THE VOCATIONAL EDUCATION SECTOR IN RELATION TO LABOUR MARKET EXPECTATIONS. THE ANALYSIS OF THE RESULTS OF AN INTERNATIONAL STUDENT SURVEY

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Abstract: The article presents an analysis of the results of a survey conducted in 2022 among students and young graduates of three vocational education courses, studying in EU countries ($N = 428$). The area of research concerns the awareness of competencies sought-after by employers and the self-assessed level of these competencies. The authors used tests of the equality of two means in order to check for differences in assessments according to the respondents' metric characteristics, and also factor analysis to check for similarities in attitudes towards different types of competencies in the respondents' assessments. Finding such similarities would allow to use a summative scale and reduce the dimensions.

Keywords: vocational education, the importance of competence, self-assessment of the level of competence, questionnaire research, statistical analyses.

1. Introduction

Technological changes, ongoing socio-economic processes, globalisation and the need to take care of the natural environment are only a few items on the list of important factors that force constant change in the system of secondary and higher

education. Adapting to the current expectations of the labour market is difficult and requires the comprehensive monitoring of educational outcomes and, above all, constant cooperation between the education sector and employers. For years, there has been talk about the poor preparation of school graduates for the labour market, their inadequate skills or the level of knowledge in areas important for employers. The measures taken in various EU countries to improve the situation bring diverse effects, and therefore initiatives where flexible solutions can be worked out in international teams should be highly appreciated. Opportunities for such international initiatives are provided by the Erasmus+ Programme (Erasmus+..., 2022; *Implementation*..., 2022), one of the main objectives of which is to improve the quality of education for different target groups. The VET (vocational education and training) sector supports the development of innovative solutions in vocational education through partnership projects. One such activity is the *Go4VocationalSkills* project implemented in the Polish-Spanish-Bulgarian-Greek partnership[1]. The main aim of the *Go4VocationalSkills* project is to improve the quality of education in technical schools in Europe by implementing a tool for analysing the competency gap of students studying in the following professions: construction technician, logistics technician, renewable energy technician. The main methodological assumptions of the project were based on the solutions developed in the international project entitled *Go4FutureSkills*, as part of which a prototype of an IT system for a comprehensive assessment of students' competencies was created (Kwiatkowska-Ciotucha and Załuska, 2020). The system uses elements of a multidimensional comparative analysis to comprehensively assess an individual's competencies and compare the results with a benchmark assessment performed by experts for specific occupations/positions (Panek and Zwierzchowski, 2013; Walesiak and Gatnar, 2013; Walesiak, 2011).

In order to implement the objectives of the *Go4VocationalSkills* project, it was necessary to conduct an extensive international comparative study among students and graduates of the indicated fields of study. This paper presents the results of the study in the area of awareness of the competencies sought-after by employers and self-assessment of the level of these competencies. In order to structure the analyses, the study posed the following research questions:

1. Do the respondents' metric characteristics differentiate their assessments in the indicated areas? In other words, do characteristics such as gender, status on the labour market, the country of study or the field of study have a differentiating effect on the formulation of these assessments?

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[1] Project *Go4VocationalSkills* (No 2021-1-PL01-KA220-VET-000034866) is financed by the Erasmus + Program. On the part of Poland, the institution leading the project is the training company Dobre Kadry Research-Training Centre Sp. z o. o., which has been operating on the Lower Silesian market for 14 years. The partnership consists of Asociacion Mundus – un Mundo a Tus Pies from Spain, I "Horizont ProConsult" EOOD from Bulgaria, Akmi Anonimi Ekpaideftiki Etairia from Greece and the Technical School in Kłodzko from Poland.

2. Are there any patterns or similarities in the respondents' assessments of the different types of competencies? In other words, is it possible to distinguish certain groups of competencies which are assessed by the respondents in a similar way?

The answers to these questions will provide information making it possible to assess the situation in the vocational education and training sector in the context of labour market expectations.

2. Materials and methods

Table 1 shows the research sample in terms of the metric characteristics highlighted in the study: gender, status on the labour market (a student/graduate), field of study and country of study. The survey was conducted in the period of March-June 2022 and included 428 respondents – final or penultimate-year students of technical secondary schools, as well as young graduates of this type of school. As far as the "country of study" characteristic is concerned, the Erasmus+ subgroup included students participating in the survey in Spain during an international Erasmus+ internship. As for the "gender" characteristic, the group of respondents with the answer "other" was eliminated from the analyses because of its small size. Students were the main target group of the research. Young graduates were selected as a comparative group; hence its number is smaller than in the case of students. This did not affect the accuracy of the conclusions resulting from the study.

Table 1. A research sample – a structure according to selected characteristics ($N = 428$)

Characteristic	Characteristic categories	Frequency	Percentage of respondents
Status	Student	312	72.9
	Graduate	116	27.1
Gender	Female	193	45.1
	Male	226	52.8
	Other	9	2.1
Field of study	Construction technician	165	38.6
	Logistics technician	194	45.3
	Renewable energy technician	69	16.1
Country of study	Poland	171	39.9
	Bulgaria	67	15.7
	Greece	109	25.5
	Spain	33	7.7
	Erasmus+	48	11.2

Source: own elaboration.

The author analysed the respondents' answers to the following questions:

Q1: In your opinion, how important are the following competencies for employment in your field of study?

Q2: How do you assess your level of the following competencies?

In both cases, the respondents used the same cafeteria of 12 types of competencies (cf. Tables 2 and 3) and could choose their answers on a five-point Likert scale, where 1 meant the lowest score, whereas 5 – the highest. In order to find the answers to the research questions the study used diverse methods of data analysis. In the case of the first research question, the authors relied on tests of the equality of two means to check the differences in assessments in relation to the respondents' metric characteristics. Depending on the number of categories for the specific metric characteristics, one of the following methods was used:

- Independent two-sample t test. Tests of the equality of two means were preceded by Levene's test for homogeneity of variances. When heterogeneity of variance was found, an alternative to the classical approach, the Welch t-test statistic, was applied. This method was used for characteristics with two categories, such as gender and status – student/graduate.

- One-way analysis of variance. When the ANOVA results showed significant differences, post hoc Tukey's HSD tests for multiple comparisons were carried out to identify the pairs characterised by different means. This method was used for characteristics with more than two categories, i.e. the field of study and the country of study. The results of the post hoc tests are illustrated in the figures obtained. Statistically significant differences between pairs of metric characteristic categories (nodes as rectangles) are shown with the use of arrows. The beginning of the arrow means a category of a given characteristic with a statistically lower value of the test variable, whereas the arrowhead is a correspondingly statistically higher value of the mean score.

A threshold p-value of 0.05 was assumed in the analyses, below which it was concluded that there were significant differences in the assessments of the respondents characterised by different categories of the metric characteristics. In the tables presented in the section dedicated to the study results, p-values are indicated for three levels of significance: below 0.05, below 0.01 and below 0.001.

In the case of the second research question, the study relied on the factor analysis (Gorsuch, 1983; Finch, 2019; Pett, Lackey, and Sullivan, 2003; Robins, Fraley, and Krueger, 2009; Watkins, 2021). This method was used to reduce the dimensions when assessing the importance of the 12 competencies and their level by the students and graduates taking part in the survey. In order to check the validity of the factor analysis, the authors carried out the Kaiser-Meyer-Olkin test of sampling adequacy, and also used the Bartlett's test of sphericity to check whether the variables are orthogonal or not. For the singled out factors, the authors checked for the diversity of answers in relation to the respondents' metric characteristics with the help of the tests of the equality of two means.

The calculations were performed using SPSS software and MS Excel.

3. Results

3.1. Importance of competences and self-assessment of the level of competences

The results concerning the evaluation of the importance of different types of competencies, taking into account the respondents' metric characteristics, are presented in Table 2. The study obtained interesting results for the "gender" characteristic. Positive values of *t*-statistic indicate that female respondents attributed greater importance to all the listed types of competencies. Moreover, for 6 out of 12 types of competencies those differences proved to be statistically significant. The greatest differences (*p*-value < 0.01) were obtained for IT competencies – software literacy and analytical competency – problem-solving skills. This means that the importance of these competencies is significantly more often appreciated by women than by men.

In the case of "status", the study did not find any one-sided correlations for students and graduates' answers concerning the importance of competencies or the self-assessment of their level. 8 out of 12 competencies were assessed as more important by students, but only in the case of "organisation" and "self-organisation" did the differences appear to be statistically significant (see Table 2). It is worth taking a look at the types of competencies that graduates assessed higher – mainly those whose importance might be assessed through practical need or use in the workplace, i.e. practical skills, IT competency, openness to lifelong development and capacity of resilience.

When comparing the respondents' answers in relation to the "field of study", due to the comparison of more than two subgroups it was not possible to unambiguously indicate the direction of differences between individual subgroups based only on the results of ANOVA. On the basis of the results presented in Table 2 in relation to the importance of competencies, one can conclude that statistically significant differences between the fields of study are found only in the case of vocational competencies – I theoretical knowledge and practical skills, as well as a personal competency – capacity of resilience. The authors obtained information about the direction of the observed differences only after performing post hoc tests appropriate for the sample analysed.

The results of the post hoc tests for the assessment of the importance of specific competencies are presented in Figure 1 (only for those types of competencies for which significant differences were found on the basis of ANOVA). Students and graduates of the renewable energy field pay more attention to theoretical knowledge in vocational subjects than the respondents who chose logistics. As far as vocational practical skills are concerned, statistically significantly higher assessments were indicated by students and graduates of the field of construction compared to the representatives of the other two fields. The respondents who chose the field

Table 2. Results of t-tests and ANOVA for importance of competences (Q1)

Competency	Gender		Status		Field of study		Country of study	
	t statistic	p-value	t statistic	p-value	F statistic	p-value	F statistic	p-value
1) vocational – theoretical knowledge	0.944	0.346	0.893	0.372	3.115	0.045*	10.093	0.000***
2) vocational – practical skills	0.829	0.408	−0.365	0.715	3.654	0.027*	5.744	0.000***
3) IT – software literacy	2.771	0.006**	−1.782	0.075	0.398	0.672	7.855	0.000***
4) language – knowledge of foreign languages	2.058	0.040*	0.692	0.489	2.255	0.106	3.616	0.007**
5) analytical – problem-solving skills	2.784	0.006**	0.708	0.479	1.299	0.274	2.309	0.057
6) interpersonal – communication, teamwork	0.978	0.329	0.636	0.525	2.682	0.070	4.469	0.002**
7) interpersonal – work in diverse teams (e.g. multicultural, multigenerational)	1.274	0.204	1.930	0.054	0.072	0.931	3.627	0.006**
8) organisation and self-organisation – time management, self-reliance	1.495	0.136	2.313	0.021*	1.562	0.211	3.280	0.012*
9) creativity – generating new ideas, creative style of work	2.184	0.030*	0.567	0.571	1.336	0.264	5.069	0.001***
10) learning – openness to lifelong development	1.510	0.132	−0.072	0.942	2.082	0.126	2.275	0.061
11) personal – loyalty, involvement, responsibility	2.364	0.019*	1.811	0.071	2.922	0.055	5.525	0.000***
12) personal – capacity of resilience (e.g. for stress, time pressure)	1.964	0.050*	−0.670	0.503	3.223	0.041*	2.564	0.038*

* p-value < 0.05; ** p-value < 0.01; *** p-value < 0.001.

Source: own elaboration.

of construction also evaluated their personal competencies in the case of capacity of resilience in a significantly better way than those who opted for the field of renewable energy.
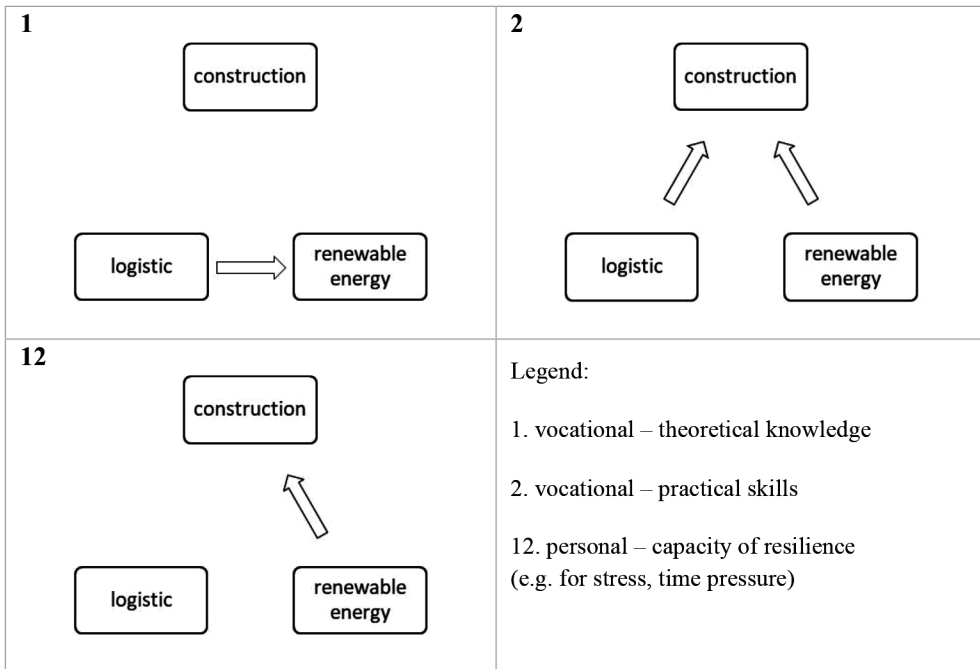

Fig. 1. Results of post hoc tests for importance of competences (Q1)

Source: own elaboration.

For the "country of study" characteristic, as in the case of the comparison of respondents' answers for the "field of study" attribute, due to the comparison of more than two subgroups, it was not possible to clearly indicate the direction of differences between the specific subgroups based only on the results of ANOVA. The analysis of the comparison of the answers for the importance of the competencies showed that statistically significant differences exist in 10 out of 12 types of competencies. Only for analytical and learning competencies, no significant differences were found. The strongest differentiation was noticed for vocational competency, IT, creativity, loyalty, involvement and responsibility.

The analysis of the results of pair-wise comparisons of answers given by the respondents of different categories of the "country of study" characteristic (post hoc test results) allowed to formulate some general observations. The most significant differences were found for the vocational competency – theoretical knowledge, for which the assessment of importance given by the respondents from Bulgaria was

significantly higher than the assessment given by those from Poland and Greece, and students taking part in Erasmus+ mobility projects. On the other hand, the assessments given by the Polish respondents were much lower than those from Bulgaria, Spain and Greece. For all the competencies for which significant differences were found on the basis of ANOVA, the assessments given by Bulgarian students and graduates were higher than the results for at least one of the remaining categories. As far as the Polish respondents are concerned, it was possible to notice that they attach greater importance to practical skills rather than theoretical knowledge, especially in comparison with respondents from other countries or Erasmus+ project participants. In 7 out of 10 competencies with significant differences, the Greek respondents assessed the importance of competencies significantly lower than the representatives of at least one of the other categories. The authors did not notice any particular situation in the assessments given by the mobility project participants, and statistically significant differences did not occur for the respondents from Spain very often, either.

The results concerning the self-assessment of competency levels with respect to the respondents' metric characteristics are presented in Table 3. For most of those competencies (8 out of 12), women assessed their level in a more positive way than men. Men, on the other hand, assessed the level of their vocational competencies (both theoretical knowledge and practical skills), language competency and creativity higher than the female respondents. However, it is worth emphasising that for this question no significant differences were obtained between the answers of women and men for any of the types of competencies.

In the self-assessment of the level of 7 out of 12 competencies, the mean scores of students were higher than those of graduates. Interestingly, in the case of vocational competencies – practical skills and personal competency – capacity of resilience, these differences proved to be statistically significant. Graduates evaluated their competencies in the field of IT, analytical, interpersonal and openness to lifelong development in a more positive manner.

For different fields of study for 7 out of 12 types of competencies, the differences in the answers are statistically significant. It is worth emphasising that for 6 types of competencies the p-value was below 0.01, and for IT – even below 0.001.

Figure 2 shows the results of the post hoc tests for the question concerning the self-assessment of the level of specific competencies. In the case of 6 types of competencies for which significant differences were found on the basis of ANOVA, the scores given by the students and graduates of the field of renewable energy were lower than the scores given by the respondents who chose the field of construction. The same applies to 4 competencies whose assessments were lower than those given by the representatives of the field of logistics. The last group of respondents, however, assessed their vocational theoretical knowledge and IT skills in a less positive way than those in the field of construction.

Table 3. Results of *t*-tests and ANOVA for assessment for level of competences (Q2)

Competency	Gender		Status		Field of study		Country of study	
	t statistic	*p*-value	*t* statistic	*p*-value	*F* statistic	*p*-value	*F* statistic	*p*-value
1) vocational – theoretical knowledge	−0.634	0.526	0.035	0.972	5.610	0.004**	4.756	0.001***
2) vocational – practical skills	−0.415	0.678	2.198	0.028*	5.820	0.003**	6.127	0.000***
3) IT – software literacy	0.123	0.902	−0.687	0.493	8.237	0.000***	9.427	0.000***
4) language – knowledge of foreign languages	−0.453	0.651	0.316	0.752	2.586	0.076	8.331	0.000***
5) analytical – problem-solving skills	0.479	0.632	−0.238	0.812	6.021	0.003**	6.963	0.000***
6) interpersonal – communication, teamwork	1.030	0.303	−1.305	0.193	2.280	0.104	2.052	0.086
7) interpersonal – work in diverse teams (e.g. multicultural, multigenerational)	0.147	0.884	−0.353	0.724	1.107	0.332	1.826	0.123
8) organisation and self-organisation – time management, self-reliance	0.784	0.433	0.053	0.958	5.059	0.007**	6.218	0.000***
9) creativity – generating new ideas, creative style of work	−0.344	0.731	0.270	0.787	3.299	0.038*	2.433	0.047*
10) learning – openness to lifelong development	0.715	0.475	−0.372	0.710	2.354	0.096	3.482	0.008**
11) personal – loyalty, involvement, responsibility	1.287	0.199	0.629	0.530	4.879	0.008**	5.175	0.000***
12) personal – capacity of resilience (e.g. for stress, time pressure)	0.338	0.736	2.531	0.012*	1.671	0.189	6.719	0.000***

* *p*-value < 0,05; ** *p*-value < 0,01; *** *p*-value < 0,001.
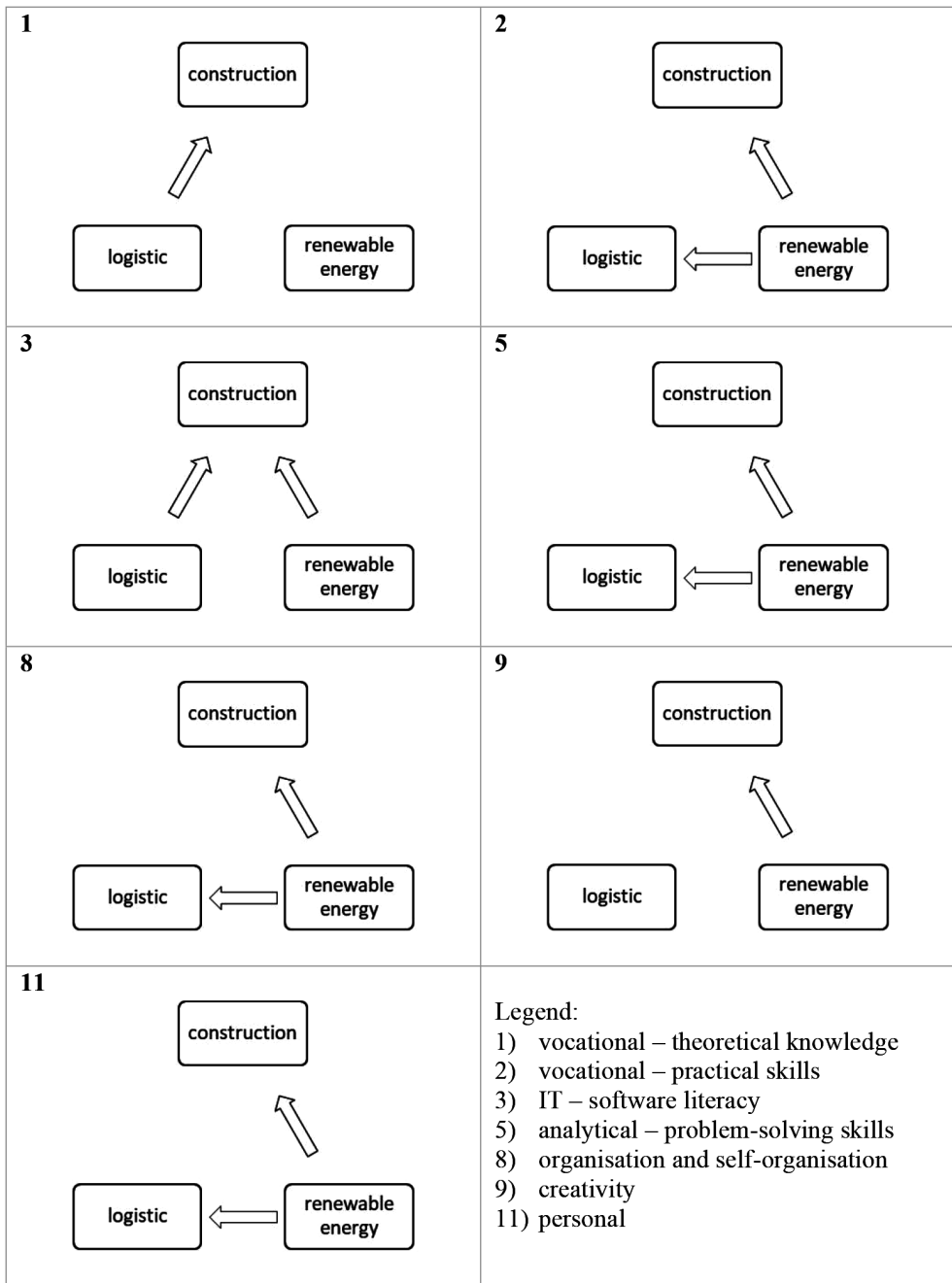
Source: own elaboration.

Fig. 2. Results of post hoc tests for assessment for level of competences (Q2)

Source: own elaboration.

For "country of study", statistically significant differences were found in 10 out of 12 competencies, but for 8 of them the *p*-value was lower than 0.001, indicating very strong differentiation. The competencies for which no significant differences in the answers were observed were the interpersonal ones. When analysing pair-wise comparisons between countries, the most significant differences occurred for the IT competency – software literacy, for which the assessments given by the Polish respondents differed significantly in minus in comparison with the assessments given by the respondents from Bulgaria and Spain, and students taking part in Erasmus+ mobility projects. In comparison with the scores given by the Bulgarian respondents and participants of mobility projects, those noted in Greece were lower. It is worth paying attention to the fact that the scores given by the Greek students and graduates in relation to all other categories, for two competencies, namely analytical (problem--solving skills) and personal (loyalty, involvement, responsibility), were significantly lower. Unlike the evaluation of the importance of competencies, in this case the study did not find any differentiated assessments in relation to vocational competencies – theoretical knowledge and practical skills. In both cases, the level of the respondents' competencies was evaluated in a more positive way by the Bulgarian respondents compared to the Polish and Greek ones, and by the Spanish respondents compared to the Greek ones. There was nothing unusual about the assessments made by the mobility project participants – if there were any significant differences, they were in favour of this subgroup in relation to comparative subgroups (5 out of 10 analysed cases with significant differences).

3.2. Summative scale

Factor analysis was used in order to check whether the respondents' answers revealed any similarities in their attitudes towards different types of competencies. Discovering such similarities would allow to use a summative scale and replace questions concerning 12 types of competencies with two or three questions about the distinguished groups of competencies that received similar assessments. This situation would be extremely beneficial for further research as it would significantly reduce both the size of the questionnaires and analyses conducted on the basis of their results.

In order to check the validity of using factor analysis to assess the importance of competencies and their level, the authors carried out the Kaiser-Meyer-Olkin test of sampling adequacy and also Bartlett's test of sphericity. In both cases, the KMO close to 1 (KMO = 0.915 and KMO = 0.949, respectively) indicates the adequacy of sample selection. Bartlett's test of sphericity (in both cases: $df = 66$, $p = 0.000$) confirms that the variables are not orthogonal. Hence, the use of dimensionality reduction is justified and can lead to meaningful results. The factors were isolated using the principal components analysis.

The explanation of the total variance through specific components is shown in Table 4.

Table 4. Factor analysis results – explained total variance

Component number	Total	Initial eigenvalues	
		% of variance	% cumulative
1	6.385	53.208	53.208
2	1.102	9.180	62.389
3	0.788	6.567	68.956
4	0.647	5.391	74.346
5	0.626	5.216	79.562
6	0.516	4.296	83.859
7	0.439	3.658	87.517
8	0.406	3.381	90.898
9	0.326	2.715	93.613
10	0.290	2.419	96.032
11	0.258	2.153	98.185
12	0.218	1.815	100.000

Source: own elaboration.

The first factor explains 53.208% of variance and the second one – 9.180%, which gives a total of 62.389%, and the subsequent increments of explanation are insignificant. The scree plot and the degree of explanation of the variance prompted the authors to analyse two factors. The solution was subjected to varimax rotation with Kaiser normalisation, and the results obtained are shown in Table 5.

Table 5. Factor analysis results – factor loadings after varimax rotation with Kaiser normalization

Variable (competence)	Loadings	
	factor 1	factor 2
Vocational – theoretical knowledge	0.224	**0.782**
Vocational – practical skills	0.319	**0.637**
IT – software literacy	0.152	**0.842**
Language – knowledge of foreign languages	**0.485**	0.454
Analytical – problem-solving skills	**0.664**	0.423
Interpersonal – communication, teamwork	**0.809**	0.154
Interpersonal – work in diverse teams (e.g. multicultural, multigenerational)	0.810	0.089
Organisation and self-organisation – time management, self-reliance	**0.748**	0.324
Creativity – generating new ideas, creative style of work	**0.690**	0.436
Learning – openness to lifelong development	**0.657**	0.458
Personal – loyalty, involvement, responsibility	**0.734**	0.287
Personal – capacity of resilience (e.g. for stress, time pressure)	**0.700**	0.311

Source: own elaboration.

The pattern of the loadings after rotation indicates that variables can be linked to the factors. The variables related to vocational and IT competencies are connected with the second factor, while the other variables are mainly determined by the first factor. Hence, the second factor may be labelled as "hard skills", whereas the first one – "universal skills".

Using the results of the factor analysis, the study applied a summative scale for the variables represented in specific factors (a mean value for these variables) and, on that basis, made an assessment of the differentiation of scores in relation to gender, the status of the respondent, the field of study and the country of study. As in the previous analyses, in the case of gender and status, a t-test of the equality of two means was used, and for the remaining variables – a one-way analysis of variance. The results of the tests and characteristics in relation to the categories of independent variables are presented in Tables 6 and 7.

Table 6. Differences in summative scale with respect to gender, status, field of study, country of study – factor 1

Independent variable	Dependent variable – summative scale		p-value (source)
	mean	SD	
Gender			
Female	3.865	0.844	0.022*
Male	3.680	0.801	(t – test)
Status			
Student	3.794	0.855	0.252
Graduate	3.691	0.754	(t – test)
Field of study			
Construction technician	3.836	0.811	0.164
Logistics technician	3.762	0.873	(ANOVA)
Renewable energy technician	3.611	0.729	
Country of study			
Poland	3.675	0.934	0.001**
Bulgaria	4.080	0.703	(ANOVA)
Greece	3.619	0.579	
Spain	3.970	0.814	
Erasmus+	3.844	0.956	

* p-value < 0,05; ** p-value < 0,01; *** p-value < 0,001.

Source: own elaboration.

In the case of the first factor, the tests showed that for the two categories of analysed independent variables there were significant differences in the mean values

for the summative scale ($p < 0.05$). Men (mean = 3.680) obtained a significantly lower score than women (mean = 3.867). As far as countries are concerned, the highest value was noted for Bulgaria (mean = 4.080), whereas the lowest one for Greece (mean = 3.619). Tukey's HSD post hoc tests (significance level = 0.05) revealed that significant differences occurred between the scores given by the respondents from Bulgaria and those given by the Polish and Greek participants. The scores given by students and graduates from Bulgaria were significantly higher than those given by the respondents from the other two above-mentioned countries (see Figure 3 – left side).

Table 7. Differences in summative scale with respect to gender, status, field of study, country of study – factor 2

Independent variable	Dependent variable – summative scale		p-value (source)
	mean	SD	
Gender			
Female	3.818	0.914	0.050*
Male	3.650	0.835	(t-test)
Status			
Student	3.707	0.876	0.555
Graduate	3.764	0.925	(t-test)
Field of study			
Construction technician	3.810	0.851	0.168
Logistics technician	3.636	0.899	(ANOVA)
Renewable energy technician	3.758	0.939	
Country of study			
Poland	3.536	0.970	0.000**
Bulgaria	4.144	0.741	(ANOVA)
Greece	3.746	0.742	
Spain	3.929	0.725	
Erasmus+	3.604	0.974	

* p-value < 0,05; ** p-value < 0,01; *** p-value < 0,001.

Source: own elaboration.

In the case of the second factor, the significance of the differences in the mean scores for the summative scale concerned the same metric categories as for the first factor, namely gender and the country of study. Again, the female respondents evaluated the importance of competencies higher (mean = 3.818) than men (mean = 3.650). On the country level, the highest scores were noted in Bulgaria (mean = 4.144), whereas the lowest – in Poland (mean = 3.536). Significant differences are presented in Figure 3 (right side).
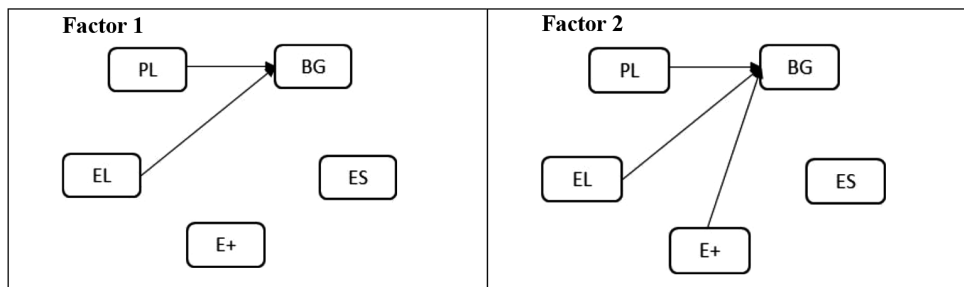
Fig. 3. Importance of competences – significant differences for the summative scale

Source: own elaboration.

A similar procedure was carried out for the self-assessment of competency level. In this case the first factor explains 58.733% of variance and the subsequent increments of explanation are insignificant. The scree plot and the degree of explanation of the variance prompted the authors to analyse one factor. Using the results of the factor analysis, a summative scale (a mean value for all variables) was applied and, based on this, the authors made an assessment of the differentiation of scores in relation to metric characteristics.

The differentiating factors were the field of study and the country of study. The general level of competencies was evaluated in the most positive way by the representatives of the construction field of study (mean = 3.670), whereas those who chose the field of renewable energy gave the lowest scores (mean = 3.302). As far as countries are concerned, the most positive opinions concerning the general preparation were expressed by students and graduates from Spain (mean = 3.828), whereas the poorest ones – by the respondents from Greece (mean = 3.255). Significant differences are presented in Figure 4.
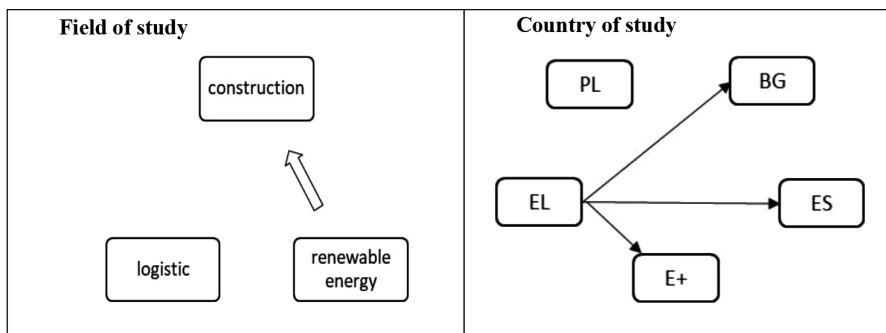

Fig. 4. Assessment of the level of competences – significant differences for the summative scale

Source: own elaboration.

4. Conclusions

The article presents the analysis of the results of a survey conducted in 2022 among students and young graduates of three vocational education courses studying in different EU countries. The results are interesting and, importantly, they are similar to the results of research conducted by other research teams (Bielecki, Maliszewska, and Matuszczak, 2022; Cedefop, 2020; Cedefop, 2022). It should be emphasized, however, that the available research results of other authors were based primarily on the analysis of data from secondary sources. Therefore, when formulating conclusions, the focus was on the conclusions of the study, the results of which are presented in the article. The tests performed showed that metric characteristics are significant in both the assessment of the importance of the competencies and the respondents' self-assessment of their level. In relation to assessing the importance of the competencies, the factor analysis made it possible to distinguish two distinct factors grouping, on the one hand, universal competencies (factor 1) and, on the other, hard competencies (factor 2), which, in addition to theoretical knowledge in the area of vocational education, included practical skills in this area, as well as IT competencies.

The key findings from the study are as follows:

- A strongly differentiating metric characteristic is gender. It is possible to conclude that women are more critical about their preparation for entering the labour market and their ability to find and maintain a job that is compatible with their field of study. When it comes to assessing the importance of competencies (in 6 types of competencies out of 12), the differences in the scores given by men and women were statistically significant, with women's mean scores being higher than men's scores for all the competencies. This means that women rate the importance of specific competencies higher than the male respondents.

- Graduates are more critical of their preparation for entering the labour market than students. Although a comparison of the answers given by students and graduates did not indicate numerous differences to which statistical significance could be attributed, it is possible to draw interesting conclusions from the analysis of the direction of the differences observed. Graduates attributed higher importance to competencies that are used in practice in the workplace, i.e. practical or IT skills, and they also appreciated the importance of openness to lifelong development and capacity of resilience. In the self-assessment of the level of competencies, it is quite surprising to find statistically significant differences in favour of students in the case of vocational competencies (practical skills) and personal competencies (capacity of resilience).

- The biggest differences in the respondents' answers differing by the "field of study" characteristic was noted for the question concerning the self-assessed level of competency. For this question, the study found statistically significant differences in 7 out of 12 competencies assessed. Only in one case (vocational

– theoretical knowledge) did they not refer to the poorer assessment of their competencies by students and graduates from the field of renewable energy. Two differences were found mainly for competencies such as: analytical – problem--solving skills, organisation and self-organisation – time management, self--reliance and personal – loyalty, involvement, responsibility.

- The characteristic that appeared to be the most differentiating was the country of study. For this characteristic, the study found statistically significant differences in 10 out of 12 types of competencies analysed, both in the question about their importance and self-assessed level. In the case of both questions, the authors noted multiple statistically significant differences in pair-wise comparisons of countries in plus for Bulgaria and in minus for Greece. This situation requires a deeper analysis in terms of the rationale behind the answers given by the respondents classified in the different categories of the "country" characteristic. It is important to determine the reasons for the statistically significant differences that have occurred – whether they result from different cultural and historical backgrounds, a different approach to the vocational training process, different expectations of employers or, for example, a different perception of reality (realism vs. wishful thinking). Significant differences also occurred in the answers to the question about further education and training, and in 2 out of 4 questions concerning the situation on the labour market. Additional educational activities are mainly undertaken by the participants of mobility projects, followed by students and graduates from Poland. Students and graduates from Spain, followed by the respondents from Bulgaria and those who participate in the Erasmus+ projects, evaluate their preparation for entering the labour market in a more positive way than those from Poland and Greece.

- The use of factor analysis confirmed the occurrence of certain patterns in the respondents' assessments concerning the different types of competencies. The clearly visible two factors created for the answers to the question on the importance of different types of competencies show that the respondents assess the importance of competencies belonging to the group of so-called universal skills (factor 1) and the importance of so-called hard skills (factor 2) in a similar manner. The summative scale used for the two factors instead of the 12 questions concerning the individual types of competencies showed, in the case of universal skills, significant differences in the scores given by men and women, and the respondents studying in different countries. As far as hard skills are concerned, significant differences were noticed for the same subgroups of the respondents as for factor 1, namely gender and the country of study. In the case of self--assessment of the level of competencies, only one factor was detected, which may indicate a tendency of respondents to evaluate the level of all the competencies as either "good" or "bad". The summative scale used showed the significance of differences for the field and the country of study.

Taking into account the particularly large diversity of the respondents' opinions, due to the selected characteristics, it is worth extending the scope of the research to new fields of study and countries.

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SEKTOR KSZTAŁCENIA ZAWODOWEGO WOBEC OCZEKIWAŃ RYNKU PRACY. ANALIZA WYNIKÓW MIĘDZYNARODOWEGO BADANIA ANKIETOWEGO UCZNIÓW

Streszczenie: W artykule zaprezentowano analizę wyników badań ankietowych przeprowadzonych w 2022 r. na grupie uczniów i młodych absolwentów trzech kierunków kształcenia zawodowego pobierających naukę w kilku krajach unijnych ($N = 428$). Prezentowany obszar badań dotyczy znajomości kompetencji pożądanych przez pracodawców oraz samooceny poziomu tych kompetencji. Wykorzystano test równości średnich w celu sprawdzenia różnic w ocenach ze względu na cechy metryczkowe respondentów. Analizę czynnikową zastosowano dla sprawdzenia, czy w ocenach respondentów można zauważyć podobieństwo podejścia do różnych rodzajów kompetencji. Ewentualne stwierdzenie takiej prawidłowości pozwoliłoby na stosowanie skali sumacyjnej i redukcję wymiarów.

Słowa kluczowe: szkolnictwo zawodowe, znaczenie kompetencji, samoocena poziomu kompetencji, badania kwestionariuszowe, analizy statystyczne.