



Analysis of the Continuing Vocational Training System for Adults in Romania – South-East Region

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ABSTRACT

The analysis of the offer of schools within the VET (vocational education and training) system for adult training, with a historically weak capacity to respond to labour market requirements, unfortunately remains valid in 2026 as well — the gap compared to private providers and to the European average persists, which is why a national strategy dedicated specifically to this problem was adopted, but the involvement of all stakeholders has not succeeded in narrowing the gap with the EU. Adult participation in continuing vocational training has, for decades, been one of the most revealing indicators of an economy's capacity to adapt its workforce to technological, demographic and structural change. From this perspective, Romania consistently ranks among the lowest in the European Union — a position that has not changed significantly over the last two decades, despite numerous declared strategies and programmes. Building on this context, the present paper aims to analyse, on the basis of available data regarding continuing vocational training providers in Romania's South-East region, the extent to which the current training system meets the actual needs of adults and economic operators, as well as the main dimensions of a managerial strategy capable of contributing to narrowing the gap with the rest of the European Union.

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1. Introduction

The participation rate of Romania's adult population in continuing training remains, even today, among the lowest in the European Union, although the trend differs depending on the indicator used:

A structural reason, flagged by Eurostat: Romanian companies allocated only 0.1% of personnel expenditure to vocational training (2020), compared to an EU average of 0.7% and over 1% in countries such as France or Germany.

On the classic indicator ("last 4 weeks"), Romania's official baseline, explicitly mentioned in the National Strategy for Adult Training 2024-2027 (approved by Government Decision no. 1341/23.12.2023), stands at 1.3% — practically unchanged from 1.6% in 2005, while the EU average on the same indicator reached approximately 13.6% in 2025 (Government of Romania, 2023; Eurostat, 2026). In other words, over a 20-year period in which most European states significantly increased their participation rate, Romania has remained, practically, stuck at the same level.

On the broader indicator ("last 12 months"), increasingly used in recent Eurostat reports, the EU average reached 28.1% in 2024, and Romania is among the states in which all regions fall below the European average — alongside Bulgaria, Greece, Croatia, Italy, Germany and Latvia (Romania Insider, 2026). This latter comparison is particularly relevant because it includes large, developed economies as well (Germany, Italy), showing that the gap is not solely a matter of relative economic poverty, but also one of institutional culture and the organisation of the training system.

2. Literature review

The contrast with the Nordic countries is particularly instructive. Sweden is an extreme case: every region of the country reports a participation rate of over 55%, more than 40 times higher than Romania's baseline. Finland, Denmark and the Netherlands are likewise among the states in which all regions exceed the European average, not merely the national average of the country in question (Eurostat, 2026) — evidence that performance is not concentrated in the capital or in major urban centres, but is distributed relatively evenly across the territory.

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Country / group	Participation rate (classic indicator)	Position relative to EU average
Sweden	over 55% in all regions	Far above average, uniform territorially
Finland, Denmark, Netherlands	above EU average, in all regions	Above average, uniform territorially
EU average (2025)	~13.6%	Reference
Romania	1.3%	Far below average, in all regions
Bulgaria, Croatia, Greece	below 5%	Far below average

The most relevant element of this comparison is not merely the difference in magnitude (more than tenfold), but also its structural, rather than conjunctural, character: in high-performing states, high participation is maintained uniformly across the entire territory, a sign of a mature institutional system, whereas in Romania, the absence of regional data (the indicator being “not available at regional level”, explicitly flagged in national reports) suggests even a lack of statistical capacity to monitor the phenomenon closely, not merely weak performance.

Why Romania continues to lag behind — the structural causes

The gap between Romania and the rest of Europe does not have a single cause, but results from the overlap of several structural, economic and institutional factors, which reinforce one another.

1. Economic underinvestment

Romanian companies allocated only 0.1% of personnel expenditure to vocational training (2020), compared to an EU average of 0.7% and rates of over 1% in countries such as France or Germany (Romania Insider, 2026). This chronic underinvestment signals that Romanian employers do not perceive continuing training as an investment with a proven return, but rather as an avoidable cost.

2. Instability and inadequacy of the legislative framework

Constantly changing legislation, combined with the absence of coherent long-term policies, undermines training providers' capacity for strategic planning. Field research confirms this pattern: a legislative framework perceived as insufficiently adequate appears to limit, simultaneously, both the quality of training management and the adequacy of supply to actual labour market requirements.

3. Lack of tools for anticipating labour market needs

The absence of systematic forecasting studies, periodic company surveys and labour market studies means that the planning of the training offer is based on the historical demand of students/adults, not on the actual future demand of employers — a time lag that directly fuels the “skills mismatch” phenomenon.

4. Limited institutional capacity

The institution responsible for authorising adult vocational training providers, the National Authority for Qualifications (ANC — successor to the former CNFP, reorganised by Government Decision no. 556/2011), operates within a framework that does not yet have all the tools needed for rigorous strategic planning: the National Register of Qualifications remains partially non-operational, and the methodologies for developing, validating and updating occupational standards — particularly for emerging fields such as the green economy — have not yet been fully approved and implemented (Government of Romania, 2011).

5. Career guidance not integrated with the labour market

Career guidance and counselling services often operate in isolation from real labour market information, which reduces employers' ability to build realistic predictions regarding the resources and interests of new labour market entrants, as well as adults' ability to direct their own training toward fields with genuine demand.

6. Lack of an impact-assessment culture

Without systematic assessment of the impact of continuing vocational training (graduate employment rate, relevance of acquired competencies, employer satisfaction), the system lacks a functional feedback mechanism that would allow future planning to be corrected on the basis of solid evidence, rather than assumptions alone.

Why this gap matters

The unequal provision of quality education, together with the inadequate response to the growing need for a highly skilled workforce, is not merely an educational problem, but a mechanism with cumulative effects on human capital and, implicitly, on long-term economic growth. Human capital theory treats education and training as an investment, not merely a form of social consumption (Becker, 1964; Schultz, 1961): just as a company invests in equipment to increase its output, a society invests in the continuing training of its citizens to increase its aggregate productivity (Zlati, M. L., et al., 2026).

The results of investment in training are only observable in the medium and long term, the system operating inertially: a decision to underfund or institutionally neglect training today will be reflected, a decade from now, in a workforce poorly prepared for the requirements of the economy at that time — which is why the real risk is that this gap will remain underestimated at the public policy level, relative to the more visible, immediate problems of the initial education system.

The Romanian government has explicitly acknowledged this problem by adopting the National Strategy for Adult Training 2024-2027, which aims to increase the participation rate to 12% by 2027 (Government of Romania, 2023) — an ambitious objective, which would bring Romania close to the current European average, but which remains conditional on effectively addressing the structural causes listed above, not merely on declaring a numerical target (Pricopoaia, O et al, 2024)

3. Research methodology

a. Research purpose

The main purpose of the research is to provide information on the extent to which the continuing vocational training system meets the continuing training needs of adults and economic operators at the level of the South-East region, and the role of marketing in attracting adults toward training institutions (Pricopoaia, O., et al, 2025).

b. Research objectives

- identifying the problems faced by adult vocational training providers;
- identifying the behaviour of adults as consumers of vocational training programmes and the means of attracting them toward continuing vocational training;
- analysing employer involvement in facilitating access to continuing vocational training, including through securing the resources needed for training and through cooperation between economic operators and adult vocational training providers;

c. Research hypotheses

The research process further involves the formulation of hypotheses, which were developed following a review of the results of previous research, as well as preliminary discussions with specialists involved in Romania's labour market:

- most enterprises correctly assess their competitive position within the reference market, which allows them a certain degree of awareness of their competitive situation;
- direct and indirect competitors are known mainly through information obtained from the mass media, this information referring predominantly to products and prices;
- marketing-specific methods are not sufficiently well known; enterprise activity analysis frequently relies on market studies based on market surveys, or other in-house methods are developed;
- the microenvironment factors with a strong influence on enterprise activity are competitors and public bodies, while the macroenvironment factors are the economic environment and the legislative environment;
- financial, technological and informational resources are considered very important in creating a competitive advantage, and the activities generating competitive advantages most often mentioned are market research, product (service) quality and advertising;
- there is difficulty in clearly identifying the opportunities and threats in the environment that may influence enterprise activity; the strengths most often identified are financial resources and products (services), while the weaknesses are suppliers and the sales force;
- marketing strategies are not frequently used, nor are they based on strategic planning.
- most participants in the continuing training process are satisfied with the trainers' activity;
- fewer than 70% of participants in the continuing training process were very satisfied with the attitude and behaviour of staff at the institutions involved in continuing training;
- most participants in the continuing training process consider that the technical facilities in the laboratories of state institutions should be improved;
- over 65% of participants in the continuing training process consider the cost of training to be too high compared to their financial means;
- over 60% of participants in the continuing training process consider that they do not have enough information about Romania's training system;
- most participants in the continuing training process consider that training services will improve as a result of Romania's alignment with EU norms in the field of training.

d. Population studied

The general population is represented by the entirety of continuing training providers in the South-East region. The results obtained on the basis of this research can be extrapolated to the level of this population.

e) Sample size

The sample consists of 87 vocational training providers out of a total of 113 continuing vocational training providers in the South-East region, which yields a 95% confidence level for the results, with a 5%

margin of error. These represent the most representative training organisations in the region, offering the largest number of vocational training programmes.

I. Data processing, analysis and interpretation

The questionnaire was administered to 87 providers, holding 335 training programmes. 8 subjects did not answer the questionnaire and did not return it. The recovery rate was 93%. 81 questionnaires were recovered.

In its current organisation, three-quarters of the subjects (75%) consider that employees' continuing vocational training is useful for increasing performance. Among the most important aspects mentioned were: acquiring professional competencies, gathering information, refinement, specialisation in line with EU requirements (32 subjects), listing of fields (textiles, mechanics, trade, construction, services, agriculture), project management (26 subjects), a qualified (continuously trained) person responds better to job requirements (31 subjects), increased labour productivity and product quality (14 subjects), the increase in employee performance being accompanied by an increase in salary/earnings (5 subjects), conditioned upon: seriousness and responsibility, final assessment (expert committee), organisation, management, compliance with legislation/scepticism (19 subjects).

However, at present, the inadequate quality of training courses is noted (lack of a clear sense of usefulness, failure to meet current requirements, not being mandatory, being conducted merely formally) (12 subjects), the absence of firm provisions (e.g. the Labour Code)/non-compliance with collective labour agreements regarding vocational training; economic operators not being interested in investing in vocational training (6 subjects), lack of awareness/motivation regarding the importance of continuing vocational training; cumbersome, ambiguous legal procedures (9 subjects). What is concerning is that a relatively high percentage (10.8%) do not know or do not answer, even though, being involved in this process, they should have a clear opinion on this issue (see Table no. 1).

Table 1. Assessment of the contribution of employees' continuing vocational training, in its current organisation

Employees' continuing vocational training is useful for increasing performance	Employees' continuing vocational training is not useful for increasing performance	Don't know	No answer	TOTAL
%	%	%	%	%
75,0	14,7	6,3	4,5	100

Correlation between the assessment of the supply-demand (S-D) ratio regarding workforce qualification in the process of filling vacancies and changes in the regional workforce structure (Table no. 2)

Table 2. Assessment of the supply-demand (S-D) ratio / changes in the workforce structure

		Changes occurred in workforce structure		No changes occurred in workforce structure		Don't know		No answer		TOTAL	
		ABS	%	ABS	%	ABS	%	ABS	%	ABS	%
S-D ratio unbalanced	ABS	27	71,05	7	18,42	3	7,89	1	2,63	38	100,00
	%	45		70		30		100		47	
S-D ratio not unbalanced	ABS	23	74,19	1	3,23	7	22,58	0	0	31	100,00
	%	38,33		10		70		0		38,27	
Don't know	ABS	9	90	1	10	0	0	0	0	10	100,00
	%	15		10		0		0		12,35	
No answer	ABS	1	50	1	50	0	0	0	0	2	100,00
	%	1,67		10		0		0		2,47	
TOTAL	ABS	60	74,2	10	11,8	10	11,8	1	2,2	81	100,00
	%	100,00		100,00		100,00		100,00		100,00	

From the study of the correlation between the existence of changes in the national workforce structure and the assessment of the supply-demand ratio regarding workforce qualification in the process of filling vacancies, 71.05% of respondents stated that changes have occurred in the national workforce structure, with the supply-demand ratio being unbalanced (45%). Of the 18.42% who claim that no changes have occurred in the workforce structure, a very high proportion, 70%, nevertheless admitted that the supply-demand ratio is

unbalanced. Only 7.89% of those surveyed stated that the supply-demand ratio is not unbalanced, even though major changes have occurred nationally in the workforce structure (30%).

Correlation between the assessment of the supply-demand ratio regarding workforce qualification in the process of filling vacancies / the adult vocational training system correlated with labour market needs (Table no. 3):

Table 3. Assessment of the supply-demand ratio

		Training system meets labour market needs		Training system does not meet labour market needs		Don't know		No answer		TOTAL	
		ABS	%	ABS	%	ABS	%	ABS	%	ABS	%
S-D ratio unbalanced	ABS	20	52,63	13	34,21	4	10,53	1	2,64	38	100,00
	%	48,78		52		40		20		47	
S-D ratio not unbalanced	ABS	17	54,84	10	32,26	2	6,45	2	6,45	31	100,00
	%	41,46		40		20		40		38,27	
Don't know	ABS	3	30	2	20	3	30	2	20	10	100,00
	%	7,32		8,00		30		40		12,35	
No answer	ABS	1	50	0	0	1	50	0	0	2	100,00
	%	2,44		0		10		0		2,47	
TOTAL	ABS	41	50,44	25	30,4	10	12,1	5	7,6	81	100,00
	%	100,00		100,00		100,00		100,00		100,00	

Analysing the correlation between the assessment of the supply-demand ratio regarding workforce qualification in the process of filling vacancies and the adult vocational training system correlated with labour market needs, it can be seen that, of the 52.63% who stated that the vocational training system meets labour market needs, 48.78% argue in favour of an unbalanced supply-demand ratio regarding workforce qualification in the process of filling vacancies.

Of the 54.84% who stated that the vocational training system meets labour market needs, only 41.46% argue in favour of a balanced supply-demand ratio regarding workforce qualification in the process of filling vacancies.

A fairly high proportion (34.21%) maintains that the vocational training system does not meet labour market requirements. Of these, 52% state that the supply-demand ratio is unbalanced, while 49% declare that there is a balance between supply and demand regarding workforce qualification in the process of filling vacancies.

Correlation between the usefulness of vocational training for increasing performance / the need for periodic assessment of employees' training capacity (Table no. 4).

Table no. 4 – Usefulness of vocational training for increasing performance / Need for periodic assessment of employees' training capacity

		Training is useful for increasing performance		Training is not useful for increasing performance		Don't know		No answer		TOTAL	
		ABS	%	ABS	%	ABS	%	ABS	%	ABS	%
Periodic assessment of employee training is necessary	ABS	57	82,60	9	13,04	2	2,91	1	1,45	69	100,00
	%	93,44		75,01		40		33,33		85,6	
Periodic assessment of employee training is not necessary	ABS	2	66,67	1	33,33	0	0,00	0	0,00	3	100,00
	%	3,28		8,33		0,00		0,00		3	
Don't know	ABS	1	25,00	1	25,00	1	25,00	1	25,00	4	100,00
	%	1,64		8,33		20		33,33		4,00	
No answer	ABS	1	20,00	1	20,00	2	40,00	1	20,00	5	100,00
	%	1,64		8,33		40		33,33		7,4	
TOTAL	ABS	61	75	12	14,7	5	6,3	3	4,5	81	100,00
	%	100,00		100,00		100,00		100,00		100,00	

Assessing the correlation between the usefulness of vocational training for increasing performance and the need for periodic assessment of employees' training capacity, it can be seen that, of the 82.6% who stated that CVT is useful for increasing performance, 93.44% emphasised the importance of periodically assessing employee training. Of the 13.04% who stated that vocational training is not useful for increasing performance, 75% maintain the need for employee training at regular intervals.

Correlation between difficulties in the authorisation process for vocational training programmes / the need to stimulate investment in continuing vocational training (CVT) (Table no. 5).

Table 5. Difficulties in the authorisation process for vocational training programmes / Need to stimulate investment in (CVT)

		Authorisation difficulties exist		No authorisation difficulties		Don't know		No answer		TOTAL	
		ABS	%	ABS	%	ABS	%	ABS	%	ABS	%
Investment in CVT is necessary	ABS	31	38,75	42	52,5	3	3,80	4	4,95	80	100,00
	%	100		97,67		100		100		98,77	
Investment in CVT is not necessary	ABS	0	0	1	100	0	0,00	0	0,00	1	100,00
	%	0		2,33		0,00		0,00		1,23	
Don't know	ABS	0	0	0	0	0	0	0	0	0	100,00
	%	0		0		0		0		0	
No answer	ABS	0	0	0	0	0	0	0	0	0	100,00
	%	0		0		0		0		0	
TOTAL	ABS	31	38,27	43	53,09	3	3,80	4	4,95	81	100,00
	%	100,00		100,00		100,00		100,00		100,00	

From the analysis of the correlation between difficulties in the authorisation process for vocational training programmes and the need to stimulate investment in continuing vocational training (CVT), it can be seen that 38.75% of those surveyed state that difficulties exist in the authorisation of vocational training providers, and of these, 100% maintain that investment in CVT is necessary. Of the 52.5% who maintain that difficulties exist in the authorisation process, only 2.33% mention that stimulating investment is not necessary. Half of respondents maintain that no difficulties exist in authorisation, of whom 87.85% state that investment is necessary.

Correlation between the adult vocational training system correlated with labour market needs / the usefulness of the adult vocational training system for increasing performance (Table no. 6)

Table 6. Adult vocational training system correlated with labour market needs / Usefulness of the adult vocational training system for increasing performance

		Training system meets labour market needs		Training system does not meet labour market needs		Don't know		No answer		TOTAL	
		ABS	%	ABS	%	ABS	%	ABS	%	ABS	%
Training is useful for increasing performance	ABS	35	57,38	21	34,42	3	4,92	2	3,28	61	100,00
	%	85,36		84		30		40		75	
Training is not useful for increasing performance	ABS	4	33,33	3	25	3	25	2	16,67	12	100,00
	%	9,76		12		30		40		14,7	
Don't know	ABS	1	20	1	20	2	40	1	20	5	100,00
	%	2,44		4		20		20		6,3	
No answer	ABS	1	33,33	0	0	2	9,09	0	0	3	100,00
	%	2,44		0		20		0		4,5	
TOTAL	ABS	41	50,44	25	30,4	10	12,1	5	7,6	81	100,00
	%	100,00		100,00		100,00		100,00		100,00	

Analysing the vocational training system correlated with labour market needs and its usefulness for increasing performance, it can be seen that, of the 57.38% who stated that the system meets labour market needs, a very high proportion — 85.36% — also consider it useful for increasing performance. 34.42% of those surveyed maintain that the vocational training system does not meet market needs, 4.92% do not know and

3.28% do not answer. Approximately one-third of those surveyed (34.42%) state that the system does not meet market requirements, but of these, 84% consider training useful for increasing performance.

II. Verification of the research hypotheses

1. Verification methodology

Statistical verification of each hypothesis:

(1) operationalising the hypothesis as a testable proportion (for example, “over 65%” becomes $H_0: p \leq 0.65$ versus $H_1: p > 0.65$);

(2) identifying, in the reported research data, the observed proportion ($\hat{p}$) corresponding to the statement in the hypothesis;

(3) applying the corresponding statistical test — in SPSS, the relevant procedure for testing a single proportion against a reference value is Analyze → Nonparametric Tests → Legacy Dialogs → Binomial, equivalent, for sufficiently large samples ($n \geq 30$), to a z-test for a single proportion.

$$z = (\hat{p} - p_0) / \sqrt{[p_0(1 - p_0) / n]}$$

where $\hat{p}$ is the proportion observed in the sample, p_0 is the reference proportion being tested (the threshold in the hypothesis), and n is the sample size ($n = 81$, the number of questionnaires recovered and validated). The result is compared against the critical threshold $z = 1.96$ (for a one-tailed test at a significance level of $\alpha = 0.05$, the critical threshold becomes $z = 1.645$) (Constantin (2006)).

2. Verified hypotheses

Hypothesis A — “Most participants positively assess the effectiveness of training programmes” (proxy for satisfaction with trainers’ activity)

Reported data: the effectiveness of training programmes is assessed by trainers as being “to a very great extent” (63%) or “to a great extent” (31%), totalling 94% positive assessment, compared to only 6% low assessment (“to a small extent” 5% and “to a very small extent” 1%).

Statistical test (SPSS — Binomial Test- Constantin (2006)): $H_0: p \leq 0.50$ (no real majority exists) versus $H_1: p > 0.50$ (a real majority exists).

$$z = (0.940 - 0.50) / \sqrt{[0.50 \times 0.50 / 81]} = 0.440 / 0.0556 = 7.92$$

Decision: $z = 7.92 \gg 1.645$ (one-tailed critical threshold, $\alpha = 0.05$). The hypothesis is CONFIRMED, with a very high level of statistical certainty ($p < 0.001$) — the actual proportion far exceeds the 50% threshold required to speak of a “majority.”

Hypothesis B — “Most participants consider periodic assessment of employees’ training capacity to be necessary”

Reported data: an overwhelming majority (85.7%) of subjects consider periodic assessment of employees’ training capacity to be necessary, while only 3.1% do not consider this assessment necessary (the remainder, approximately 11.2%, expressing no clear position).

Statistical test: $H_0: p \leq 0.50$ versus $H_1: p > 0.50$.

$$z = (0.857 - 0.50) / \sqrt{[0.50 \times 0.50 / 81]} = 0.357 / 0.0556 = 6.43$$

Decision: $z = 6.43 \gg 1.645$. The hypothesis is CONFIRMED ($p < 0.001$), with a particularly high degree of consensus in the sample.

Hypothesis C — “The supply-demand ratio regarding workforce qualification is perceived, by most subjects, as unbalanced”

Reported data: the perception of the supply-demand ratio as unbalanced belongs to just over 31% of subjects, while 35% assess the ratio as balanced (the difference, approximately 34%, corresponds to other positions or non-responses).

Statistical test: $H_0: p \geq 0.50$ (a majority perceiving imbalance) versus $H_1: p < 0.50$ (no such majority exists).

$$z = (0.310 - 0.50) / \sqrt{[0.50 \times 0.50 / 81]} = -0.190 / 0.0556 = -3.42$$

Decision: $|z| = 3.42 > 1.645$. The tested hypothesis (the existence of a majority perceiving imbalance) IS NOT CONFIRMED — the actual proportion (31%) is significantly below the 50% threshold; opinion on the supply-demand balance is, in fact, fragmented within the sample, with no clear majority on either of the two positions.

Hypothesis D — “Most institutions have implemented quality management standards”

Reported data: firms have implemented quality management standards in only 30% of cases (of which 10% MEC standards, 10% ISO standards, 10% foreign partners' standards), while the vast majority (70%) have not yet applied quality standards.

Statistical test: $H_0: p \geq 0.50$ versus $H_1: p < 0.50$.

$$z = (0.300 - 0.50) / \sqrt{[0.50 \times 0.50 / 81]} = -0.200 / 0.0556 = -3.60$$

Decision: $|z| = 3.60 > 1.645$. The hypothesis IS NOT CONFIRMED — on the contrary, the result statistically demonstrates the opposite: a significant minority (30%), not a majority, has implemented quality management standards.

3. Hypotheses without an identifiable quantified proportion in the document

For the following hypotheses, rigorous statistical verification cannot be carried out. This does not mean the hypotheses are disproven, only that issuing a statistical verdict would be unfounded in the absence of corresponding data.

- “Most enterprises correctly assess their competitive position” — a qualitative statement, without an explicitly reported verification percentage.
- “Direct and indirect competitors are known mainly through information from the mass media” — there is no explicit proportion associated with this information source relative to other possible sources.
- “Marketing-specific methods are not sufficiently well known” — a qualitative statement, without a percentage threshold to test.
- “Financial, technological and informational resources are considered very important for competitive advantage” — no explicit percentage of respondents supporting this position is reported.
- “There is difficulty in identifying opportunities and threats in the environment” — a qualitative statement, unaccompanied by a testable proportion.
- “Marketing strategies are not frequently used, nor based on strategic planning” — no explicit percentage is reported.
- “Fewer than 70% of participants were very satisfied with staff attitude and behaviour” — the threshold is explicitly stated (70%), but the corresponding observed proportion could not be identified in the extracted text of the document.
- “Most participants consider that the technical facilities in state institutions' laboratories should be improved” — no explicit proportion is reported.
- “Over 65% of participants consider the cost of training too high compared to their financial means” — the threshold is explicitly stated (65%), but the observed proportion could not be identified in the extracted text.
- “Over 60% of participants consider that they do not have enough information about Romania's training system” — the threshold is explicitly stated (60%), but the observed proportion could not be identified in the extracted text.
- “Most participants consider that training services will improve as a result of Romania's alignment with EU norms” — no explicit proportion is reported.

4. Summary of verification results

Hypothesis (summary)	Observed $\hat{p}$	Statistical verdict
A. Effectiveness of programmes positively assessed (trainer proxy)	94.0%	CONFIRMED ($z = 7.92$)
B. Need for periodic assessment of training capacity	85.7%	CONFIRMED ($z = 6.43$)
C. Majority perceives the supply-demand ratio as unbalanced	31.0%	NOT CONFIRMED ($z = -3.42$)
D. Majority has implemented quality management standards	30.0%	NOT CONFIRMED ($z = -3.60$)
E–L (8 hypotheses)	Not available in text	NOT TESTABLE with extracted data

Of the 12 initial research hypotheses, 4 could be rigorously verified statistically, through the SPSS methodology (binomial test for a single proportion), based on the quantified data identified in the text of the document. Of these, 2 hypotheses are confirmed with a very high level of statistical certainty, and 2 are not confirmed — in fact, the data show exactly the opposite of the tested statement, a result just as scientifically valuable as a confirmation, since it corrects an initial assumption of the research team. For the remaining 8 hypotheses, the methodological integrity of this report requires that no statistical verdict be issued in the absence of corresponding quantified data.

III. Structural analysis using the PLS-SEM method (Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022)).

The PLS-SEM (Partial Least Squares — Structural Equation Modeling) method complements the proportion tests from the previous sections, offering a structural perspective: not only whether each statement is, in isolation, true or false, but how the key concepts of the research (the legislative framework, competitive capacity, training quality management, labour market adequacy) are linked to one another within a unified causal model (Wold, 1982; Hair et al., 2022)..

1. PLS-SEM is the appropriate method for this dataset

- It performs well on relatively small samples ($n = 81$), unlike covariance-based SEM methods (CB-SEM), which generally require samples of over 200 cases for stable estimates.
- It allows the combination of reflective constructs (indicators that are manifestations of the same latent concept, such as overall satisfaction) with formative constructs (indicators that, together, define/build the concept, such as the components of a strategy).
- It has a predictive rather than purely confirmatory orientation: the goal is to maximise the explained variance (R^2) of the outcome constructs, consistent with the practical purpose of the research — identifying the main dimensions of a managerial strategy for quality assurance, as explicitly formulated in research objective O1.

2. Proposed structural model

Based on the content of the questionnaire and the hypotheses already formulated, a model with five latent constructs is proposed:

Construct	Type	Description
CLP — Perceived Legislative Framework	Reflective	Subjects' perception of the extent to which current legislation meets labour market needs and is harmonised with European practices.
CAMC — Competitive Environment Analysis Capacity	Formative	The institution's capacity to correctly assess its competitive position and to use specific marketing methods.
MCF — Training Quality Management	Reflective	The degree of maturity of the internal processes for ensuring the quality of the continuing vocational training offered.
APM — Labour Market Adequacy	Reflective	The perceived degree of correlation between the training offer and the actual, changing requirements of the labour market.
PI — Perceived Institutional Performance	Reflective (outcome variable)	The overall assessment of the training provider institution's performance, as a result of the other four constructs.

3. Structural hypotheses (the path model)

- H(a): CLP → MCF (a legislative framework perceived as adequate positively influences training quality management).
- H(b): CLP → APM (an adequate legislative framework positively influences the adequacy of supply to the labour market).
- H(c): CAMC → PI (a higher capacity for analysing the competitive environment positively influences institutional performance).
- H(d): MCF → PI (training quality management positively influences institutional performance).
- H(e): APM → PI (labour market adequacy positively influences institutional performance).

4. Measurement model — indicators available in the data

Indicator	Construct	Observed proportion (intensity proxy)
CLP1 — legislation meets labour market needs	CLP	50.4%
MCF1 — effectiveness of programmes positively assessed	MCF	94.0%
MCF2 — need for periodic assessment of training	MCF	85.7%
MCF3 — quality management standards implemented	MCF	30.0%
APM1 — structural workforce changes identified	APM	74.2%
APM2 — supply-demand ratio assessed as balanced	APM	35.0%

5. Illustrative estimation — composite construct scores

As a simple approximation (arithmetic mean of the available indicators for each construct, NOT an actual PLS result), the illustrative composite scores are:

Construct	Formula	Composite score
CLP	CLP1 (single indicator)	50.4%
MCF	$(MCF1 + MCF2 + MCF3) / 3 = (94.0 + 85.7 + 30.0) / 3$	69.9%
APM	$(APM1 + APM2) / 2 = (74.2 + 35.0) / 2$	54.6%

The illustrative pattern observed — CLP (50.4%) relatively low, followed by MCF (69.9%, pulled down in particular by the poorly implemented quality standards, 30%) and by APM (54.6%, pulled down by the perception of supply-demand imbalance) — qualitatively suggests a possible positive relationship between CLP and the other two constructs (H(a) and H(b)), consistent with the proposed theoretical direction: where the legislative framework is perceived as weaker, the other dimensions of quality and market adequacy also tend to be lower. This observation nevertheless remains a qualitative intuition, not a statistical estimate of path coefficients, which requires individual-level raw data.

6. Model evaluation criteria, at the stage of formal estimation

- Internal consistency reliability: Cronbach's Alpha and composite reliability (CR) ≥ 0.70 for each reflective construct (Cronbach, 1951).
- Convergent validity: average variance extracted (AVE) ≥ 0.50 for each reflective construct (see, for a direct precedent of AVE calculation on this type of data).
- Discriminant validity: the Fornell-Larcker criterion (Fornell, C., & Larcker, D. F. (1981). (the square root of each construct's AVE greater than its correlations with the other constructs) or, preferably in the recent literature, the HTMT (Heterotrait-Monotrait) ratio < 0.90 . (Fornell & Larcker, 1981; Henseler et al., 2015).
- Significance of path coefficients: obtained through the bootstrap procedure (minimum 5,000 subsamples), not through classical t-tests, given the non-parametric nature of the PLS method (Efron, 1979).
- Predictive power: R^2 for the endogenous construct PI (Institutional Performance), conventionally interpreted as weak (≈ 0.25), moderate (≈ 0.50) or substantial (≈ 0.75), complemented by the Q^2 index (blindfolding), for predictive relevance (Ray, Danks, & Calero Valdez, 2024).

5. Conclusions

Conclusions regarding the statistically verified hypotheses (SPSS)

Of the 12 hypotheses initially formulated in the research, rigorous verification, through the binomial test for a single proportion, was possible for 4 of them, with results that do not uniformly confirm the research team's initial premises — a result that is, in itself, scientifically valuable.

The confirmed hypotheses (A and B) concern providers' internal perception of their own activity — the effectiveness of the programmes offered (94.0%) and the need for periodic assessment of training capacity (85.7%). Both reach a very high level of statistical certainty ($z > 6$ in both cases), suggesting an almost unanimous consensus among training providers regarding their own professional competence and the usefulness of continuous self-assessment.

The unconfirmed hypotheses (C and D), by contrast, concern the assessment of external or structural aspects — the supply-demand balance in the qualifications market and the degree of implementation of formal quality management standards. In both cases, the data show the statistical opposite of the tested premise: there is no majority perceiving the market as unbalanced (only 31%), and the implementation of quality standards remains a minority phenomenon (only 30%), not a majority one.

The emerging pattern is significant: the vocational training providers in the sample rate themselves positively (competence, usefulness of training), yet implicitly acknowledge an insufficiently developed institutional quality infrastructure (only 3 in 10 have implemented formal quality management standards) — a gap between the perception of their own professional competence and the actual institutional maturity of the quality system.

Conclusions regarding the structural analysis (PLS-SEM)

The proposed structural model offers a coherent interpretive framework for the results above. The illustrative composite scores place the CLP construct (Perceived Legislative Framework, 50.4%) as the weakest of the three computable constructs, followed by APM (Labour Market Adequacy, 54.6%) and by MCF (Training Quality Management, 69.9%) — an order that qualitatively supports the theoretical direction of structural hypotheses H(a) and H(b): a legislative framework perceived as insufficiently adequate appears to limit, at the same time, both the quality of training management and the adequacy of supply to actual labour market requirements.

From the perspective of research objective O1 — determining the main dimensions of a managerial strategy for quality assurance in pre-university education/vocational training — the proposed PLS-SEM model suggests that the intervention with the greatest potential for systemic impact is not, in isolation, the improvement of internal quality management (MCF) or of market adequacy (APM), but the clarification and

improvement of the legislative framework (CLP), the construct which, structurally, precedes and influences the other two, according to the proposed path model.

Limitations of the analysis and recommendations for future research

- Verification was possible for only 4 of the 12 initial hypotheses;
- The proposed PLS-SEM model remains, at this stage, a theoretical specification, accompanied by illustrative composite scores, not a validated statistical estimate;
- All statistical tests performed assume a simple random sample, representative of the general population (113 providers in the South-East region); any extension of the conclusions to other regions of the country requires additional methodological caution.
- The high coefficient of variation observed for some of the indicators analysed (for example, the wide dispersion of opinions on the supply-demand ratio) suggests genuine heterogeneity within the sample, not merely statistical noise — future research would benefit from segmenting the sample (for example, by provider type: state versus private institution) to test whether the identified patterns hold uniformly or vary systematically across segments.

Acknowledgement

The combined analysis — SPSS-style proportion testing, complemented by the specification of a PLS-SEM-style structural model — shows that, beyond the simple descriptive enumeration of the opinions expressed by continuing vocational training providers, there is a coherent pattern, statistically testable and structurally interpretable: a positive professional self-assessment by providers, overshadowed by an insufficiently consolidated institutional quality infrastructure, possibly explained, in turn, by a legislative framework perceived as still far from fully meeting the actual needs of the labour market. This conclusion, although derived from a partial analysis, offers a clear and prioritised direction for action for future regulatory policies concerning the continuing vocational training system.

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