

**THE FUTURE OF EDUCATION: EFFECTIVE POLICIES, PRIVATE SECTOR
PARTNERSHIPS, AND THE DEVELOPMENT OF EDUCATION
FOR ECONOMIC GROWTH**

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Abstract

This paper analyses how education can support economic growth in the European Union, with a particular focus on Romania. The analysis is based on the assumption that education is not only a social right but also a key factor influencing productivity, innovation capacity, and individuals' opportunities for labour market integration. Using Eurostat data for the period 2014–2023, the study compares several EU Member States. Four main indicators were examined: the employment rate of recent young graduates, the share of young people who are neither in employment nor in education or training (NEET), the extent of companies' involvement in continuing vocational training, and the degree of practical experience provided within vocational education.

The results indicate that countries which have established strong links between educational institutions and businesses—such as Germany, Denmark, the Netherlands, and Austria—achieve significantly better outcomes. Young people enter employment more rapidly, businesses invest more in employee training, and economies become more resilient. In Romania, although some improvements have been observed, the gap compared with the EU average remains substantial. Graduate employment has increased only gradually, private sector involvement in training remains limited, and vocational education continues to be predominantly theoretical.

The paper highlights the need for more coherent policies, stronger partnerships with businesses, and a more practice-oriented vocational education system if Romania is to transform its human capital into a genuine source of economic competitiveness.

Keywords: education, economic growth, human capital, educational policies

JEL Classification Codes: I25, J24, O15, I20

Introduction

In a world characterised by rapid economic transformations, disruptive technologies, and global challenges such as health crises and climate change, education is increasingly recognised as a key determinant of countries' capacity to achieve prosperity and resilience. This introductory section examines the role of education in supporting sustainable economic growth through three

interconnected dimensions: effective educational policies, private sector involvement in vocational training, and the development of practice-oriented vocational education. Within the European Union, where economic interdependence and structural differences among Member States require adaptable solutions, education is no longer merely a fundamental right but also a strategic instrument enabling countries to respond to the demands of an increasingly dynamic labour market, while reducing inequalities and fostering innovation.

Building on this premise, the paper analyses how well-designed policies can align education systems with economic needs, how partnerships with the private sector can enhance the relevance and practical orientation of vocational training, and how the specific characteristics of vocational education can transform human capital into a critical resource for economic progress. Romania, with its specific challenges and structural particularities, serves as a reference point, providing a useful comparison with successful models implemented in other Member States, while insights from the academic literature contribute evidence-based perspectives to the discussion.

Education plays a central role in shaping economic development, profoundly influencing societies' ability to sustain long-term growth and adapt to the complex requirements of contemporary economies. Within the European Union, education contributes significantly to improving labour productivity, promoting technological progress, and reducing socio-economic disparities among different population groups.

This section examines in greater detail the mechanisms through which education contributes to economic development, focusing on how investments in human capital formation influence the economic performance of Member States and drawing on academic research that has explored these relationships.

The relationship between workforce skills and economic performance represents a major area of interest in the specialised literature. Becker (1993), in the revised edition of his seminal work *Human Capital: A Theoretical and Empirical Analysis*, argued that education enhances individuals' ability to contribute effectively to productive activities, thereby increasing productivity at the societal level.

Subsequent studies have confirmed that individuals with higher levels of education are better equipped to perform complex tasks, adopt new technologies more rapidly, and improve production processes, generating additional economic value. In European economies, which increasingly rely on knowledge, innovation, and specialised skills, these capabilities have become essential for maintaining international competitiveness. Nordic countries, recognised for their well-developed and efficient education systems, provide a relevant example, as their labour productivity indicators consistently rank among the highest internationally, contributing to high living standards and attracting foreign investment.

Technological advancement, widely regarded by researchers as a major driver of long-term economic growth, is closely associated with the availability of highly skilled human capital capable of developing and implementing innovative solutions. Higher education institutions and research centres across Europe play an important role in preparing professionals who support leading industries, including information technology, renewable energy, and biotechnology.

The transfer of knowledge from academia to the private sector through cooperation and strategic partnerships amplifies the economic impact of education, contributing to productivity gains and economic growth. However, assessing the contribution of education through simple indicators, such as years of schooling, is considered “less precise than the direct measurement of skills, although the comprehensive testing of all relevant abilities remains a challenge” (Hanushek & Woessmann, 2015, p. 23). An alternative approach, proposed by Barro and Lee (2013), relies on indirect measures, such as average years of schooling among the adult population, to estimate the stock of human capital.

The academic literature has also extensively examined other dimensions of education's impact on economic outcomes. Investment in education, viewed as a key driver of human capital

accumulation, has been analysed in studies by Barro (2001), Krueger and Lindahl (2001), and Cohen and Soto (2007), which identified a positive relationship between educational investment and economic growth. For example, Krueger and Lindahl (2001) demonstrated that increases in educational attainment are associated with higher productivity, particularly in economies that prioritise technical and vocational skills. Within the European Union, this relationship is evident in countries that allocate substantial resources to education, such as Finland and Denmark, where high levels of educational participation are associated with stronger economic performance.

Another mechanism through which education affects economic development is its capacity to reduce social and economic inequalities. Broad access to high-quality education facilitates the labour market integration of disadvantaged groups, reducing the risk of social exclusion and persistent poverty. In European Union countries, well-designed educational strategies have demonstrated their ability to increase employment rates and reduce dependence on social assistance systems, thereby strengthening economic stability at both national and regional levels.

Continuous learning and professional retraining programmes play an important role in helping workers adapt to economic transformations, particularly those driven by digitalisation and automation. This dimension has been explored by Psacharopoulos and Patrinos (2018), who emphasised the economic benefits of lifelong learning.

However, the impact of education on economic outcomes is not uniform and may be influenced by regional disparities and differences in the quality of education systems. Western European countries benefit from strong educational infrastructures and substantial financial resources, whereas many Eastern European countries, including Romania, continue to face challenges related to underinvestment and higher school dropout rates.

In Romania, education is characterised by insufficient funding and weak alignment with labour market requirements, limiting the contribution of human resources to economic development. Labour mobility within the European Union represents another channel through which education influences economic dynamics. Freedom of movement enables skilled professionals to access employment opportunities in regions experiencing high demand for specific competences, contributing to a more balanced allocation of talent. Nevertheless, this process may also generate negative effects, including the loss of qualified specialists from their countries of origin, a phenomenon particularly evident in Romania.

Investment in education has significant macroeconomic implications, with public expenditure in this sector representing a long-term strategy aimed at improving workforce efficiency and increasing tax revenues. Through econometric analyses, Barro (2001) demonstrated that higher educational expenditure as a share of GDP is associated with faster economic growth, particularly in economies that emphasise technical and specialised skills.

However, the effectiveness of educational investment depends on teaching quality, curriculum modernisation, and the alignment of educational provision with the requirements of the contemporary economy. Education systems that fail to adapt may generate graduates whose skills do not correspond to labour market needs, thereby constraining economic progress, as highlighted by Hanushek and Woessmann (2015).

Education also encourages entrepreneurial activity, as individuals with appropriate knowledge and skills are more likely to initiate economic ventures, contributing to economic diversification and job creation. Within the European Union, entrepreneurship education programmes have been incorporated into national education systems to foster creativity, innovation, and initiative, which are essential elements in the transition towards a sustainable economy.

In Romania, although education has considerable economic potential, its contribution is constrained by unequal access to educational opportunities, particularly in rural areas, and by insufficient alignment with labour market demand. Nevertheless, initiatives such as educational

digitalisation and the expansion of dual education models could strengthen its economic contribution.

Education also affects broader social and economic outcomes, including health and social cohesion. Cutler and Lleras-Muney (2010) demonstrated that more educated populations are more likely to adopt preventive health behaviours, reducing pressure on healthcare systems and supporting higher labour force participation. Furthermore, education contributes to social and institutional stability by creating a more favourable environment for investment and long-term economic development.

Effective Educational Policies and Their Impact on Youth Employment

The economic development of modern states largely depends on the capacity of education systems to generate human capital capable of responding to the requirements of a dynamic economy. Effective educational policies play a central role in this process by aligning individuals' training with labour market needs and by stimulating innovation and productivity.

Within the context of the European Union, where economic competition and transnational integration are increasingly emphasised, education becomes a strategic vector through which states can achieve competitive advantages, supporting economic growth through policies that promote access, quality, and relevance in education. The analysis of effective educational policies for economic growth explores how these strategies can be designed and implemented in order to maximise the impact of education on the economy, with particular attention paid to the Romanian context, enriched by contributions from academic literature that has investigated this relationship.

Recent economic crises have highlighted the need for educational policies that prioritise flexibility and adaptability, enabling education systems to respond rapidly to structural changes in the economy and contribute to the recovery of productive activity.

Hanushek and Woessmann (2015), in *The Knowledge Capital of Nations*, argue that effective educational policies are not limited to increasing access to education, but also include improving the quality of the learning process through curricula designed to develop skills relevant to the labour market, such as analytical thinking and technical abilities.

In Romania, educational policies have been characterised by a fragmented approach, with emphasis placed on expanding access to primary and secondary education, but with insufficient attention given to quality and orientation towards current economic requirements. This situation has limited the contribution of education to economic growth.

Unlike countries such as Germany, where policies have integrated vocational education with industrial requirements, Romania has remained anchored in a model that does not fully exploit the potential of human capital to stimulate economic development. According to Eurostat data (2022), Germany allocates more than 10% of its education budget to vocational programmes, which has contributed to a youth unemployment rate below 7%, compared with more than 16% in Romania in 2021.

Another important aspect of effective educational policies is the promotion of lifelong learning, which enables individuals to update their skills according to economic developments and contributes to a more resilient labour market.

The OECD (2020), in *Continuous Learning in Working Life in Europe*, emphasises that policies encouraging continuous education-through retraining programmes and partnerships with the private sector-are essential for supporting economic growth, particularly in a globalised economy where the lifespan of skills is rapidly decreasing.

In Romania, this dimension of education has been neglected, as the system has focused predominantly on initial education, without developing the necessary infrastructure to support adults in adapting to the requirements of the modern economy.

By comparison, Nordic countries, such as Denmark, have implemented policies that integrate lifelong learning into their economic strategies, enabling a smoother transition towards high-value-

added sectors and providing a model that Romania could adapt in order to stimulate economic growth.

For example, Denmark allocated more than EUR 1.5 billion annually to adult retraining programmes between 2018 and 2022, according to governmental data, which contributed to maintaining an employment rate above 75%.

Exploring the role of educational policies in stimulating innovation, it becomes evident that education can contribute to economic development by promoting research and entrepreneurial skills, which are essential for generating new economic opportunities.

Authors such as Brynjolfsson and McAfee (2014), in *The Second Machine Age*, suggest that policies encouraging education in fields such as technology and entrepreneurship can accelerate economic growth by creating an environment conducive to innovation and by preparing individuals to capitalise on technological transformations.

In Romania, educational policies have been slow to integrate these elements, with higher education remaining largely disconnected from the real needs of the economy, thereby limiting the country's ability to develop innovative industries.

Unlike countries such as Ireland, where education has been strategically aligned with investments in technology, Romania has missed opportunities to stimulate economic growth through policies linking education with research and entrepreneurship.

In Ireland, more than 20% of university graduates are employed in the technology sector five years after graduation, according to IDA Ireland (2022), compared with less than 10% in Romania, according to the National Institute of Statistics (INS, 2021).

Considering education as a means of reducing economic inequalities, effective policies can contribute to economic growth by expanding access to educational opportunities for all segments of the population, thereby increasing economic participation and productivity.

Psacharopoulos and Patrinos (2018), in *Returns to Investment in Education*, emphasise that investments in education, when distributed equitably, generate significant economic benefits by reducing poverty and increasing the tax base.

In Romania, regional and social inequalities have been exacerbated by educational policies that have insufficiently addressed disparities between urban and rural areas, limiting the contribution of education to economic growth.

Countries such as Finland, with policies promoting educational equity, have demonstrated that a more balanced distribution of educational resources can support a more inclusive and dynamic economy, representing a relevant example for Romania in its efforts to optimise the impact of education.

According to the OECD (2021), Finland invests more than EUR 6,000 annually per student, compared with less than EUR 1,500 in Romania, which explains the differences in economic and educational outcomes.

Analysing education from the perspective of strategic investments, effective policies can maximise its economic impact by allocating resources towards areas that address the current and future needs of the economy, such as technology, sustainability, and innovation.

The academic literature suggests that education can stimulate economic growth when it is supported by policies that promote quality, relevance, and accessibility, aspects that require an integrated vision and coordination between the educational sector and the economic sector.

In Romania, the absence of such a vision has limited the potential of education to contribute to economic development, with the system being characterised by fragmentation in contrast with the coherent approaches adopted by other European countries.

The Romanian experience highlights the need for educational policies that overcome current limitations by promoting education aligned with economic requirements and capable of supporting sustainable growth.

World Bank data (2022) indicate that countries allocating more than 5% of GDP to education, such as Sweden, have a GDP per capita 40% higher than Romania, where investments have remained below 3% over the last decade, reflecting the correlation between financing and economic performance.

In this context, we considered it appropriate to investigate the employment rate of recent graduates aged between 20 and 34 years old during the period 2014–2023, in order to assess the effectiveness of educational policies in facilitating their transition towards the labour market, an essential aspect for understanding the impact of education on economic growth.

In this regard, we aimed to analyse these indicators because they reflect the capacity of education systems to generate productive human capital, providing an initial perspective on how educational strategies support economic dynamism within the European Union, including Romania.

This graphical representation allows us to establish a starting point for further analysis, highlighting the performance of Member States and laying the foundations for exploring connections with other dimensions, such as youth vulnerability or private sector involvement.

The examination of this bar chart reveals a detailed map of the success of educational policies within the European Union, illustrating the employment rate of recent graduates (aged 20–34 years) between 2014 and 2023, an essential indicator of the impact of education on economic dynamism.

The orange bars, representing the values recorded in 2014, are juxtaposed with the purple bars corresponding to 2023, while the red dotted and continuous lines, indicating the EU-27 average (76.1% in 2014 and 84.0% in 2023), outline an upward trend of 7.9 percentage points. This evolution highlights the effectiveness of educational strategies that align young people's training with labour market requirements.



Figure 1. Employment Rate of Recent Graduates (Aged 20–34) in EU Member States and the EU-27 Average, 2014–2023

Source: Prepared by the author based on Eurostat data.

Link: https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_24/default/table?lang=en

One aspect that stands out is the leading position of countries with well-structured education systems. Malta, with an employment rate of 92.0% in 2023, and the Netherlands, with 91.0%, rank highest, starting from 88.0% and 85.0% respectively in 2014, with increases of 4.0 and 6.0 percentage points. These performances reflect educational policies that prioritise cooperation with the private sector and lifelong learning, a model that aligns with the analysis regarding the success of strategies inspired by countries such as Germany, where vocational education is integrated with industry requirements.

Germany (from 87.5% to 90.0%) and Austria (from 86.5% to 90.0%) follow closely, strengthening their reputation through efficient dual education systems, which, as previously mentioned, reduce youth unemployment and support economic growth.

At the opposite end, Italy (from 55.0% to 70.0%) and Greece (from 60.0% to 74.0%) remain below the European average in 2023, although they recorded significant progress of 15.0 and 14.0 percentage points respectively. These improvements suggest a strengthening of educational policies, likely supported by European funds, but their rates remain lower, reflecting structural challenges such as underfunding and weak alignment with labour market requirements. Romania, with an increase from 70.2% in 2014 to 75.0% in 2023 (an advance of 4.8 percentage points), remains below the EU-27 average of 84.0%, indicating modest progress. This limited evolution reinforces the observations presented in the text regarding the fragmentation of educational policies in Romania, which do not fully exploit the potential of human capital and require reforms such as lifelong learning, as previously explored.

Countries in the middle range, such as Ireland (from 72.0% to 86.0%), Lithuania (from 80.0% to 88.0%), and Denmark (from 82.0% to 89.0%), recorded increases between 10.0 and 14.0 percentage points, reflecting an effective adaptation of educational policies to economic requirements.

Ireland, with an increase of 14.0 percentage points, illustrates the success of strategies that align education with investments in technology, an aspect that resonates with the idea of the necessity for an integrated vision. Denmark and Lithuania demonstrate the benefits of educational flexibility, a model that supports employment and stimulates innovation, in accordance with our analysis presented in the text.

An interesting group consists of countries that started from lower levels but achieved remarkable progress. Croatia (from 62.0% to 78.0%), Spain (from 65.0% to 80.0%), and Portugal (from 70.0% to 83.0%) advanced by 16.0, 15.0, and 13.0 percentage points respectively, suggesting an economic recovery supported by educational reforms and European assistance.

These increases reflect the capacity of education to reduce inequalities. Bulgaria (from 65.0% to 75.0%) and Slovakia (from 70.0% to 82.0%) follow a similar trajectory, with advances of 10.0 and 12.0 percentage points, indicating an improvement in educational policies in Eastern Europe.

From an economic perspective, the graph highlights the role of educational policies in stimulating employment and, implicitly, economic growth. Countries with high rates, such as Malta and the Netherlands, demonstrate the benefits of education aligned with labour market requirements, while countries such as Italy and Romania require more ambitious reforms in order to reach European standards.

The average increase recorded in the EU-27, from 76.1% to 84.0%, reflects an overall success of educational strategies; however, regional variations underline the need for more balanced policies. In Romania, the increase from 70.2% to 75.0% represents progress, but remains

insufficient, suggesting that the adoption of practices such as lifelong learning could accelerate graduate integration.

After examining in Figure 1 the employment rate of recent graduates, which provided an overview of the successful integration of educated young people into the labour market between 2014 and 2023, we considered it necessary to complement this analysis by exploring the NEET rate, which includes young people aged between 15 and 29 who are not engaged in education, employment, or training, in order to better understand the vulnerability of those who remain outside the integration process during the same period.

In this regard, we aimed to analyse these indicators because they reveal the reverse side of the phenomenon-the extent to which education systems fail to prevent marginalisation-and they complete the perspective on the effectiveness of educational policies discussed previously.

This graphical representation allows us to compare the progress of Member States, including Romania, in reducing this phenomenon, providing an empirical basis for assessing the contribution of education to economic and social resilience.

Analysing the impact of crises on European youth, the dumbbell chart captures the evolution of the NEET rate (young people aged 15–29 who are not in education, employment, or training) within the European Union between 2014 and 2023, highlighting how education has responded to the economic and social challenges of this period.

The blue points, representing the values recorded in 2014, are connected through thin lines with the red points from 2023, providing a clear overview of the progress achieved, while the dotted and continuous red lines, marking the EU-27 average (15.6% in 2014 and 11.2% in 2023), serve as benchmarks for evaluating the individual performance of countries.

The average decrease of 4.4 percentage points reflects significant progress in reducing youth vulnerability.

One aspect that immediately stands out is the leading position of Nordic countries and states with well-structured educational and economic systems. The Netherlands, with a NEET rate decreasing from 6.3% in 2014 to 4.9% in 2023, and Luxembourg, from 7.3% to 5.8%, are among the leading performers, reflecting the effectiveness of vocational education and youth support programmes in these countries.

Denmark (from 7.6% to 6.3%) and Sweden (from 8.3% to 6.1%) follow closely, demonstrating a remarkable capacity to integrate young people into the labour market, even in crisis contexts.

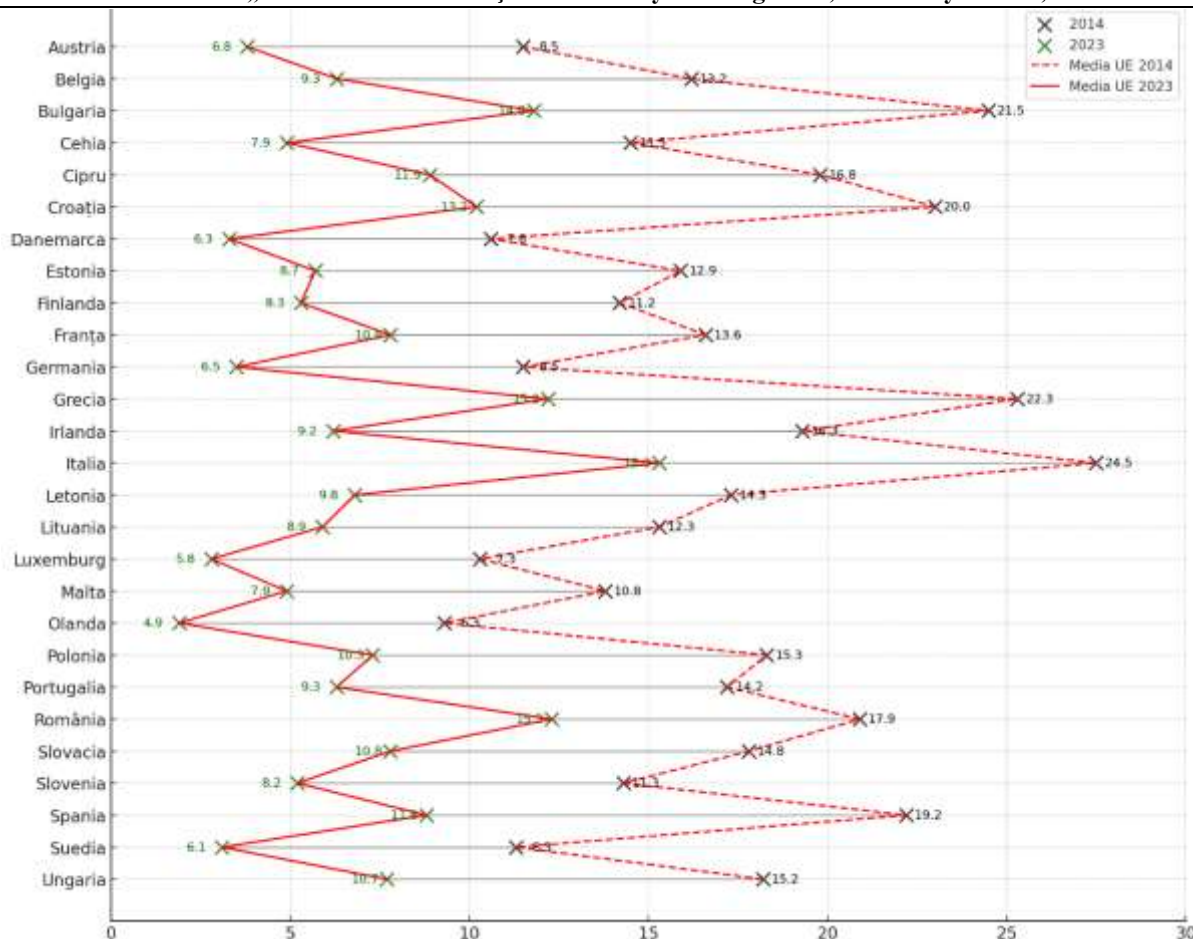


Figure 2. NEET Rate (Aged 15–29) in EU Member States, 2014–2023

Source: Prepared by the author based on Eurostat data.

Link: https://ec.europa.eu/eurostat/databrowser/view/edat_lfse_20/default/table?lang=en

At the opposite end, Italy (from 24.5% to 18.3%), Greece (from 22.3% to 15.2%), and Bulgaria (from 21.5% to 14.8%) remained above the European average in 2023, although they recorded substantial reductions of 6.2, 7.1, and 6.7 percentage points, respectively. These improvements, although significant, indicate the persistence of structural challenges in Southern and Eastern Europe, where economic and health crises have had a profound impact, limiting young people's access to education and employment opportunities. This situation reflects the systemic difficulties discussed in the text, where the absence of rapid reskilling programmes has intensified youth vulnerability in the face of crises.

Romania, with a NEET rate declining from 17.9% in 2014 to 15.3% in 2023, recorded a reduction of 2.6 percentage points, one of the lowest decreases in the European Union, remaining above the European average of 11.2%. This modest progress reflects the rigidity of the Romanian education system, which has remained anchored in traditional paradigms focused on theoretical knowledge rather than on the development of practical skills required to cope with economic disruptions. Nevertheless, the decline indicates a certain level of improvement, which could be enhanced through the adoption of innovative approaches, such as digital education, as previously explored in the text.

Countries in the middle range, such as Spain (from 19.2% to 11.8%), Ireland (from 16.3% to 9.2%), and Croatia (from 20.0% to 13.2%), recorded significant reductions of 7.4, 7.1, and 6.8 percentage points, respectively, reflecting a recovery capacity supported by educational reforms and youth-oriented support measures. These improvements suggest a faster adaptation to crises, potentially through the integration of vocational education and reskilling programmes, an aspect

consistent with the idea that education must become a rapid-response instrument to economic challenges. Belgium (from 13.2% to 9.3%) and France (from 13.6% to 10.8%) followed a similar trajectory, with reductions of 3.9 and 2.8 percentage points, indicating gradual improvement supported by more flexible education systems.

An interesting group is represented by the Baltic and Central European countries, which recorded moderate but consistent reductions. Latvia (from 14.3% to 9.8%), Lithuania (from 12.3% to 8.9%), and Poland (from 15.3% to 10.3%) reduced their NEET rates by 4.5, 3.4, and 5.0 percentage points, respectively, approaching the European average. These developments reflect a gradual capacity for adaptation, potentially supported by European funds and educational reforms that enabled better integration of young people into the labour market, an aspect connected to the analysis presented in the text regarding the necessity of education programmes oriented towards resilience.

From the perspective of crisis impact, the graph highlights the role of education as a factor mitigating youth vulnerability. Nordic countries, characterised by low NEET rates, demonstrate the benefits of an adaptable education system, while countries such as Italy and Greece, despite their progress, require more ambitious reforms to reduce youth marginalisation. The EU-27 average, decreasing from 15.6% to 11.2%, indicates overall success in managing the impact of crises; however, regional variations underline the need for more balanced strategies. In Romania, the reduction of the NEET rate represents an initial step, but remains insufficient, suggesting that reforms such as digitalisation and rapid reskilling could accelerate youth integration.

Therefore, this graphical analysis reveals a European Union in which education has contributed to reducing youth vulnerability in the face of crises, with notable progress in Southern and Eastern Europe, but with persistent challenges in countries such as Romania, which require a reconsideration of the education system in order to maximise its impact on the economy and society.

Having examined the role of effective educational policies in aligning education with labour market needs and stimulating innovation, the analysis now turns to another key actor in this process: the private sector. While public policies establish the strategic direction and create the institutional framework for maximising the contribution of education to economic growth, company involvement adds an applied dimension that complements these efforts. Through their resources, expertise, and direct connection with economic realities, firms can transform strategic objectives into tangible outcomes, highlighting the importance of understanding how cooperation between education systems and the private sector can strengthen the contribution of education to economic development, particularly in countries such as Romania, where significant potential remains insufficiently exploited.

Partnerships with the Private Sector and the Role of Vocational Education

The economic and technological transformations of recent decades have emphasised the need for close cooperation between education systems and the private sector, particularly in the field of vocational training, where company involvement becomes essential for aligning workforce skills with labour market requirements and supporting economic growth through the development of highly qualified human capital. Within the European Union, where economic competitiveness depends on the ability to rapidly respond to industrial needs, private-sector-supported vocational training emerges as a strategy through which countries can optimise the economic impact of education, reducing the gap between theoretical preparation and practical applicability.

The analysis of private-sector involvement in vocational training explores the ways in which this collaboration can contribute to economic development, highlighting Romania's experience and enriching the discussion with relevant academic perspectives.

Cooperation with the private sector in vocational training enables an integrated approach in which education becomes more responsive to immediate economic requirements, providing

individuals with practical skills that facilitate their transition into the labour market. CEDEFOP (2015), in Vocational Education and Training in Europe, emphasises that company involvement in curriculum development and the provision of practical training opportunities increases the relevance of vocational education, contributing to a more dynamic economy by reducing structural unemployment and increasing productivity.

In Romania, this cooperation has been limited by an educational tradition that has prioritised state responsibility, leaving the private sector in a secondary role, which has resulted in vocational preparation being insufficiently aligned with real economic needs. Unlike Germany, where the dual system integrates companies directly into the educational process, Romania has remained dependent on a centralised system that has not fully capitalised on the potential of private-sector involvement to stimulate economic growth.

Exploring the role of the private sector in reducing occupational inequalities, its involvement can contribute to economic growth by expanding access to vocational training for vulnerable groups, providing opportunities for reskilling and labour market integration. OECD (2019), in Getting Skills Right, suggests that public-private partnerships can facilitate access to practical education in disadvantaged regions, supporting a more inclusive economy by increasing the economic participation of low-skilled populations.

In Romania, the absence of such partnerships has perpetuated regional disparities, with vocational training being more accessible in urban areas and less developed in rural regions, thereby limiting its contribution to national economic development. Comparatively, countries such as Austria have used private-sector involvement to ensure more equal access to training opportunities, reducing inequalities and stimulating economic growth through the integration of broader categories of workers.

From the perspective of innovation, cooperation with the private sector can stimulate economic growth by promoting technological and entrepreneurial skills, which are essential for modern knowledge-based economies. Authors such as Brynjolfsson and McAfee (2014), in The Second Machine Age, argue that company involvement in education can accelerate economic development by preparing individuals to innovate and respond to technological transformations, a process requiring close alignment between industrial needs and educational provision.

In Romania, this alignment has been insufficiently developed, with vocational training remaining largely disconnected from the requirements of the digital economy, in contrast to countries such as the Netherlands, where the private sector actively contributes to the development of technological skills, generating significant economic benefits. The Romanian experience highlights the need for strategies that capitalise on private expertise in order to increase the relevance of vocational education.

Analysing vocational education as a strategic investment, private-sector involvement can maximise its economic impact by allocating resources towards areas that address current and future labour market requirements, such as technology and sustainability. Psacharopoulos and Patrinos (2018), in Returns to Investment in Education, emphasise that vocational education supported by the private sector generates economic benefits by reducing training costs for the state and increasing employability, thereby contributing to a more efficient economy.

In Romania, the lack of consistent company involvement has limited this potential, with vocational training remaining characterised by dependence on public funding and weak coordination with the economic sector, which has reduced its contribution to economic growth. Countries such as Denmark, where the private sector plays an active role in education, illustrate how cooperation can transform vocational training into an engine of economic development, providing a relevant example for Romania.

Approaching vocational education from the perspective of economic resilience, private-sector involvement can contribute to preparing individuals to cope with economic shocks by developing skills that enable rapid adaptation to changing conditions. Academic literature suggests

that vocational education, when supported by companies, can reduce the vulnerability of economies to crises by creating a flexible and highly qualified workforce.

In Romania, this approach has been insufficiently developed, with vocational training remaining fragmented and weakly connected to economic needs, highlighting the necessity of policies that promote closer cooperation with the private sector in order to optimise the contribution of education to economic development.

Starting from the analysis of the NEET rate presented in Figure 2, which highlighted the vulnerability of young people outside education, employment, or training, and complementing it with the graduate employment rate presented in Figure 1, we considered it appropriate to deepen the research by investigating the degree of private-sector involvement in continuous vocational training between 2014 and 2023, in order to understand how enterprises contribute to reducing these gaps and aligning skills with economic requirements.

In this regard, we aimed to analyse these indicators because they reflect the role of public-private partnerships in increasing the relevance of vocational education, a factor that directly influences both youth employment and workforce adaptability.

This graphical representation enables us to observe differences in commitment among Member States, including Romania, and to evaluate how cooperation with the private sector can amplify the impact of education on economic development.

The exploration of private-sector involvement in continuous vocational training within the European Union, as illustrated in this bar chart, provides a clear picture of enterprise commitment between 2014 and 2023.

The green bars, indicating the percentage of enterprises providing vocational training in 2014, are juxtaposed with the pink bars representing the values recorded in 2023, while the dotted and continuous red lines, representing the EU-27 average (36% in 2014 and 40% in 2023), reveal a moderate increase of 4 percentage points.

This evolution highlights the contribution of the private sector to aligning workforce skills with economic requirements.

An immediately visible element is the dominant position of Nordic countries and states with a strong tradition of vocational training. Sweden, with an increase from 55% in 2014 to 61% in 2023, and Denmark, from 55% to 59%, rank among the leading countries, reflecting a culture of lifelong learning supported by the private sector, which contributes to a more dynamic economy by reducing structural unemployment.

Austria, Luxembourg, and the Netherlands, all reaching 55% in 2023 (from 50% in 2014), complete this group, demonstrating consistent enterprise involvement that aligns with the analysis presented in the text regarding the German dual model, which integrates companies into the educational process in order to respond effectively to labour market requirements.

At the opposite end, Romania (from 15% to 18%), Greece (from 20% to 25%), and Bulgaria (from 20% to 25%) remain below the European average, with modest increases of 3, 5, and 5 percentage points respectively.

Romania, with only 18% in 2023, reflects limited private-sector involvement, a situation consistent with the observations regarding dependence on public financing and the lack of strong cooperation with companies, which restricts the relevance of vocational training.

Greece and Bulgaria, although showing progress, reveal similar structural challenges that require more ambitious strategies to align education with economic requirements, an aspect that could provide valuable lessons for educational reforms in Romania.

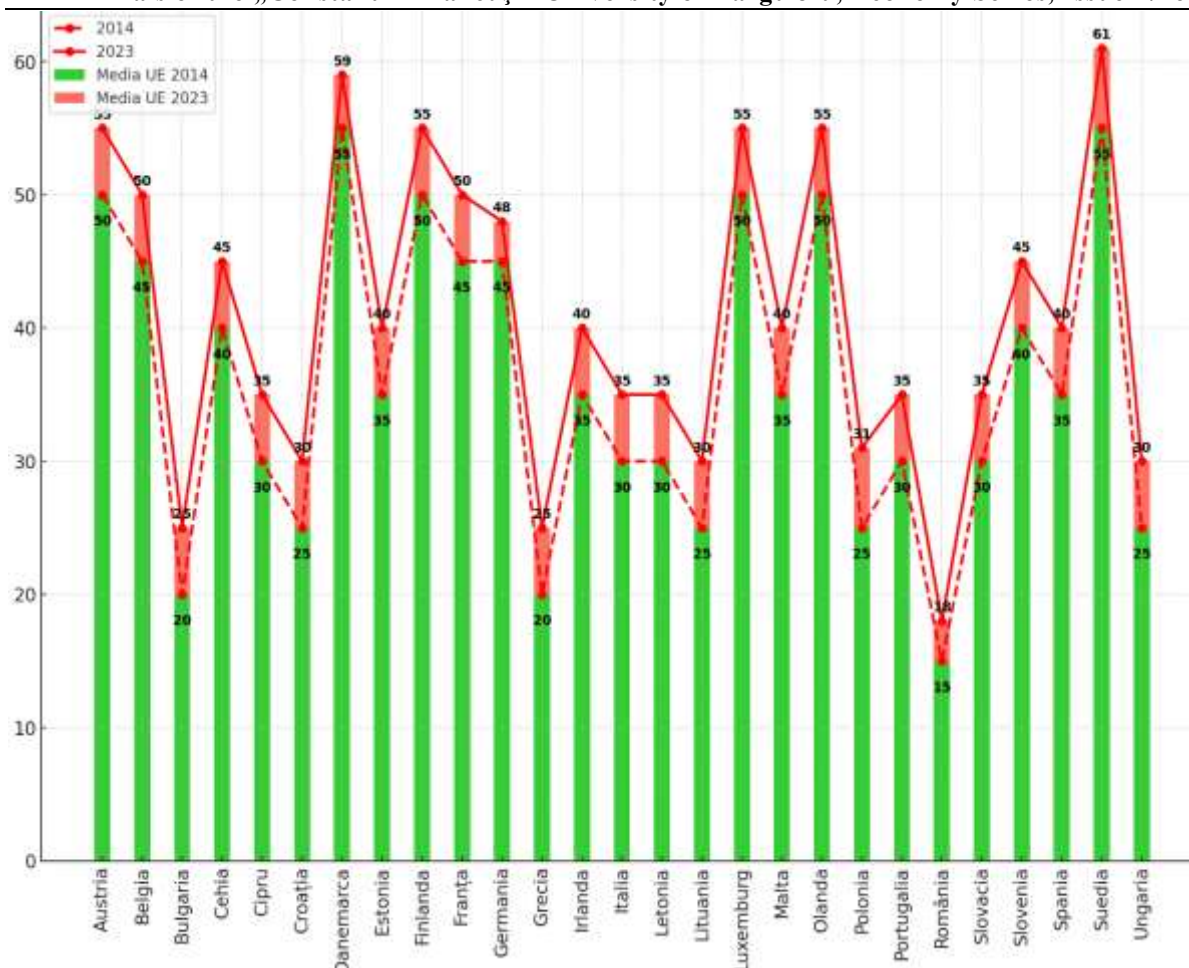


Figure 3. Private Sector Involvement in Continuing Vocational Training in Selected EU Member States, 2014–2023

Source: Prepared by the author based on Eurostat data

Link: https://ec.europa.eu/eurostat/databrowser/view/trng_cvt_01s/default/table?lang=en

Countries in the intermediate range, such as the Czech Republic (from 40% to 45%), Slovenia (from 40% to 45%), and Spain (from 35% to 40%), recorded moderate increases of 5 percentage points, reflecting a growing involvement of the private sector in supporting a better integration of skills into the labour market. Belgium and France, both reaching 50% in 2023 (from 45%), demonstrate a similar trend, indicating a constant commitment to continuing vocational training, which contributes to productivity, an aspect consistent with the idea that public-private partnerships can enhance employability.

A notable group consists of countries that started from relatively low levels but achieved visible progress. Poland (from 25% to 31%), Slovakia (from 30% to 35%), and Portugal (from 30% to 35%) advanced by 6, 5, and 5 percentage points, respectively, suggesting a gradual recognition of the importance of vocational training supported by the private sector, potentially through European support mechanisms. These developments reflect the capacity of vocational education to reduce occupational inequalities.

From an economic perspective, the graph highlights the contribution of the private sector to a more resilient economy. The Nordic countries, characterised by high participation rates, illustrate the benefits of active business involvement, while countries such as Romania and Greece, with lower levels of engagement, risk losing economic opportunities by limiting the impact of vocational training. The average increase recorded at the EU-27 level, from 36% to 40%, indicates a general strengthening of commitment; however, regional disparities emphasise the need for more balanced strategies. In Romania, the increase from 15% to 18% represents only modest progress, suggesting

that closer cooperation with the private sector could accelerate the alignment of skills with economic requirements.

The analysis of these data reveals a diverse landscape of private sector involvement in vocational training, with Nordic leaders establishing benchmarks and Eastern European countries, such as Romania, potentially benefiting from models such as the Austrian approach in order to maximise the contribution of vocational education to the national economy.

While the analysis has demonstrated how private sector involvement in vocational training can better align workforce skills with the immediate needs of the economy, creating a bridge between theoretical knowledge and practical application, the discussion would remain incomplete without examining the foundation that enables this cooperation: vocational education itself. The role of companies is undeniably valuable, yet its effectiveness depends on the specific characteristics of vocational education systems, which provide substance and direction to this partnership. The distinctive features of vocational education -ranging from its practical orientation to its flexibility-enable the private sector to contribute meaningfully, transforming vocational training into a concrete instrument for economic development. Therefore, exploring these attributes is essential for understanding how vocational education can support economic growth, particularly in a context such as Romania, where adaptation to modern requirements remains a significant challenge.

Connecting the various dimensions of our analysis, it becomes evident that effective educational policies, private sector involvement, and the characteristics of vocational education intertwine to shape an integrated approach to the role of education in economic development. On the one hand, well-designed policies establish the strategic direction by providing a framework capable of responding to labour market needs and reducing inequalities, while cooperation with the private sector introduces a practical dimension, anchoring education in immediate economic realities through resources and expertise. In turn, vocational education, through its distinctive characteristics, acts as a connecting element, reinforcing these efforts through flexibility and practical applicability. Together, these components provide a clearer understanding of how education can become a solid bridge between today's economic challenges and tomorrow's opportunities, enabling Romania and other European countries to transform human potential into sustainable progress.

Characteristics of vocational education and its contribution to economic growth

Vocational education occupies a distinct position within the educational landscape due to its ability to combine theoretical preparation with practical applicability, providing individuals with specific skills that respond to labour market requirements and thereby contributing to economic development through the formation of a workforce adapted to industrial needs. Within the European Union, where economic diversity and the necessity of a rapid transition towards knowledge-based economies are increasingly evident, vocational education stands out through its unique characteristics, distinguishing it from general education and positioning it as a strategic instrument for economic growth. Examining the main characteristics of vocational education reveals how these elements can influence economic performance, highlighting Romania's experience and enriching the analysis with relevant perspectives from academic literature.

One of the defining characteristics of vocational education is its practical orientation, which establishes a direct connection between the learning process and the specific requirements of occupations, facilitating the rapid integration of graduates into the labour market. CEDEFOP (2015), in *Vocational Education and Training in Europe*, emphasises that this characteristic involves a combination of theoretical training and practical experience, frequently achieved through internships or collaborations with employers, thereby increasing the relevance of education for the economy. In Romania, vocational education has been characterised by a limited practical orientation, with training remaining predominantly theoretical and insufficiently connected to

actual labour market needs, which has reduced its capacity to contribute to economic growth. Unlike countries such as Germany, where practical training is systematically integrated through the dual education model, Romania has remained dependent on an educational approach that does not fully exploit this essential characteristic, diminishing the economic impact of vocational training.

Flexibility represents another fundamental characteristic of vocational education, enabling curricula to adapt to economic and technological changes and providing individuals with the opportunity to acquire updated skills according to labour market requirements. OECD (2019), in *Getting Skills Right*, argues that this flexibility is crucial for responding to the needs of emerging industries, contributing to a more resilient economy by preparing a workforce capable of rapidly adapting to transformations. In Romania, this flexibility remains insufficiently developed, with vocational curricula continuing to be relatively rigid and poorly aligned with current economic demands, limiting the contribution of vocational education to economic development. Comparatively, countries such as Finland have successfully leveraged the flexibility of vocational education to integrate digital and sustainability-related skills, offering an example of adaptation that could inspire Romania to optimise the economic impact of its vocational training system.

Exploring accessibility as a characteristic of vocational education, it becomes evident that this form of education distinguishes itself through its ability to provide learning opportunities for a broad range of individuals, including vulnerable groups, thereby contributing to the reduction of economic and social inequalities. Billett (2011), in *Vocational Education: Purposes, Traditions and Prospects*, suggests that the accessibility of vocational education can increase economic participation by integrating individuals with lower levels of formal education into the labour market, generating economic benefits through the expansion of the tax base. In Romania, accessibility to vocational education has been constrained by regional disparities and limited resources in rural areas, reducing its potential contribution to a more inclusive economy. Unlike countries such as Australia, where vocational education is accessible through an extensive network of programmes, Romania has faced difficulties in expanding this characteristic, thereby limiting its economic impact.

Considering vocational education from the perspective of cooperation with the private sector, this characteristic enables a close alignment between training provision and economic requirements through employer involvement in defining the necessary skills. Psacharopoulos and Patrinos (2018), in *Returns to Investment in Education*, emphasise that vocational education supported by the private sector generates economic benefits by reducing the gap between education and the labour market, increasing employability and productivity. In Romania, cooperation with the private sector has remained underdeveloped, with vocational training relying primarily on state initiatives, resulting in educational provision insufficiently connected to real economic requirements. Countries such as the Netherlands, where the private sector plays an active role in vocational education, demonstrate how this characteristic can transform vocational training into an engine of economic growth, highlighting Romania's largely unexploited potential.

Analysing vocational education as a driver of innovation, its focus on practical and specialised skills can contribute to economic development by preparing individuals to respond effectively to technological and industrial transformations. Academic literature suggests that vocational education, through its unique characteristics, can support knowledge-based economies by providing skills that stimulate innovation and adaptability. In Romania, this orientation has been insufficiently exploited, with vocational training remaining largely disconnected from the requirements of the digital economy, highlighting the need to reconsider how its characteristics are utilised in order to optimise its contribution to economic development.

After examining in Figure 3 the involvement of the private sector in continuing vocational training, which highlighted the contribution of companies to workforce development between 2014 and 2023, and considering the perspectives provided by employment rates and NEET rates, we considered it relevant to extend the analysis by examining the proportion of students enrolled in

upper secondary vocational education (ISCED 3) participating in work-based learning, in order to demonstrate how the practical characteristics of vocational education support economic integration. In this regard, we aimed to analyse these indicators because they illustrate the applicability of vocational education – influenced by cooperation with the private sector – and its capacity to reduce youth vulnerability, thereby completing the perspective previously developed. This diagram provides a comparative view of vocational education progress across Member States, including Romania, representing an essential tool for understanding the contribution of vocational education to sustainable economic growth.

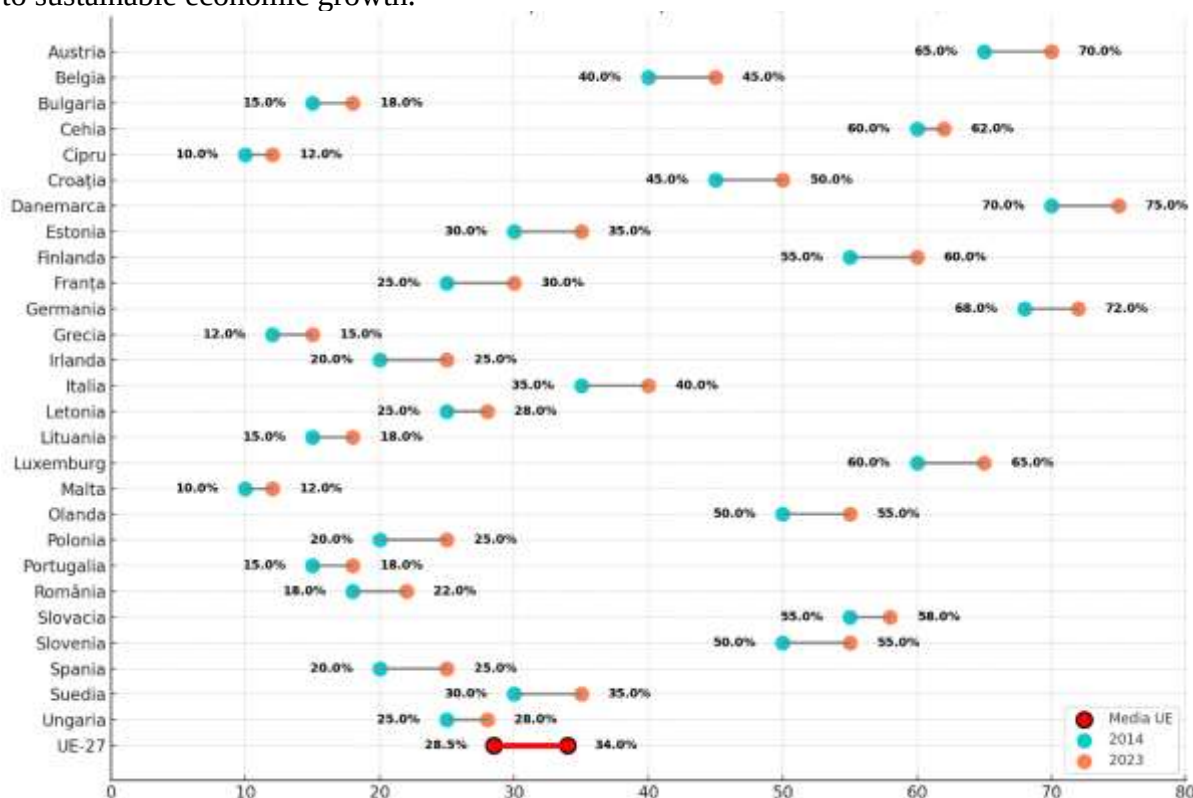


Figure 4. Main Characteristics of Vocational Education in EU Member States

Source: Prepared by the author based on Eurostat data.

Link: https://ec.europa.eu/eurostat/databrowser/view/educ_uoe_enrt05/default/table?lang=en

Analysing the development of vocational education within the European Union, this dumbbell chart highlights the proportion of students enrolled in upper secondary vocational education (ISCED 3) participating in work-based learning between 2014 and 2023, providing a detailed overview of how this practice supports labour market integration. The blue points, representing the values recorded in 2014, are connected through thin lines to the orange points corresponding to 2023, while the red dotted and continuous lines, indicating the EU-27 average (28.5% in 2014 and 34.0% in 2023), illustrate an average increase of 5.5 percentage points. This evolution highlights the importance of practical learning, a defining feature of vocational education, which contributes to economic development by preparing a workforce adapted to industrial requirements.

A notable aspect is the leading position of countries with well-established vocational education systems. Denmark, with an increase from 70.0% in 2014 to 75.0% in 2023, and Austria, from 65.0% to 70.0%, rank highest, reflecting a strong tradition of work-based learning supported by close cooperation with the private sector, a model consistent with the analysis regarding the effectiveness of the German dual system. Germany (from 68.0% to 72.0%) and Luxembourg (from 60.0% to 65.0%) follow the same trend, demonstrating how professional practice integrated into

education facilitates the transition towards employment, a central aspect discussed throughout this paper.

At the opposite end, Cyprus (from 10.0% to 12.0%), Malta (from 10.0% to 12.0%), and Bulgaria (from 15.0% to 18.0%) remain below the European average, recording modest increases of 2, 2, and 3 percentage points, respectively. Romania, with an increase from 18.0% to 22.0% (a growth of 4 percentage points), also remains below the EU-27 average of 34.0%, reflecting limited participation in work-based learning. This situation highlights previous observations regarding the predominantly theoretical orientation of Romanian vocational education, which contrasts with models such as the Finnish system, where flexibility and cooperation with employers are more strongly emphasised, suggesting the need for reforms aimed at increasing the economic relevance of vocational training.

Countries in the intermediate range, such as Croatia (from 45.0% to 50.0%), Finland (from 55.0% to 60.0%), and the Netherlands (from 50.0% to 55.0%), recorded increases of 5 percentage points, reflecting the consolidation of work-based learning practices supported by effective educational policies. Belgium (from 40.0% to 45.0%) and Italy (from 35.0% to 40.0%) followed a similar trajectory, with increases of 5 percentage points, indicating a gradual adaptation of vocational education systems that contributes to better labour market integration, an aspect consistent with the concept of accessibility in vocational education.

A notable group consists of countries that started from lower levels but achieved visible progress. Greece (from 12.0% to 15.0%), Poland (from 20.0% to 25.0%), and Spain (from 20.0% to 25.0%) advanced by 3, 5, and 5 percentage points, respectively, suggesting efforts to modernise vocational education, potentially supported by European funding. These developments reflect the capacity of work-based learning to reduce occupational inequalities.

From an economic perspective, the graph highlights the role of vocational education as an instrument for workforce development. Nordic and Western European countries, characterised by higher participation rates, illustrate the benefits of cooperation with the private sector, whereas countries such as Romania and Bulgaria, with lower levels of engagement, risk losing economic opportunities by limiting the impact of vocational training. The EU-27 average increase, from 28.5% to 34.0%, reflects a growing overall commitment; however, regional disparities emphasise the need for more balanced strategies. In Romania, the increase from 18.0% to 22.0% represents modest progress, suggesting that stronger private sector involvement could accelerate skills alignment with economic requirements.

The analysis reveals a diverse educational landscape in which work-based learning supports the transition into employment, with Nordic countries setting benchmarks and Eastern European countries, such as Romania, potentially benefiting from adopting elements of models such as the Austrian system in order to maximise the contribution of vocational education to national economic development.

Conclusions

Education plays an essential role in the economic development of any country, and the analysed data confirm this relationship. Within the European Union, countries that have succeeded in better aligning their education systems with the actual requirements of the labour market achieve visibly better outcomes in terms of employment, productivity, and economic resilience. The models implemented in Germany, Denmark, the Netherlands, and Austria demonstrate that when vocational education is directly connected to companies, when students gain genuine practical experience, and when firms invest in continuous employee training, positive effects emerge relatively quickly. Young people enter employment more easily, the proportion of individuals outside education, employment, or training decreases, and economies become better equipped to respond to structural changes.

By contrast, Romania continues to face significant challenges. Although certain improvements were recorded between 2014 and 2023, these remain modest and insufficient. The employment rate of young graduates increased from 70.2% to 75%, yet it remains almost 9 percentage points below the European average. Business involvement in continuing vocational training increased only from 15% to 18%, representing one of the lowest levels in the European Union. Furthermore, the proportion of vocational education students participating in work-based learning reached only 22%, considerably below the EU average of 34%. These figures indicate that Romania's education system remains excessively theoretical, insufficiently connected to employers' actual requirements, and inadequately supported by partnerships with the private sector.

The specialised literature explains the reasons behind this situation. Investments in education generate stronger outcomes when accompanied by quality and relevance, rather than merely by an increase in years of schooling. When curricula are rigid, practical training opportunities are limited, and companies are not involved in defining required competencies, graduates enter the labour market with skills that do not correspond to demand. Moreover, chronic underfunding and significant disparities between urban and rural areas exacerbate these challenges. Many young people from disadvantaged regions lack access to high-quality education, which subsequently contributes to higher NEET rates and the loss of economic potential.

To address these challenges, Romania requires concrete and sustained long-term reforms. The first important step involves strengthening genuine partnerships with the private sector. Companies should be involved not only occasionally but systematically, both in curriculum development and in the provision of internships and continuing training opportunities. The German dual model, as well as the experiences of Denmark and Austria, may serve as sources of inspiration, adapted to the Romanian context. The second step involves transforming vocational education into a genuinely practice-oriented system. Students should spend more time in companies, work with real equipment, and acquire current competencies rather than focusing predominantly on theoretical knowledge. The third step concerns lifelong learning. In an economy where skills evolve rapidly due to digitalisation and the green transition, continuous training can no longer be considered a luxury but rather a necessity. The state and businesses must create simpler and more accessible mechanisms through which adults can acquire new qualifications and adapt to changing economic conditions.

Furthermore, a genuine increase in educational investment is essential, not merely a formal commitment. Without sufficient resources for adequate teacher salaries, modern infrastructure, and support programmes in rural areas, reforms remain largely declarative. At the same time, bureaucracy and fragmented decision-making processes must be reduced. A clear long-term strategy linking education to national economic objectives would provide significantly greater benefits than frequent changes in policy direction.

If these directions are pursued consistently, the effects could be substantial. Youth employment would increase, NEET rates would decline, and the workforce would become more adaptable to economic transformations. In the long term, this would contribute to more sustainable economic growth, reduced regional inequalities, and Romania's stronger integration into the European knowledge-based economy. Moreover, more relevant education could partially reduce the loss of skilled young people through migration and make the country more attractive for foreign investment.

Ultimately, education is not an isolated sector. It directly influences economic competitiveness, social cohesion, and a country's ability to withstand crises. The presented data demonstrate that the gap between Romania and the best-performing European states is not inevitable. It can be reduced through intelligent policies, genuine private sector involvement, and the effective utilisation of vocational education potential. The ability of decision-makers to transform these findings into concrete and sustainable actions will determine future progress.

Without such measures, Romania risks falling further behind, while the potential of its human capital will continue to be underutilised.

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