

# COMPARISON BETWEEN THE ROMANIAN EDUCATIONAL SYSTEM AND THE EUROPEAN EDUCATIONAL SYSTEM USING BENCHMARKING ANALYSIS

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**Abstract:** *Abstract: This article presents a comparative analysis between the Romanian educational system and the European educational system using data at the level of Romania and at the European/Eurostat level, as well as a benchmarking analysis, thus highlighting differences and similarities through the use of relevant statistical indicators. The study examines aspects such as the school dropout rate, the level of education funding, access to education, and students' performance in international assessments. The analysis is based on European statistical data and official reports on the development of education in Romania and in the European Union, analyses published by Eurostat. The results indicate the existence of regional disparities and significant differences with regard to investments in education. They also highlight the challenges related to the quality of the educational process and the equality of opportunities for students. Comparing the two systems allows for the identification of good European practices that can contribute to improving the Romanian system. In this context, the article emphasizes the importance of harmonizing educational policies with European standards. The study highlights the role of public policies in increasing educational performance and also the necessity and importance of educational reforms supported by appropriate strategies and investments. Thus, the research provides a perspective on the development directions of education in Romania in relation to the European space.*

**Keywords:** *Romanian and European education, rata abandonului şcolar, finanţarea şi accesul la educaţie, educational system.*

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## 1. Introduction

European education systems are undergoing a continuous process of adaptation to the demands of the knowledge-based economy, the objectives of the European Education Area, and the strategic targets set for 2030. Benchmarking provides a practical instrument for comparing the performance, efficiency, and equity of national education systems, identifying gaps, and extracting transferable best practices.

This paper compares key indicators of the Romanian education system with the EU-27 average, using official Eurostat and OECD data, in order to substantiate public policy recommendations and priority interventions. The aim of the research is to evaluate and compare the performance of the Romanian education system relative to the EU-27 average through the analysis of key indicators (funding, ECEC participation, early school leaving, tertiary education attainment, PISA performance), to identify gaps, validate hypotheses

regarding the relationship between policies and outcomes, and formulate practical and transferable public policy recommendations.

The objectives of the study focus on identifying the most effective practices, models, and educational policies implemented in high-performing education systems at the international level, with the purpose of formulating applicable recommendations for the modernization and improvement of the quality of the Romanian education system.

The novelty of the article lies in the comparison between the Romanian and the European education systems, using specific educational indicators, with the aim of adopting best practices to improve system performance.

Official data show that Romania is below the EU27 average on several structural and performance indicators. This reality justifies a benchmarking analysis that: (1) measures the gaps using normalized indicators; (2) identifies model countries for each domain (ECEC, VET, anti-dropout policies, funding); (3) proposes scalable pilot interventions, accompanied by clear monitoring and evaluation mechanisms.

The structure of the article is as follows: Chapter 1 presents the criteria underlying the benchmarking analysis and the sources used in the comparative analysis; Chapter 2 describes the concept of “benchmarking” and presents the main typologies of benchmarking (definitions, advantages, and relevance for education); and Chapter 3 carries out the research and comparison of the two educational systems using the benchmarking model.

## 2. Typologies of benchmarking and applicability in education

### 2.1. Introduction to benchmarking analysis

Benchmarking is a systematic process of comparing performance, processes, and practices with the aim of identifying gaps, extracting best practices, and designing improvements adapted to the local context (Camp, 1989; van Vught et al., 2008). In education, benchmarking supports strategic planning, resource allocation, and the design of targeted interventions (e.g., reducing early school leaving, increasing participation in ECEC, strengthening VET), and it can be applied both at the institutional level and at the system level (Camp, 1989; van Vught et al., 2008).

The concept of benchmarking originates from the term “benchmark” – a reference value that serves as a point of comparison in determining an organization’s current position through surveys (questionnaires) or observations. Benchmarking consists of two components (Kozak, 2004), namely:

- the “benchmarker,” representing the organization that initiates and implements the procedure;
- the “benchmarkee,” referring to the organizations against which comparisons are made (Florea, 2014, *Human Resources Audit*, C.H. Beck).

## 2.2. Main typologies of benchmarking (definitions, advantages, and relevance for education)

### Internal benchmarking

- **Definition:** Comparison between units/subunits within the same organization (schools, campuses, counties).
- **Advantages:** Easy access to data, low costs, higher internal acceptability; useful for the rapid dissemination of best practices.
- **Applicability in education:** Comparing remedial programs or promotion rates among high schools within the same county.
- **Source:** Camp (1989); APQC (n.d.).

### Competitive benchmarking (direct external)

- **Definition:** Comparison with similar institutions or systems in other regions/countries.
- **Advantages:** Provides a clear picture of relative positioning; stimulates performance-oriented innovation.
- **Applicability in education:** Comparing PISA results or graduation rates across systems with similar socio-economic profiles.
- **Source:** Burquel & van Vught (2010); APQC (n.d.).

### Functional benchmarking

- **Definition:** Comparison of specific functions/processes (e.g., teacher training, human resource management) with organizations performing the same functions, regardless of sector.
- **Advantages:** Enables the transfer of efficient practices from sectors with high operational maturity (e.g., healthcare, industry).
- **Applicability in education:** Adapting a continuous professional development model inspired by best practices in industry.
- **Source:** Elmuti & Kathawala (1997); van Vught et al. (2008).

### Generic / best-in-class benchmarking

- **Definition:** Comparison with the best available practices, regardless of sector or context, in order to establish high standards.
- **Advantages:** Identifies ambitious benchmarks; stimulates structural change.
- **Applicability in education:** Analyzing Nordic ECEC models or German VET systems to extract adaptable policy elements.
- **Source:** Camp (1989); van Vught et al. (2008).

### Essential distinction: performance benchmarking vs. practice benchmarking

- **Performance benchmarking:** Compares quantitative indicators (KPIs), e.g., early school leaving rates, expenditure per student, PISA scores.

- **Practice benchmarking:** Examines how processes are implemented (processes, policies, training). The combination of both types provides both measurable targets and practical implementation pathways (APQC, n.d.; van Vught et al., 2008).

## 3. Methodology

### 3.1. Selection criteria and recommended methodological steps

**Selection criteria:** strategic objectives, data maturity, available resources, time horizon, and degree of contextual comparability (e.g., curricular structure, funding, demographics). For the Romania vs. EU-27 analysis, the practical recommendation is: (1) piloting through internal benchmarking in representative regions; (2) functional benchmarking for processes (training, VET); (3) best-in-class benchmarking for ECEC policies and inclusion models (van Vught et al., 2008; OECD, 2019).

#### Methodological steps (operational synthesis):

1. Clearly define the purpose and policy questions.
2. Select comparable indicators (KPIs).
3. Choose the type of benchmarking.
4. Identify benchmarking partners and verify comparability.
5. Collect and validate data (official sources, standardization).
6. Analyze gaps (absolute and relative differences) and conduct qualitative diagnosis.
7. Adapt and pilot best practices.
8. Monitor, evaluate, and recalibrate.

These steps align with the classical benchmarking process model (Camp, 1989) and with guidelines for education systems (van Vught et al., 2008; OECD, 2019).

### 3.2 Risks, limitations, and ethical good practices

- **“Copy-paste” risk:** Importing a practice without contextual adaptation may fail; critical adaptation is essential (Burquel & van Vught, 2010).
- **Comparability issues:** Socio-economic, legislative, and cultural differences require methodological adjustments (e.g., weighting by GDP per capita).
- **Ethics and confidentiality:** In competitive benchmarking, clear agreements regarding sensitive data and intellectual property must be ensured (APQC, n.d.).
- **Learning-oriented approach (benchlearning):** Prioritize mutual exchange and stakeholder engagement (ministries, inspectorates, schools, unions, employers) to ensure sustainability (Ossiannilsson, 2023).

## 4. Results and Discussion

### 4.1 Analysis of the Romanian Education System Using Benchmarking

In order to highlight the differences between the practices applied in the education systems under analysis, several indicators drawn from official European statistics are proposed for comparison (Table 1).

**Table 1. Comparative synthesis of the main education indicators, Romania vs. EU-27, 2022–2023**

Indicator	România (official value)	UE27 (official value)
Public expenditure on education(% of GDP, 2022)	3,3%	4,7%
Early school leaving (ages 18–24, 2023)	16,6%	9,5%
Participation in early childhood education (age 3 to the start of primary education)	75,7%	94,6%
Tertiary education attainment (ages 25–34, 2023)	≈22–23%	43%
PISA performance (age 15, reading, PISA 2022)	428 points (România)	OECD average ≈ 487

*Source:* Authors' elaboration based on Eurostat (2024) and Organisation for Economic Co-operation and Development (2023).

The values presented in the table are those officially reported by Eurostat and OECD for the specified years; in the final text, the exact reference year will be indicated for each individual indicator.

### Brief interpretation of the indicators

- **Funding:** Romania allocates a share of GDP to education that is significantly below the EU-27 average; this gap constrains investments in infrastructure, equipment, and support programs for vulnerable students.
- **Early school leaving:** The rate of early school leaving in Romania is considerably higher than the EU average, signaling issues related to inclusion, curricular relevance, and support for students from disadvantaged backgrounds.
- **Early childhood education and care (ECEC):** Participation in pre-primary education in Romania remains below the EU average, with long-term implications for basic skills development and equity in educational trajectories.
- **Tertiary education:** The proportion of young people in Romania attaining tertiary education is well below the EU average, affecting the supply of advanced skills necessary for innovation and competitiveness.
- **PISA performance:** Romania's PISA scores (2022) are below the OECD average; these results indicate the need for targeted interventions in functional literacy, mathematics, and science.

### Relevance of the comparison and initial implications

The observed pattern (relatively low funding; limited access to ECEC; high early school leaving rates; low tertiary participation; below-average PISA performance) suggests interdependencies: insufficient investment in ECEC and in primary and secondary education may amplify the risk of early school leaving, while the deficit of tertiary graduates constrains the supply of advanced skills required by the labor market.

Benchmarking allows not only the quantification of gaps but also the identification of model countries (e.g., Finland, Estonia, Germany, the Netherlands) whose policies can be adapted to the Romanian context.

The cited data are drawn from official publications and databases:

- Eurostat. (2024). Educational expenditure statistics.
- Eurostat.(2023). Early leavers from education and training.
- Eurostat. Pre primary education participation.
- Organisation for Economic Co-operation and Development. (2023). *PISA 2022 results*.

**Table 2. Performance indicators used in the benchmarking analysis**

Indicator	România (official value)	UE27 (official value)
Public expenditure on education(% of GDP, 2022)	3,3%	4,7%
Early school leaving (ages 18–24, 2023)	16,6%	9,5%
Participation in early childhood education (age 3 to the start of primary education)	75,7%	94,6%
Tertiary education attainment (ages 25–34, 2023)	≈22–23%	43%
PISA performance (age 15, reading, PISA 2022)	România average 428	OECD average ≈ 487

**Source:** Authors' elaboration based on Eurostat (2024) and Organisation for Economic Co-operation and Development (2023).

This chapter formulates the research hypotheses of the study, correlates them with the indicators analyzed in the previous chapters, and establishes SMART objectives and the activities required for their validation through a benchmarking analysis. The hypotheses are grounded in official Eurostat and OECD data, which highlight significant gaps between Romania and the EU-27 average in terms of education funding, participation in ECEC, early school leaving rates, and PISA performance (Table 2).

#### 4.2 Research Aim

The aim of this study is to identify the most effective practices, models, and educational policies implemented in high-performing education systems at the international level, in order to formulate applicable recommendations for the modernization and improvement of the quality of the Romanian education system. *"Official data indicate that Romania ranks below the EU-27 average on several structural and performance indicators. Romania allocates a share of GDP to education that is significantly below the EU-27 average; this gap limits investments in infrastructure, equipment, and support programs for vulnerable students."*

#### SMART Research Objectives

##### *SMART Objective 1 – Validation of Hypothesis 1*

- **S (Specific):** Analyze the relationship between educational strategies/policies and early school leaving rates.
- **M (Measurable):** Compare at least five relevant indicators (ECEC participation, early school leaving, socio-educational support, remedial programs, school participation).
- **A (Achievable):** Data available through Eurostat, OECD, and the Ministry of Education.
- **R (Relevant):** Directly related to reducing early school leaving.
- **T (Time-bound):** Completion within 8 weeks.

##### *SMART Objective 2 – Validation of Hypothesis 2*

- **S (Specific):** Evaluate the impact of public expenditure on the quality and efficiency of the education system.

- **M (Measurable):** Comparative analysis of three key indicators: public expenditure (% of GDP), PISA scores, and ECEC participation.
- **A (Achievable):** Official data available for Romania and the EU-27.
- **R (Relevant):** Relevant for funding policies.
- **T (Time-bound):** Completion within 6 weeks.

#### ***SMART Objective 3 – Identification of Best Practices***

- **S (Specific):** Identify at least 10 international best practices that have reduced early school leaving or improved education quality.
- **M (Measurable):** Each best practice documented with outcomes and transferability conditions.
- **A (Achievable):** Feasible through functional and best-in-class benchmarking.
- **R (Relevant):** Contributes to public policy recommendations.
- **T (Time-bound):** 4 weeks.

#### ***4.3 Research Hypotheses***

**Hypothesis 1.** The implementation of effective education strategies and policies at the system level significantly contributes to reducing early school leaving in Romania.

**Justification:** The analysis shows that: "The early school leaving rate in Romania is significantly above the EU average, indicating issues related to inclusion, curricular relevance, and support for students from disadvantaged backgrounds." This suggests that well-calibrated education policies (ECEC, support for vulnerable students, remedial programs) can contribute to reducing early school leaving.

**Hypothesis 2.** The level of public expenditure allocated to the education system directly influences its quality, and increased public investment leads to improved efficiency in the functioning of the Romanian education system.

**Justification:** The analysis emphasizes that Romania allocates a share of GDP to education that is significantly below the EU-27 average; this gap constrains investments in infrastructure, equipment, and support programs for vulnerable students. This financial gap affects the quality of educational processes and student performance.

#### ***4.4 Research implementation stage***

For the purpose of conducting the research, five key indicators were selected for the analysis of the education system in Romania and the EU-27. These indicators are frequently used in European-level educational research (Eurostat), namely:

1. **Public expenditure on education (% of GDP, 2022)** – measures the share of public resources allocated to the education system relative to the size of the economy in 2022, both for Romania and as an average across EU-27 countries;
2. **Early school leaving (ages 18–24, 2023)** - indicates the percentage of young people who have not completed secondary education in Romania and in the EU-27 (expressed as an average percentage);

3. **Participation in early childhood education (age 3 to the start of primary education)** – measures children’s access to pre-primary education services in Romania and in the EU-27;
4. **Tertiary education attainment (ages 25–34, 2023)** – reflects the proportion of young people holding a university degree in Romania and in the EU-27;
5. **PISA performance (age 15, reading, PISA 2022)** – indicates the level of reading competencies among 15-year-old students in Romania and the EU-27.

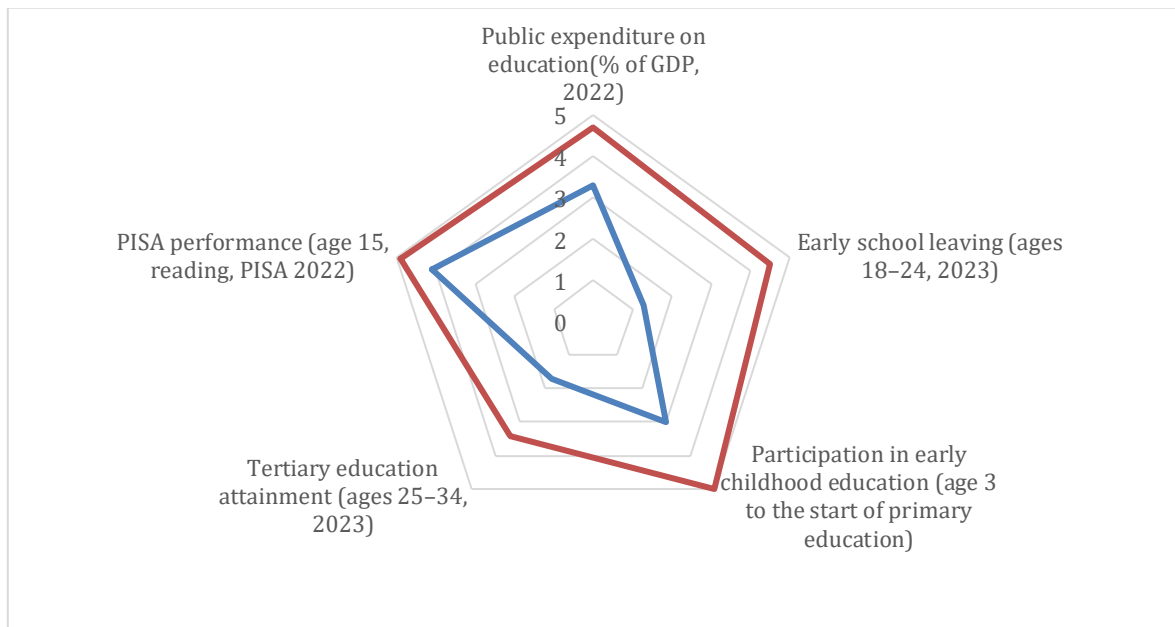
The benchmarking analysis aimed to transform the initial values of the five selected criteria into a scalar assessment on a scale from 1 to 5, corresponding to the percentages obtained in the first stage. Accordingly, values were assigned to each indicator, and these were recorded in tabular form, with Romania marked as “X” and the EU-27 as “0” (Table 3).

**Table 3. Scaled values obtained for the benchmarking analysis**

No. Criterion	Obtained value	1	2	3	4	5
1				X	0	
2		X			0	
3				X		0
4		X		0		
5					X	0

*Source:* Authors’ calculations based on Eurostat (2024) and Organisation for Economic Co-operation and Development (2023).

The results obtained enabled their representation in the form of a diagram, highlighting the major differences between the compared education systems in terms of the five criteria used (Figure 1).



**Figure 1. Graphical representation of the differences identified following the analysis of the five selected criteria, Romania vs. EU-27**

*Source:* Authors’ representation based on benchmarking calculations using Eurostat (2024) and Organisation for Economic Co-operation and Development (2023).

**Interpretation:**

1. **Public expenditure on education (% of GDP, 2022)** – measures the share of public resources allocated to the education system relative to the size of the economy. **Romania: 3.3%, EU-27: 4.7%**. A lower share of public expenditure indicates limited resources for infrastructure, salaries, and educational programmes, which may negatively affect both the quality and equity of the education system.
2. **Early school leaving (ages 18–24, 2023)** – indicates the percentage of young people who have not completed upper secondary education. **Romania: 16.6%, EU-27: 9.5%**. A high level of early school leaving reflects issues related to student retention, the relevance of the educational offer, and socio-economic barriers that **Participation** reduce opportunities for employment and further training.
3. **In early childhood education (age 3 to primary school entry)** – measures children’s access to pre-primary education services. **Romania: 75.7%, EU-27: 94.6%**. The significant gap in participation suggests deficiencies in access, limited ECEC system capacity, and territorial inequalities, with long-term effects on early skills development.
4. **Tertiary education attainment (ages 25–34, 2023)** – reflects the proportion of young people holding a university degree. **Romania: approx. 22–23%, EU-27: 43%**. The low tertiary attainment rate may limit labour market competitiveness and innovation capacity, despite relatively higher shares in certain fields (e.g., STEM) in Romania.
5. **PISA performance (age 15, reading, PISA 2022)** – indicates reading competency levels among 15-year-old students. **Romania: average 428, OECD average ≈ 487**; the results indicate significant underperformance and high levels of inequality in educational outcomes. PISA results highlight the need for **reforms in initial and continuous teacher training, curriculum design, and inclusion policies** in order to reduce gaps compared to EU/OECD averages.

**4.5 Operational activities****A. Data collection and standardization**

- Extraction of Eurostat and OECD data for the analyzed indicators.
- Verification of comparability (definitions, reference years, methodologies).
- Construction of a unified Romania–EU-27 database.

**B. Gap analysis**

- Calculation of absolute and relative differences for each indicator.
- Identification of the areas with the largest gaps (ECEC, early school leaving, funding, PISA).
- Correlation of indicators to identify potential causal relationships (e.g., funding → performance).

**C. Functional and best-in-class benchmarking**

- Selection of model countries (Finland, Estonia, the Netherlands, Germany).
- Analysis of policies that have reduced early school leaving or improved education quality.

- Assessment of transferability to the Romanian context.

#### D. Hypothesis validation

- Testing the relationship between policies and early school leaving (Hypothesis 1).
- Testing the relationship between funding and quality (Hypothesis 2).
- Triangulation with qualitative data (studies, reports, interviews).

#### E. Formulation of recommendations

- Development of a set of short-, medium-, and long-term recommendations.
- Definition of monitoring indicators.
- Proposal of pilot interventions.

#### 4.6 Conclusions based on indicator analysis

The analysis of Eurostat and OECD indicators confirms the relevance of the formulated hypotheses:

1. **Hypothesis 1** is supported by the fact that Romania records an early school leaving rate of **16.6%**, significantly above the EU-27 average (**9.5%**).
  - Low participation in ECEC (**75.7%** vs **94.6%**) and the lack of support programmes contribute to early school leaving.
  - Effective policies in model countries show that early interventions significantly reduce dropout rates.
1. **Hypothesis 2** is supported by the significant funding gap:
  - Romania: **3.3% of GDP**
  - EU-27: **4.7% of GDP**

This deficit affects infrastructure, teaching quality, and PISA performance (**428 points** vs OECD average of **487**).

2. **The interdependencies** between indicators confirm that:
  - adequate funding → improved access to ECEC → reduced early school leaving → higher PISA performance → increased participation in tertiary education.
3. **Benchmarking** enables the identification of successful models that can be adapted to Romania, particularly in the following areas:
  - early childhood education,
  - anti-dropout policies,
  - teacher training,
  - predictable funding mechanisms.

## 5. Conclusions

In order to improve the performance of the Romanian education system, based on the five indicators considered, several specific measures for analysis and improvement are proposed.

- **Insufficient funding:** Romania allocates **3.3%** of GDP to education (2022), below the EU-27 average of **4.7%**, which limits investments in infrastructure, staff, and support programmes.
- **High early school leaving:** The early school leaving rate in Romania is **16.6%** (2023), significantly above the EU-27 average of **9.5%**, indicating issues related to inclusion and curricular relevance.
- **Below-average ECEC access:** Participation in early childhood education (age 3 to primary school entry) is approximately **75.7%** in Romania compared to **94.6%** in the EU-27, with long-term implications for equity.
- **Below-average PISA performance:** Romania's average PISA reading score (2022) is approximately **428** points, below the OECD average of approximately **487**, confirming the need for interventions in foundational competencies.

### 5.1 Recommendations

- **Short term:** Pilot expansion of ECEC programmes in regions with low coverage; strengthening remedial programmes in primary education.
- **Medium term:** Gradual increase in public expenditure on education towards the EU-27 level, with dedicated allocations for ECEC and anti-dropout measures.
- **Long term:** Structural reforms for continuous teacher training and the implementation of monitoring systems for impact assessment (longitudinal evaluations and impact studies).

### Research limitations

- **Aggregated data and local heterogeneity:** National indicators may mask urban/rural or regional disparities; sub-national data are needed for operational recommendations.
- **Temporal and methodological comparability:** Differences in reference years and definitions across sources may affect gap estimations; further standardization is recommended.
- **Risk of unadapted transfer:** Best practices from other countries must be adapted to the Romanian institutional and financial context to avoid implementation failure.

### 5.2 Future research directions regarding benchmarking and the Romanian education system

In the context of globalization and increasing international competition, both organizations and education systems are required to continuously adapt their strategies in order to respond to ever-changing demands. Benchmarking, as a tool for comparative analysis and performance improvement, provides a relevant framework for developing future research directions, particularly in relation to the Romanian education system.

A first important research direction concerns **the systematic integration of benchmarking within educational institutions**. Although this tool is well established in the economic sector, its use in education remains limited and fragmented. Future studies could analyze how educational institutions can adopt best practice models from other high-performing systems, identifying relevant performance indicators such as graduation rates, graduate employability, or the level of acquired competencies. In this regard, research should

highlight the mechanisms through which benchmarking can become an operational tool, not merely a theoretical one.

A second relevant direction is **the comparative analysis of the Romanian education system with other European or international systems**. Periodic comparative studies can contribute to identifying structural and functional differences, as well as highlighting strengths and weaknesses. Such research could focus on aspects such as curriculum design, teaching methods, teacher training, or the level of digitalization. The results could provide a foundation for more effective education policies adapted to contemporary realities.

Another relevant direction is **the assessment of the impact of benchmarking on education quality**. It is necessary to investigate the relationship between the application of this tool and the improvement of institutional performance. Future research could examine whether institutions that adopt benchmarking practices achieve better results in terms of student satisfaction, academic performance, or managerial efficiency. Additionally, it could explore how benchmarking contributes to the development of an organizational culture oriented toward performance and continuous learning.

Closely related to this, **the role of technology and digitalization in educational benchmarking emerges** as another research direction. The use of digital platforms, databases, and advanced analytical tools can facilitate the collection and interpretation of relevant data. Future studies could explore how artificial intelligence, big data, or integrated information systems can support comparison and evaluation processes, thereby improving the accuracy and efficiency of decision-making.

Furthermore, an insufficiently explored area concerns **the adaptation of benchmarking to the cultural and organizational specificities of the Romanian education system**. International models cannot always be implemented directly without contextual adjustments. Therefore, future research should analyze contextual factors influencing the success of such practices, such as organizational culture, available resources, or the level of institutional autonomy. Such an approach would enable the development of benchmarking models adapted to local realities.

Another important direction concerns **the involvement of educational stakeholders in the benchmarking process**. Teachers, students, parents, and institutional managers play a crucial role in the implementation and success of these practices. Future studies could analyze the level of acceptance and involvement of these actors, as well as their impact on decision-making processes. In this context, research on the development of managerial competencies required for the effective use of benchmarking is also relevant.

Finally, there is a clear need for research on **the alignment of benchmarking with public education policies**. Integrating this tool at the macro level through national strategies could contribute to increasing the coherence and efficiency of the education system. Future studies could analyze how benchmarking results can inform educational reforms, resource allocation, or the establishment of quality standards.

In conclusion, benchmarking offers significant potential for improving the performance of the education system; however, its effective use requires in-depth research adapted to the specific context. The future directions outlined above emphasize the importance of an integrated approach that combines comparative analysis, innovation, and adaptation to local

realities. In this way, it is possible to contribute to the development of a more efficient, competitive, and performance-oriented education system.

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