, at the level of the European Union, participation rate in education and training was 9.2%, with 8.3% for the male population and 10% for the female population. Also, in 2020, compared to 2005, the values decreased for 10 countries (Belgium, Czechia, Denmark, Cyprus, Latvia, Austria, Poland, Romania, Slovenia, Slovakia). The countries with significant growth were: Sweden (+11.2%) and Estonia (+11.1%). In 2020, the highest values of participation rate in education and training were registered in: Sweden (28.6%), Finland (27.3%), Denmark (20.0%), Netherlands (18.8%), Estonia (17.1%), Luxembourg (16.3%). The lowest values of participation rate in education and training had: Romania (1.0%), Bulgaria (1.6%), Slovakia (2.8%), Croatia (3.2%), Poland (3.7%).

For males, the situation is similar. Thus, the highest values were in: Finland (23%), Sweden (21.9%), Netherlands (17.9%), Denmark (16.4%). The lowest were registered in: Romania (1%), Bulgaria (1.4%), Slovakia (2.6%), Croatia (2.6%), Poland (3%).

It is found that the participation rate in education and training is higher for females than for males. Thus, in 2020, the values are higher in: Sweden (35.5%), Finland (31.7%), Denmark (23.6%), Estonia (21.1%), Netherlands (19.8%). In contrast, the countries that have low values of participation rate in education and training for males are found to have low values for females as well: Romania (1%), Bulgaria (1.7%), Slovakia (3%), Croatia (3.8%).

Another important indicator is the share of tertiary education graduates by field of education. Thus, the evolution of the total number of tertiary education graduates, at the level of the European Union, for the period 2013-2019, is presented in the following figure.

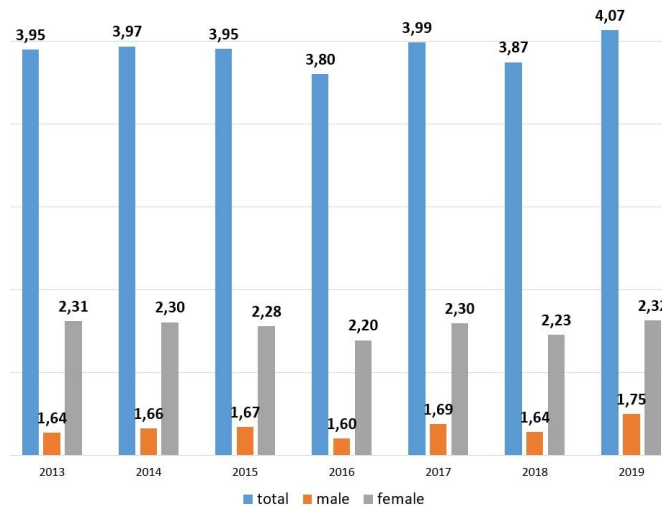


Figure 1: The evolution of the total number of tertiary education graduates, at the level of the European Union, 2013-2019

Source: processing according to data published by EUROSTAT, 2022

It is observed that in the periods 2015-2016, respectively 2017-2018, the total number of tertiary education graduates had a decreasing trend. Also, in the periods 2016-2017 and

2018-2019, respectively, the total number of tertiary education graduates had an increasing trend. These trends have been maintained for graduates of both sexes. In 2019, at the level of the European Union, the total number of tertiary education graduates reached over 4 million, of which 2.32 million were females and 1.75 million were males. According to the existing data on the EUROSTAT website, it is observed that, for the analyzed period (2013-2019), the number of female graduates was higher than that of male graduates by more than half a million per year. For the period 2013-2019, the total number of tertiary education graduates was 27.60 million, of which 57.7% were female and 42.3% male.

Also in 2019, the countries with the most graduates of tertiary education were: France (804431 graduates), Germany (649520 graduates), Spain (458528 graduates), Poland (452628 graduates), Italy (416631 graduates), Netherlands (161049 graduates), Romania (124759 graduates), Belgium (114468 graduates).

At the level of the European Union, for 2019, the distribution of the number of tertiary education graduates according to field of education is shown in the following figure.

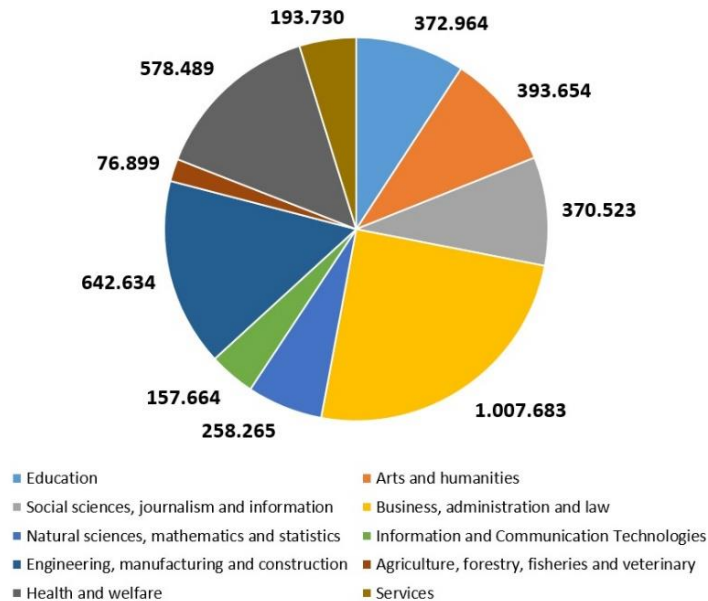


Figure 2: Distribution of the number of tertiary education graduates according to field of education, 2019

Source: processing according to data published by EUROSTAT, 2022

It is noted that in 2019, the field with the most graduates of tertiary education was business, administration and law (1007683 graduates). The following fields that had a high number of graduates were: engineering, manufacturing and construction (642634 graduates), health and welfare (578489 graduates), arts and humanities (393654 graduates), education (372964 graduates), social sciences, journalism and information (370523 graduates).

The following table, for 2019, presents the comparative situation of the weights of the graduates according to sex and field of education (%).

Table 3: The comparative situation of the weights of the graduates according to sex and field of education, 2019

Field of education	Total	Male	Female
Education	9,2	4,0	13,1
Arts and humanities	9,7	7,3	11,5
Social sciences, journalism and information	9,1	6,9	10,9
Business, administration and law	24,9	24,3	25,3
Natural sciences, mathematics and statistics	6,4	7,0	5,9
Information and Communication Technologies	3,9	7,2	1,4
Engineering, manufacturing and construction	15,9	26,9	7,5
Agriculture, forestry, fisheries and veterinary	1,9	2,3	1,6
Health and welfare	14,3	8,7	18,5
Services	4,8	5,5	4,2

Source: processing according to data published by EUROSTAT, 2022

From the data presented, it is observed that for certain fields of education the weights of the graduates according to sex differ. Thus, higher shares of female graduates are in the fields: health and welfare (+9.8%), education (+9.1%), arts and humanities (+4.2%), social sciences, journalism and information (+4%). Also, higher shares of male graduates are in the field of engineering, manufacturing and construction (+19.4%), as well as in the field of information and communication technologies (+5.8%).

5. Conclusions

Compared to 2000, it is observed that in 2020, the share of the total population aged between 25 and 64, with a level of tertiary education, has increased in all countries of the European Union.

In 2020, at the level of the European Union, the share of the total population aged between 25 and 64 years, with a level of tertiary education was 32.8%. Values over 40% were recorded in: Ireland, Finland, Luxembourg, Cyprus, Sweden, Lithuania, Netherlands, Belgium, Estonia, Denmark. The lowest values were recorded in: Romania, Italy, Czechia, Croatia.

The situation is similar for the male population, from the same age group and the same level of education.

In 2020, at the level of the European Union, the participation rate in education and training was 9.2%, with 8.3% for the male population and 10% for the female population. The highest values were recorded in: Sweden, Finland, Denmark, Netherlands, Estonia, and the lowest in: Romania, Bulgaria, Slovakia, Croatia, Poland.

In 2019, at the level of the European Union, the total number of tertiary education graduates reached over 4 million, of which 2.32 million were females and 1.75 million were males. The countries with the most tertiary education graduates were: France, Germany, Spain, Poland, Italy, Netherlands, Romania, Belgium. Also, in 2019, the field with the most graduates of tertiary education was business, administration and law, followed by engineering, manufacturing and construction, health and welfare, arts and humanities, education, social sciences, journalism and information.

Maintaining the competitiveness of the industry can also be based on adapting the

academic environment to changes in the labor market. The skills required in the workplace can be acquired by students through collaboration between universities and enterprises in different economic sectors (Anghelută *et al.*, 2021).

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