

THE BUILDING BLOCK OF INNOVATION; EDUCATION, THE COMPARISON OF EDUCATION EXPENDITURES IN EU COUNTRIES AND TURKEY

İNOVASYONUN YAPITAŞI EĞİTİM; AVRUPA BİRLİĞİ ÜLKELERİ VE TÜRKİYE İÇİN EĞİTİM HARCAMALARININ KIYASLANMASI

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Abstract

Innovation is one of the most popular topics today both for academia and business life. Countries as well as companies are aware of that; the competitive advantage coming hand in hand with innovation rather than conventional trade, so it seems very important to make successful innovations. One of the basic building blocks of innovation is education, innovative human resources are in general results of successful education systems. In this research the education expenditures of EU countries and Turkey is being analyzed and compared. The relevant data is collected from international associations such as World Bank, IMF, Eurostat, etc., and detailed data is collected from the website of TUIK. Results of this study shows that even over the years there has been an increase in education expenditures, for Turkish Republic it is still below the EU averages.

Key Words: Innovation, education, education expenditures, EU, budget

Özet

İnovasyon günümüzde hem akademi hem de iş dünyası için en popüler konulardan biridir. Ülkeler de şirketler gibi artık rekabet avantajının klasik yöntem ve ürünlerden ziyade inovasyon ile yakalanabileceğinin farkındalar dolayısıyla başarılı inovasyonlar yapmak son derece mühim bir konu olarak karşımıza çıkıyor. Eğitim, inovasyonun en temel yapıtaşlarından birisidir ve başarılı inovasyonlar yapan insan kaynakları genel itibarı ile başarılı eğitim süreçlerinden geçmişlerdir. Bu çalışmada ekonomik anlamda dünyanın önemli ve büyük ülkelerini de bünyesinde barındıran Avrupa Birliği ülkeleri ile Türkiye'deki eğitim harcamaları incelenmiş ve karşılaştırılmıştır. İlgili verilere Dünya Bankası, IMF, Eurostat gibi uluslararası kuruluşların internet sitelerinden ulaşılmış, Türkiye ile ilgili detaylı veriler ise TÜİK internet sayfasından alınmıştır. Sonuçta görülmüştür ki yıllar içinde bir artış olmakla birlikte Türkiye'de eğitim harcamaları Avrupa Birliği ortalamalarının altında kalmaktadır.

Anahtar Kelimeler: İnovasyon, eğitim, eğitim harcamaları, AB, bütçe

Introduction

In the present day there is a very strict competition in almost all sectors around the world, and the level of competition is increasing every single moment. The effects of globalization are experienced in all areas of our lives including commerce, education, healthcare, social life. Markets are international and open to each other, new organizations, companies are being involved in the markets and entering this competition arena from all corners of the world. Gaining sustainable competitive advantage by competing in conventional

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ways does not seem possible. To be able to achieve competitive advantage, companies need innovation in this knowledge dominant global market.

To be able to make successful innovations there are some requirements and it is possible to say education comes first at this list. There is a direct relationship between innovation and education, education has a key role in successful innovations (OECD, 2016). As it is mentioned in the Global Innovation Indexes 2020 and 2021, education can doubtlessly be shown as one of the most important investments for innovation. Qualified human resource is the key actor for innovations and for having qualified people there is a need for a high quality education, and it is a holistic process starting from preschool education to tertiary education. So, it is some kind of a reaction which starts with a strong and quality education and finishing with successful innovations.

The importance of education has been noticed all over the world long time ago especially by most of the developed countries, but today the others who have not paid required attention to education -especially the developing countries- are also paying more and more attention to education. Governments all over the world, especially in the developed and developing countries pay so much attention to education issue as much as possible, and the level and quality of the education in a country are directly related and proportionate with budgets of states, and the share they allocate for education. In this research the education expenditures made by EU countries and Turkish Republic is being analyzed.

1. Innovation

Innovation has taken place in the agendas of many researchers, academicians and also practitioners, they have focused on innovation topic and made valuable contributions to the literature. Some of these names can be counted as Rosenberg, Drucker, Schumpeter, Davis, Dosi, etc. and this list could easily be expanded.

When the literature is checked, it is seen that the first person who studied innovation in a systematic way is Joseph Schumpeter in 1934, this name is so important for innovation studies, even Thomas McCraw calls Schumpeter as the innovation's prophet (2010). Joseph Schumpeter supports the idea that; innovation is essential for sustainable economic development. Schumpeter also proposed the idea of creative destruction, which is still a very well-known term. According to Schumpeter the creative destruction takes place at the center of capitalism and it simply means the organizations who make creative innovations will prevail among others who insistently continues to produces in the old fashion styles and *new* takes the place of *old* (Kitapçı, 2019).

In the Oslo Manual which is today accepted as one of the main sources of innovation, the definition of innovation is given as following; “An innovation is basically using and implementing a new or significantly improved product -both it can be a good or service-, or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations.” (OECD, 2005).

Although there are some different taxonomies about innovation, general accepted classifications about innovations divides innovation into 4 subheadings; product innovation, process innovation, marketing innovations and organizational innovations. Shortly, while product innovation means offering a completely new or significantly changed good or service, process innovation means using new or significantly changed production or delivery techniques for production. Then when we look at the organizational innovation, basically the definition of organizational innovation is “An organisational innovation is the implementation of a new organisational method in the firm’s business practices, workplace organisation or external relations” (OECD, 2005). Just in Time (JIT) method which was proposed by a Japanese company Toyota could be given as an organizational innovation example, which makes important changes in the production style, such as decreasing the inventories to very little levels. Lastly, the meaning of marketing innovation is using new marketing methods including design, promotion, packaging for service and production (OECD, 2005). All types of innovation are necessary and so beneficial for companies. And companies’ success directly effects the success of the countries in many ways, for example one of them is their contribution to gross domestic products of the countries, etc.

2. Education Expenditures in EU and Turkey

Despite the Brexit, which basically means the exit of one of the biggest members of European Union; England, the community is still important and powerful in many areas including economy, military, and politics, etc. Today European Union consists of 27 countries which are; Germany, Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Croatia, Netherlands, Ireland, Spain, Sweden, Italy, Latvia, Lithuania, Luxemburg, Hungary, Malta, Poland, Portugal, Romania, Slovakia, Slovenia, Greece and Southern Cyprus (EU, 2022). According to the World Bank Data, the annual GDP of European Union is \$17,1 trillion –the sum of all member countries’ GDP- and this amount makes EU the third biggest economy in the world as community; according to the ranking based on annual GDP values following USA (\$23 trillion) and China (\$17,7trillion) (World Bank, 2021).

European Union has taken this name in 1999 with Maastricht Treaty, at the beginning the name of the community was European Coal and Steel Community, then this name has

changed to European Economic Community in 1957 by Rome Treaty and Turkish Republic has applied to the community just after Roma Treaty in 1959 (Republic of Turkey Ministry of Foreign Affairs, 2020).

Turkey has applied for membership just after the union founded and is a strong nominee for being a member of this community, so analyzing the members of this big community in terms of public education expenditures would be beneficial for both analyzing the situation in those countries and comparing it with Turkey. In the following sections, the education expenditures of EU members and Turkish Republic is being analyzed one by one.

2.1. Education Expenditures in Turkey

In 2021 Turkey has been the 19th largest economy according to the annual GDP ranking list of World Bank with \$815 billion (World Bank, 2022) and 20th largest economy according to the IMF World Outlook October Report (IMF, 2022).

The 2021 budget size of the Republic of Turkey is about 1,4 trillion Turkish Liras and 15,7% of this budget which equals to 211,4 billion TL is allocated to education (Presidency of the Republic of Turkey Presidency of Strategy and Budget, 2022). The change of education budget in years is given in the following figure.

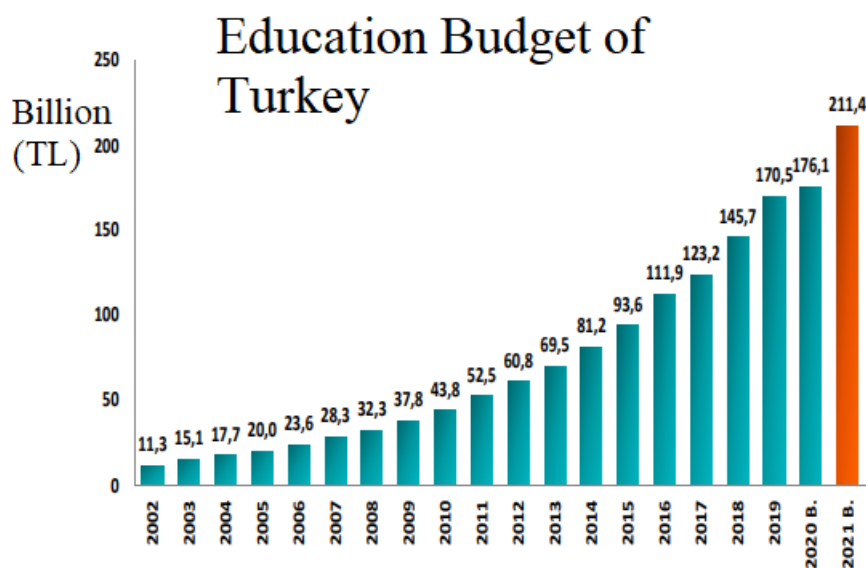


Figure.1. Education Budgets of Turkish Republic between 2002 and 2021 years.

Source: Presidency of the Republic of Turkey Presidency of Strategy and Budget, 2022.

It is explicitly seen that, the budgets allocated to education in the central government budget has increased regularly since 2002 and this is a promising development for the future of education area in Turkey.

After giving the change in the education budget of Turkey in years, in the next table the expenditures of Republic of Turkey on education is given for the years 2016 to 2020.

	2016	2017	2018	2019	2020
<i>Total Education Expenditure (Million TL)</i>	160733	176452	219363	259220	270921
<i>Total Education Expenditure (Million \$)</i>	53,105	48.287	45.491	45.626	38.614
<i>Education Expenditure per student (\$)</i>	2477	2220	2075	2071	1754
<i>Share of Education Expenditure in GDP (%)</i>	6.1	5.6	5.8	6.0	5.4
<i>Share of Public Education Expenditure in GDP %</i>	4.6	4.2	4.3	4.4	4.0

Table 1. Education expenditures of Turkey

Source: TUIK, 2021.

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Table 1 given above clearly underlines the increase in the education expenditures in the last years, when the data is checked, while the education expenditure was about 160 billion TL in 2016, this amount has reached to 270 billion Turkish Liras (TUIK, 2021). But to be able to understand the situation adjusted for inflation, when we check these values in USD, it is seen that the total expenditure values are decreasing year by year. Also, the share of government education expenditure has decreased in years, such that; while the share of total public education expenditure in 2016 was 4,6 this share amount falls to 4.2 in 2017 and to 4 in 2020.

2.2. Education Expenditures (% of GDP)

The following table includes the education expenditures of countries relative to their GDPs for years 2016 to 2020.

Country	2016	2017	2018	2019	2020
Austria	5.5	5.4	5.2	4.7	5,1
Belgium	6.5	6.4	6.4	6.3	6.6
Bulgaria	3.9	4.1	-	4.2	4

Croatia	3.8	3.9	3.9	2.2	5.4
Cyprus (Sothern)	6	6.1	5.7	5.2	5.9
Czechia	5.6	3.8	4.3	4.5	5.1
Denmark	-	7.8	6.8	6.4	6.4
Estonia	5.1	5	5.3	-	6.6
Finland	6.9	6.4	6.3	6	5.9
France	-	5.5	5.4	5.4	5.5
Germany	4.8	4.9	5	4.7	
Greece	-	3.5	3.6	3.6	4.5
Hungary	4.6	4.6	4.6	3.9	4.7
Ireland	3.7	3.5	3.4	-	3.1
Italy	3.8	4	4.3	4.1	4.3
Latvia	4.7	4.4	4.2	4.4	5.9
Lithuania	4	3.8	3.9	3.8	5.2
Luxemburg	-	3.5	3.6	3.7	5
Malta	5.1	4.7	4.6	4.6	5.9
Netherlands	5.5	5.2	5.4	5.1	5.3
Poland	4.6	4.6	4.6	4.7	5.2
Portugal	-	5	4.7	4.6	5
Romania	3	3.1	3.3	3.2	3.7
Slovakia	3.9	3.9	4	-	4.6
Slovenia	4.8	4.8	4.9	4.6	5.8
Spain	4.2	4.2	4.2	4	4.6
Sweden	7.6	7.6	7.6	7.9	7.2
Turkey	4.6	4.2	4.3	4.4	4
EU Average	4.8	4.6	4.6	4.8	5

Table 2. Education expenditures of EU countries and Turkey relative to GDP (World Bank, 2022; Eurostat, 2022)

The table given above shows the government expenditures of EU countries and Turkey in terms of the percentage of GDP values of the countries. It is an important indicator, it gives us the percentages spent on education so we can compare the education expenditures relatively,

otherwise comparing only the nominal values spent for education would be misleading and the main reason of this situation is different sizes of the economies of these countries. Such that Germany is the fourth largest economy in the world with \$4,2 trillion annual GDP on the other hand Sweden's annual GDP is \$627 billion (World Bank, 2022). So the percentage values differ a lot even the nominal percentage values are close to each other.

When it is analyzed it is seen that for the last five years, Sweden is at the top position in the list with percentage values bigger than 7%, and Ireland is at the lowest place in the list with its education expenditure 3.1% of total GDP in the list. A detailed visualization of education expenditures is given in the following figure, figure 2, which gives the details of these expenditures for countries. According to this table, Turkey stays under the EU countries' average % of GDP value in all 5 years. For the year 2020 Turkey (4%) could only pass Ireland (3,1%) and Romania (3,7%) in the ranking of public expenditure on education in terms of % of GDP, so it is possible to say the education expenditure should be increased as much as and as soon as possible.

Figure 2 given below, makes a visualized comparison of European countries and Turkey for year 2020, and it may ease the comparison.

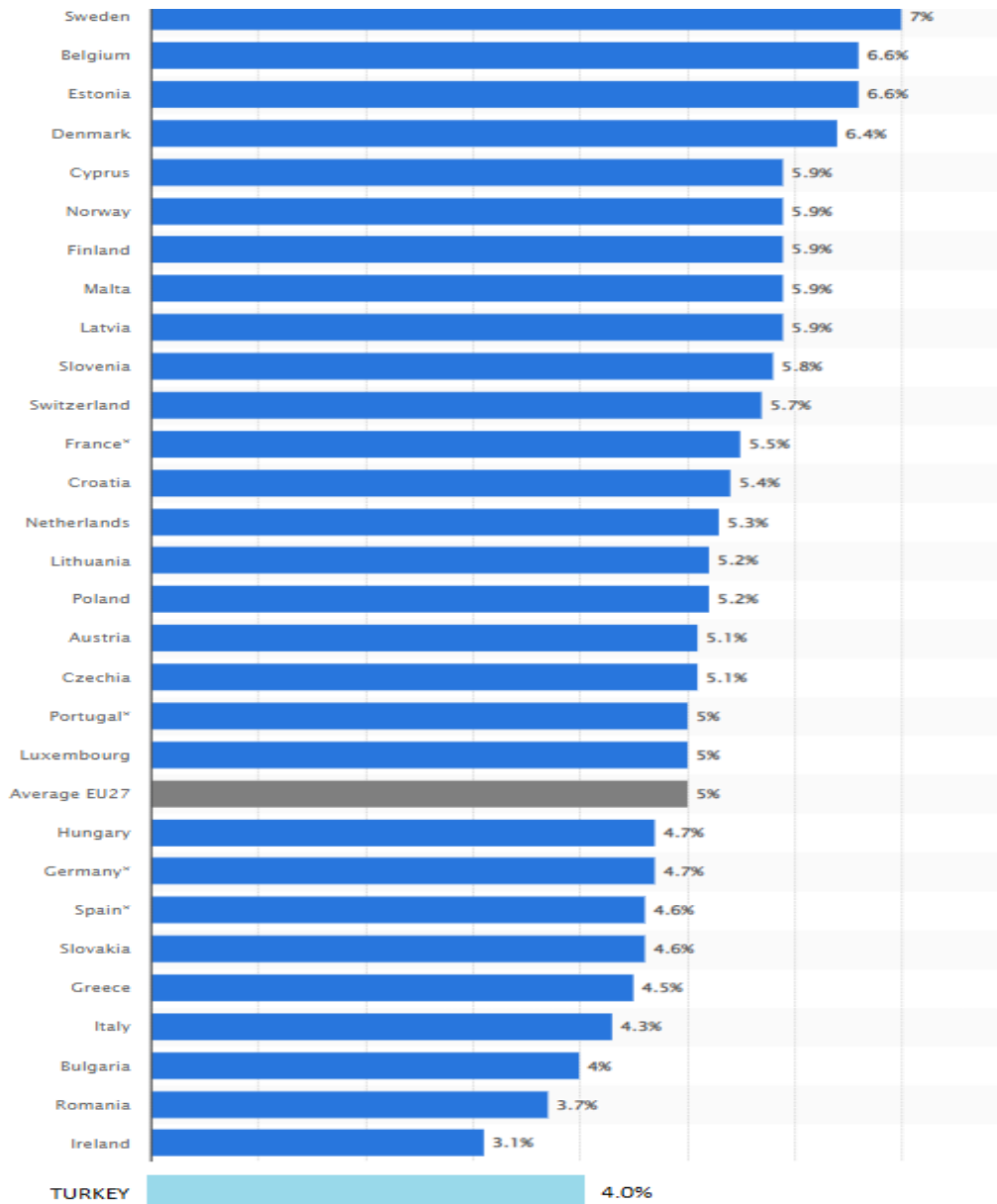


Figure. 2. Comparison of the government education expenditures for European Countries and Turkey

In the previous figures and tables, the data involves the education as a whole. But it is important to see the education expenditures in different levels of education. In the following table, there is more detailed data taken from Eurostat (2022) the expenditures are given elaborately, which means the education is classified according to the levels, pre-primary and primary education, secondary education, post-secondary and non-tertiary education and tertiary education. Table 3 does not include data about Turkey, but the relevant data for Turkey is present in TUIK data and it is given in Figure 3.

Total general government expenditure on education, 2020, % of GDP

	Education	Pre-primary and primary education	Secondary education	Post-secondary non-tertiary education	Tertiary education	Education not definable by level	Subsidiary services to education	R&D Education	Education n.e.c.
EU*	5.0	1.7	1.9	0.0	0.8	0.1	0.3	0.0	0.1
euro area*	4.9	1.6	1.9	0.0	0.8	0.1	0.4	0.0	0.1
Belgium	6.6	2.1	2.5	0.0	0.9	0.6	0.2	0.0	0.1
Bulgaria	4.0	0.8	2.1	0.0	0.7	0.0	0.1	0.0	0.2
Czechia	5.1	1.3	2.3	0.0	0.8	0.1	0.2	0.3	0.1
Denmark	6.4	2.9	1.6	0.0	1.6	0.1	0.1	0.0	0.1
Germany*	4.7	1.5	1.7	0.1	0.8	0.1	0.4	0.0	0.1
Estonia	6.6	2.7	1.8	0.1	1.1	0.3	0.3	0.1	0.2
Ireland	3.1	1.3	1.2	0.0	0.4	0.1	0.1	0.0	0.0
Greece	4.5	1.4	1.4	0.0	1.0	0.0	0.1	0.4	0.2
Spain*	4.6	1.8	1.8	0.0	0.6	0.1	0.1	0.1	0.1
France*	5.5	1.5	2.4	0.0	0.7	0.2	0.7	0.0	0.0
Croatia	5.4	2.6	1.0	0.0	1.1	0.0	0.3	0.1	0.3
Italy*	4.3	1.6	1.9	0.0	0.3	0.0	0.2	0.0	0.1
Cyprus	5.9	2.0	2.1	0.0	1.0	0.4	0.3	0.0	0.0
Latvia	5.9	2.4	1.4	0.0	1.0	0.5	0.1	0.1	0.5
Lithuania	5.2	1.0	2.0	0.2	0.8	0.4	0.0	0.2	0.5
Luxembourg	5.0	1.8	1.8	0.1	0.5	0.4	0.4	0.0	0.0
Hungary	4.7	1.2	1.8	0.0	1.0	0.1	0.5	0.0	0.2
Malta	5.9	1.5	2.2	0.0	1.0	0.2	0.3	0.4	0.2
Netherlands	5.3	1.7	2.1	0.0	1.3	0.0	0.2	0.0	0.0
Austria	5.1	1.6	2.1	0.0	0.8	0.3	0.2	0.0	0.1
Poland	5.2	2.4	1.0	0.0	1.3	0.1	0.3	0.1	0.1
Portugal*	5.0	1.7	1.9	0.0	0.8	0.3	0.2	0.0	0.2
Romania	3.7	0.9	1.5	0.0	0.7	0.1	0.1	0.0	0.3
Slovenia	5.8	2.2	2.0	0.0	1.2	0.1	0.2	0.0	0.1
Slovakia	4.6	1.3	1.5	0.0	0.6	0.3	0.5	0.0	0.2
Finland	5.9	1.3	2.5	0.0	1.7	0.2	0.0	0.0	0.1
Sweden	7.2	4.4	1.1	0.0	1.3	0.2	0.0	0.0	0.1
Iceland	7.7	3.5	2.4	0.0	1.4	0.1	0.2	0.0	0.1
Norway	5.9	2.6	1.1	0.0	1.3	0.5	0.2	0.0	0.1
Switzerland	5.7	1.3	1.7	0.0	1.3	1.2	0.1	0.1	0.1

Table 3. Total general government expenditure on education in European countries for 2020.

Source: Eurostat

Iceland, Sweden and Estonia are leader countries allocating more shares to preprimary and primary education, 7.7, 7.2 and 6.6 respectively. In the secondary education Finland, Belgium and Iceland take place at the top of the list, Finland and Iceland also are leaders in the shares allocated to tertiary education with 1.7 and 1.4 (Eurostat, 2022.)

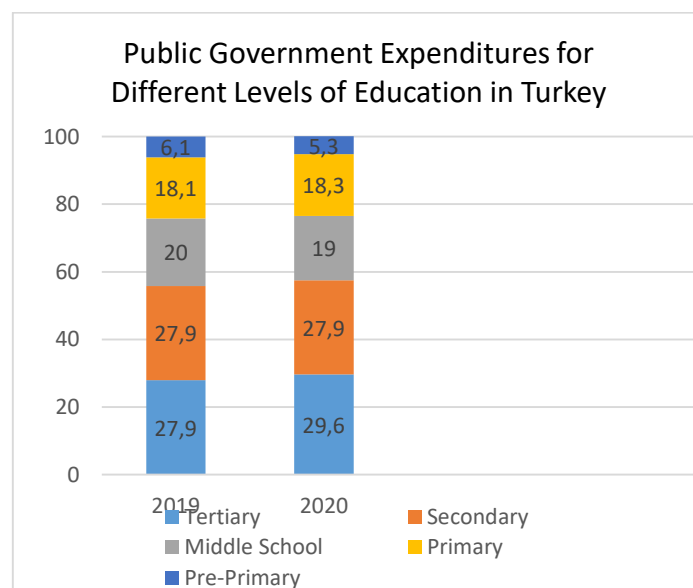


Figure.3. Public Education expenditures according to the levels of education (TUIK, 2021)

The data in figure 3, gives the distribution of education expenditures, to be able to get the % of GDP, simple mathematics would be enough; for tertiary education we need to calculate 29,6% of 4%; which equals to 1,2%. Similarly, secondary education expenditure relative to GDP is 1.1%, and middle school; %0.8, primary school; 0.7% and preprimary school education expenditure is %0.2 of the GDP.

It is easy to see the differences between Turkey and other countries as we check the data; while the biggest education expenditure is made in tertiary education in Turkey, the situation is not the same in the European countries. The larger shares of these expenditures are seen in pre-primary, primary and secondary education levels. The EU average for tertiary education expenses for 2020 is 16%, on the other hand in Turkey this number reaches to 29,6% which is close to two times of European Union averages. The EU average of pre-primary and primary school level expenditures has been 34% but in Turkey the situation is different again, according to the TUIK data; in 2020 the total share of pre-primary and primary school expenditures is 23,6% (TUIK, 2021).

Another important indicator to share among EU countries and Turkey is the education expenditure per student, the data is available in European Union's web site.

Expenditure on educational institutions (excluding early childhood educational development) per pupil/student

(€ per pupil/student in full-time equivalents)

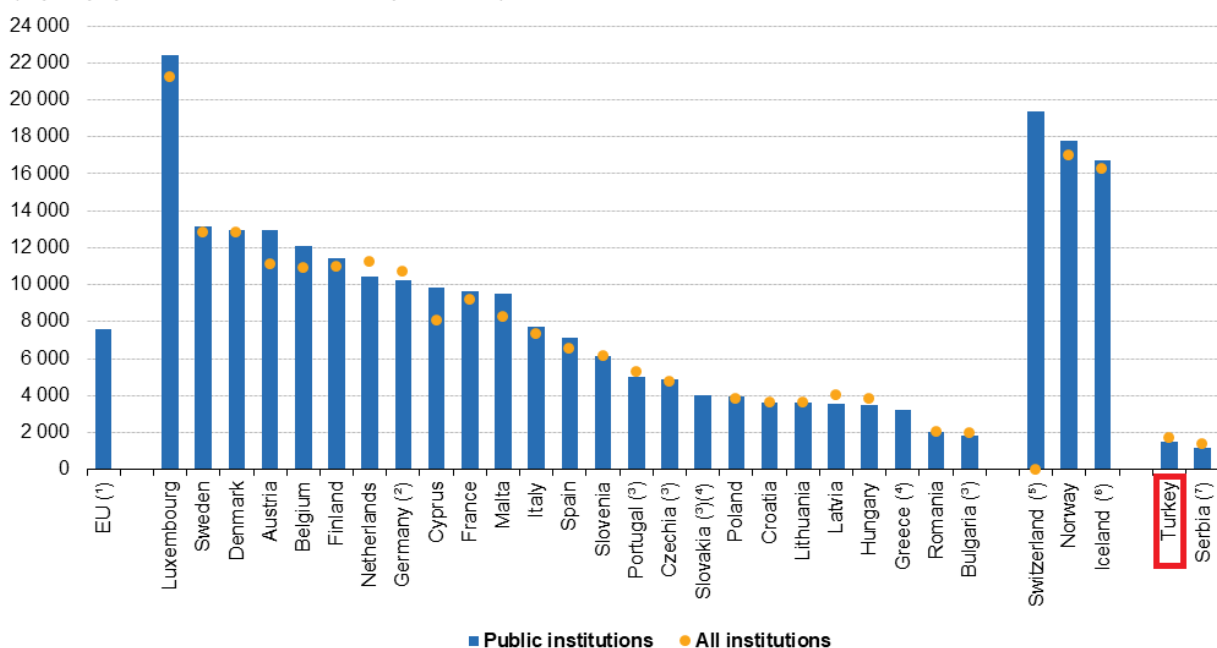


Figure 4. Education expenditures per student in 2019. (Eurostat)

Figure 4 points that out; Luxemburg, Switzerland, Norway and Iceland are leaders in government education expenditures per student in Euro currency. Unfortunately, Turkey takes place in the bottom of the list with Serbia, Romania and Bulgaria when we look at the list. There are some possible reasons for this table, first of all the Euro currency itself is one of the reasons, on 1st of November 2022, 1 euro equals to 18,5 Turkish Liras (TCMB, 2022). This means even the amount you spend for education, to convert it into Euro we should divide this number to approximately 19.

Conclusion

When we consider in general, today innovation is a very important topic which preoccupies the agenda of governments, academicians and absolutely the practitioners. In the Industry 4.0 age, the dominant paradigm in economy is knowledge economy, and the main actor in this process is qualified human capital. The building block of preparing this qualified human capital is education.

In this research the education expenditures in the European Union and Turkey is being analyzed and compared by using some indicators. Looking at the overall picture shows us that, although the increase in budgets, expenditure (in TRY) Turkey is still under the desired level. The details are given in the previous parts and data shows that, in some of the titles related to public education expenditures Turkey stays below the EU average, such that education expenditures relative to GDP, amount spent per student, etc.

For achieving the desired targets, Republic of Turkey should continue increasing the education investments and allocate more share in the budgets for education, by this way it would be possible to take place in the largest economies of the world.

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