

one standard deviation of the performance - higher cognitive skills - (representing 100 on the PISA scale) gives an annual growth rate of approximately 2% points in per capita GDP.

In Romania case, the report entitled “Quality Report on the Pre-University Education System in Romania” describes in Annex 5 - “Detailed statistical analysis” (Iosifescu et al., 2012, pp. 3-13) presents the methodology to assess the added value, means the results obtained by each educational organization, not absolutely, but in the context of the expected ones (taking into consideration the conditions in which it operates and the available resources). In addition, the above mention Report introduces *the efficiency index*, defined as the ratio between an aggregate indicator related to the “*results*” and an aggregate indicator reflecting the “*resources*” (both, the report and the methodology were developed with financial aid of EU, thru Human Resources Development Operational Programme 2007 – 2013).

The value judgment on the efficiency of educational organizations from the pre-university area is based on gross results (school participation and the learning results, measured in recurrent evaluations and thru national and international evaluations, participation and exceptional results in national and international contests), in connection with directly controlled factors – the existing infrastructure (physical facilities), IT technologies as resources of the educational process, the teacher background (their professionalization, experience and continuous professional development), and with uncontrolled inputs factors – the economic level of the family and of the community, including the residence environment (rural/ urban), the education level of the parents, social problems and personal problems of students (the existence of disabilities or special educational requirements), etc.

Table 2: Synthetic indicators and tracked issues

RESOURCES		Tracked issues
1	Family environment	Family education level; social and personal problems of students (the existence of disabilities or special educational requirements); economic level of the family; average access time to school
2	Operating conditions (local conditions and infrastructure)	Socio-economic development of the area; educational spaces and their usage; utilities
3	Facilities (equipment and documentary materials)	School opinion on equipment; book fund/ documentary materials; educational software; computer equipment and the Internet
4	Staff (teaching and supporting staff)	Qualification; stability; continuous training of teachers in the current year
RESULTS		Tracked issues
5	Computerization of teaching	Use of the existing computer equipment and of the Internet at the teaching process level
6	Staff	Continuous training of teachers in the previous year (seen as a management objective)
7	School attendance	Absenteeism; repeating one or more years of tuitions; school drop-out
8	Learning results (measured in recurrent evaluations and thru national evaluations)	Results at the end of the school year and at the national examination at the end of the 8th grade (as part of compulsory education); participation and results at the national Baccalaureate exam; participation and results in national exams for certification of professional competences; participation and exceptional results in national and international contests

Source: Authors own development

In the calculation methodology are considered 60 primary indicators, as resource or as results indicators. Starting from 2017, through the experience gained, there has been a change of approach, two indicators (use of the existing computer equipment and of the Internet at the teaching process level, and continuous training of teachers in the previous year) being translated from resources to results (they are being results of managerial objectives). Furthermore, in 2017 calculation methodology were taken into account 30 input indicators included in the category “*resources*” and 30 output indicators included in the category “*results*”; they were clustered into categories, establishing a unitary sense of approach (i.e., positive), and were subject to standardization (by transforming them into normal normalized Hull

variables); using the average of the standardized indicators per group, eight other synthetic indicators were determined (Table 2 presents these eight synthetic indicators, together with tracked issues).

Considering Commission’s communication, means that this methodology follows the line of a relative efficiency, the index being calculated as a ratio between the arithmetic mean of synthetic results indicators and the arithmetic mean of synthetic resources indicators. A value equal to 1 of the efficiency index shows that the results obtained are those expected in the concrete environment in which the school operates; a value above 1 indicates that the results obtained are better than the expected ones, and a value below 1 shows that the results obtained are weaker than the expected ones.

3. RESEARCH METHODOLOGY

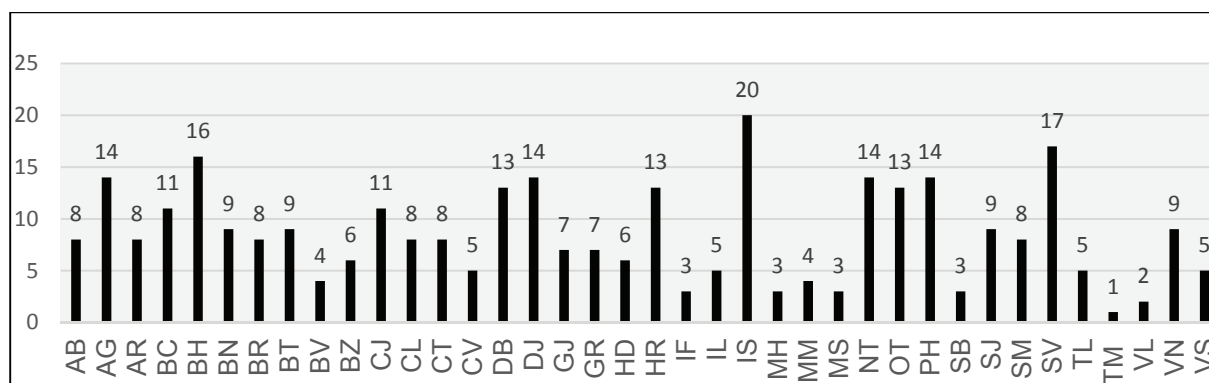
3.1. Data collection and sample

The data collection process for this research relies on quantitative investigations, more precisely on self-evaluation questionnaires filled in by each school, till October 15th 2017, the date when the software platform for self-evaluation (<https://calitate.aracip.eu>) was closed. The starting database for the year 2017 was set at 6413 independent schools (which may have one or more locations), but only 4559 (71%) of them completed on time the annual self-evaluation report and with valid data (validity refers to data completeness and congruence). Compared with the valid database from 2014, it resulted a general, urban and rural sample of 2956 schools with a sub-sample of 323 rural schools externally evaluated in the school year 2014 - 2015, as base for this research.

The data are public and allowed to Romanian Agency for Quality Assurance in Pre-university Education (ARACIP), as the Romanian institution empowered to carry out the external evaluation in pre-university area, the calculation of the efficiency indexes for all the schools who completed on time the annual self-evaluation report and with valid data (indicating that, for the rest of them the efficiency index received has the minimum value per category, and are not included in the analysis).

Having as base the reports regarding the quality of education in Romania (Iosifescu et al., 2012; Novak et al., 2015) showing that, in Romania, urban schools perform better than those in rural areas, we limited the empirical investigation to rural sector, starting from the assumption that if the external evaluation was effective and brought real benefits to the schools, then the long-term effects should first be identified at the level of the rural ones.

Picture 1: Distribution of rural schools by district



Source: Authors own development.

The sample consists of 284 kindergartens, 10 primary schools, 1773 gymnasium schools, 22 professional schools, 838 high schools, 4 post-secondary schools and 25 schools for special education, and the sub-sample consists of 3 kindergartens, 297 gymnasium schools, 1 professional school and 22 high schools (in line with the specificity of the rural network). Picture 1 shows that the sub-sample of this research are widespread in 38 counties (out of 42 in which Romania is administratively divided).

3.2. Measures

In the research approach were considered the efficiency indexes values for the years 2014 and 2017. The comparison of the evolution was made at sample level and at sub-sample level, by reporting the 2017 index (I17) with that of 2014 (I14), with a margin of $\pm 5\%$ around the latter and establishing three cases: Regress / decreasing (if $I17 < 95\% I14$); Progress / growth (if $I17 > 1.05\% I14$); Stationary situation (if $95\% I14 < I17 < 1.05\% I14$).

4. RESEARCH RESULTS

In general, the comparison of the efficiency index values revealed that only one in five units (19.7%) registered increased values, while two thirds of the total unity units (64.7%) registered negative evolutions index. An approximately similar structure of evolution, with a slight shift to positive values, was recorded on the units evaluated externally in 2014, with 22.3% of units progressing and 61.6% declining. Table 3 presents the evolution of the efficiency indexes, by sample and sub-sample, and by clustering the schools.

Table 3: The evolution of the efficiency indexes

The evolution of the efficiency indexes	Decrease	Stationary	Growth	Total	Decrease	Stationary	Growth	Total
	Total sample							
	Absolute values				%			
Kindergarten	163	12	109	284	57.4	4.2	38.4	100
Primary schools	3	2	5	10	30.0	20.0	50.0	100
Gymnasium schools	1144	306	323	1773	64.5	17.3	18.2	100
Professional school	10	4	8	22	45.5	18.2	36.4	100
High schools	574	132	132	838	68.5	15.8	15.8	100
Post-secondary schools	1	1	2	4	25.0	25.0	50.0	100
Schools for special education	19	4	2	25	76.0	16.0	8.0	100
Total	1914	461	581	2956	64.7	15.6	19.7	100
	Total sub-sample							
	Absolute values				%			
Kindergarten	3	0	0	3	100	0	0	100
Gymnasium schools	185	47	65	297	62.3	15,8	21.9	100
Professional school	0	0	1	1	0	0	100	100
High schools	11	5	6	22	50.0	22.7	27.3	100
Total	199	52	72	323	61.6	16.1	22.3	100

Source: Authors own development.

The analysis was continued to determine the causes, highlighting the evolution of indexes, simultaneously with the evolution of resources and of gross results. The values obtained show that the decrease in efficiency due to the decrease of the results (60.6% on sample level, and 56% on sub-sample level) is much higher than the one determined by the decrease of resources (8.8% on sample level, and 7.7% on sub-sample level). An evolution regarding the resources of the unit reveals that, at the total of the analyzed sample, just over half of the units (51.3% on sample level, and 56.3% on sub-

sample level) maintained the level of resources, a quarter of them (25.5% on sample level, and 27.2% on sub-sample level) registering decreases. Table 4 presents the research results in this case.

Table 4: The evolution of the efficiency indexes in parallel with the dynamics of resources and of gross results

The evolution of the efficiency indexes	Evolution of resources				Evolution of results			
	Decrease	Stationary	Growth	Total	Decrease	Stationary	Growth	Total
	Total sample (absolute values)							
1. Decreasing	260	1060	594	1914	1791	111	12	1914
2. Stationary	171	238	52	461	178	226	57	461
3. Increasing	322	218	41	581	52	120	409	581
Total	753	1516	687	2956	2021	457	478	2956
	Total sample (%)							
1. Decreasing	13.6	55.4	31.0	100	93.6	5.8	0.6	100
2. Stationary	37.1	51.6	11.3	100	38.6	49.0	12.4	100
3. Increasing	55.4	37.5	7.1	100	9.0	20.7	70.4	100
Total	25.5	51.3	23.2	100	68.4	15.5	16.2	100
	From total (%)							
1. Decreasing	8.8	35.9	20.1	64.7	60.6	3.8	0.4	64.7
2. Stationary	5.8	8.1	1.8	15.6	6.0	7.6	1.9	15.6
3. Increasing	10.9	7.4	1.4	19.7	1.8	4.1	13.8	19.7
Total	25.5	51.3	23.2	100	68.4	15.5	16.2	100
	Total sub-sample (absolute values)							
1. Decreasing	25	126	48	199	181	18	0	199
2. Stationary	18	30	4	52	16	31	5	52
3. Increasing	45	26	1	72	11	19	42	72
Total	88	182	53	323	208	68	47	323
	Total sub-sample (%)							
1. Decreasing	12.6	63.3	24.1	100	91.0	9.0	0	100
2. Stationary	34.6	57.7	7.7	100	30.8	59.6	9.6	100
3. Increasing	62.5	36.1	1.4	100	15.3	26.4	58.3	100
Total	27.2	56.3	16.4	100	64.4	21.1	14.6	100
	From total sub-sample (%)							
1. Decreasing	7.7	39.0	14.9	61.6	56.0	5.6	0	61.6
2. Stationary	5.6	9.3	1.2	16.1	5.0	9.6	1.5	16.1
3. Increasing	13.9	8.0	0.3	22.3	3.4	5.9	13.0	22.3
Total	27.2	56.3	16.4	100	64.4	21.1	14.6	100

Source: Authors own development.

5. CONCLUSIONS

In the period 2009 - 2017, the Romanian education system has been confronted with the following phenomena:

- (1) The transfer of the last year of kindergarten to primary education (along with reshaping the curriculum for primary education);
- (2) The gradual transformation of arts and crafts schools into technological high schools;
- (3) A massive reorganization of the school network (a dissolution of many public schools, by transforming them administratively into structures of other schools and destroying organizational culture of both, the receiving and the received school) and
- (4) The constant decrease of public expenditure in education (from 5.76% of total expenditures in 2009, to 3.6% of total expenditures in 2016), school organizations may be considered to have been under increasing pressure. In this context, considering only external factors, the decrease in efficiency may be, to some extent, justified.

The research results have underlined slightly positive differences highlighted on the rural schools (which face much more problems related to the education process) arise in case of passing through the external evaluation process, means that those organizations learn and develop through insight and reflection of feedback received.

The limitation of this paper is given by the fact that the approach is only on gross results (school participation and the learning results, measured in recurrent evaluations and thru national and international evaluations), while outcomes of education are not the grades received by the students in various national and international examinations, but their capacity (knowledge, skills and attitudes) to succeed in an uncertain and changing future.

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