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Vocational High Schools Apprenticeship Program, in Greece: Application, Recent Facts and Views

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Abstract

Apprenticeship in Greek vocational high schools started as a pilot program in 2017. The number of apprentices is gradually increasing, Greece followed the dual German apprenticeship system, when the students complete successfully their studies obtaining a degree of level 5, according to the European Qualifications Framework. The purpose of the project was to capture the views and experience of apprentices and employers regarding their involvement with the above apprenticeship program, during the period 2020-2021. Structured questionnaires were appropriately used and were completed by 622 apprentices and 265 employers. Factor analysis reduced the variables and was followed by further investigation with chi-square. To test the linear relationship between the variables of the research queries, the Pearson correlation coefficient was applied. Finally, by using the Mann-Whitney (U-test), a significant difference between the apprentices' and the employers' responses was found. **Main Results:** 89% of the apprentices and 78.9% of employers were very satisfied with their participation in the apprenticeship program. 71% of apprentices and 81.5% of employers were very satisfied with the overall quality of the apprenticeship program. **Conclusions:** The majority of apprentices and employers seemed satisfied regarding the apprenticeship program quality. The knowledge and skills were acquired by the students during the apprenticeship which help them to gain a place in the labor market. Hosting companies provided the appropriate equipment; all safety regulations and the employees who trained the apprentices had the necessary qualifications in the same or related subject.

Keywords

Apprenticeship, Vocational Education, Adult Education, Post-Secondary

Education, European Qualifications Framework

1. Introduction

The political scene in Greece radically changed after the outbreak of the fiscal and economic crisis and the inclusion of Greece in the European Financial Stability Mechanism in 2010 (CEDEFOP, 2014a). The economic downturn has exacerbated chronic problems in the labor market, leading to rising social inequalities and youth unemployment. However, Greek society is characterized by a strong demand for university studies, while vocational education has had little impact on young people so far. As an expecting result, Greece has produced a plethora of scientists, but no sufficiently specialized workforce that can support the country's production and economy.

Globalization, the development of technology, the aging of the population and the need to integrate thousands of refugees and immigrants into the education system as well as the labor market have created unprecedented conditions of economic uncertainty and unemployment, not only in Greece (13%, November 2021) but throughout all European countries (CEDEFOP, 2016).

In order to reduce high unemployment, the E.U. countries have jointly decided to take drastic measures. Despite the present recession, countries such as Austria, Germany, etc. managed to keep youth unemployment on a low scale (CEDEFOP, 2014b). This achievement is partly attributed to: a) application of apprenticeship programs; and b) dual education systems that significantly increased interest attracting more young people.

According to Hellenic Ministry of Education (2016), Apprenticeship Program (A.P.) defines the educational system in which learning time alternates between work and educational structures.

A.P. is considered a very effective learning method, since it provides young people and adults with the skills that current employers demand, thus facilitating the transition from school to work (CEDEFOP, 2020). It further enhances cooperation between governments, social partners, employers and educational institutions, which explains in a way why its revival is a global trend nowadays(CEDEFOP, 2014b).

A.P. has different characteristics throughout countries. However, CEDEFOP (European Center for the Development of Vocational Training) has identified some common elements (CEDEFOP, 2021). The A.P.:

- Is supported by a legal framework;
- Leads to the acquisition of formal professional qualifications;
- Is based on an organized alternation between learning in the workplace and at school;
- Presupposes a commitment for a minimum duration of the program that makes the exchange of training meaningful.

In Greece, according to the existing educational framework, A.P. based on respective programs is conducted in the following structures (Hellenic Parliament, 2018):

1) Vocational Schools (V.S./EPA.L.) that lead to the acquisition of a level 3 degree, according to the European qualification's framework, after two years of alternating learning at school and in the workplace. These schools are part of the formal education;

2) Vocational High Schools (V.H.S/EPA.S.) are offered at the level of post-secondary education and lead to level 5 qualifications, after a school year of alternate learning at school and in the workplace. The studies in the apprenticeship year belong to the non-formal education;

3) Institutes of Vocational Training (I.V.T.) are offered at the level of post-secondary education. Students obtain a level 5 degree, according to the European Qualifications Framework, after four semesters of study at I.V.T. (I.E.K., in Greece) and one semester at work. Studies in these schools are part of non-formal education.

2. Objectives and Methods

2.1. Purpose of the Research

The purpose of the present project was to investigate the attitudes, views and living experiences of both apprentices and employers on A.P. of the Ministry of Education, with the main task to capture, evaluate and improve these progressive programs for the future. More specifically, present research was based on two main pillars where students and employers were asked to reply: 1) How satisfied are they with the benefits obtained from their participation in AP? 2) How satisfied are they with the quality of whole A.P.?

2.2. The Sample of the Study

Schools and companies that implemented A.P. were carefully selected. The final sample consists of a representative and homogeneous number of students and employers in order to ensure the reliability and validity of the research. The research population consisted of students of the post-high school year of apprenticeship (post-secondary education) aged 18 years and over, graduates of EPA.L., and employers from all regions of Greece. The program is attended by about 3000 students per year (Hellenic Ministry of Education, 2020) and till now six phases of the A.P. have been organized (Hellenic Ministry of Education, 2021). Of the students who participated in the 5th phase, 622 (20.7%) answered and of the employers only 265 (19%) answered.

The survey was conducted in October 2021 on graduates of 5th Phase (**Table 1**).

2.3. Method

Appropriately designed questionnaires for employers and apprentices were used

Table 1. The number (#) of the participants in the research.

(#)/percentage	E-mails sent	Unsuccessful E-mail sent	Incomplete questionnaires	Completed questionnaires
Apprentices	3.000 100%	59 2%	2.319 77.3%	**622** **20.7%**
Employers	1.400 100%	23 1.6%	1.112 79.4%	**265** **19%**

as research tools. In the compilation of the questionnaires, clear closed-ended questions were used, using simple language and the existence of appropriate explanations. The questionnaires consisted of three parts (Table 2).

Table 2. Structure of the questionnaire. The answers were given on a Likert ten-point scale, where it was graded from "1" corresponding to "not at all satisfied" to "10" corresponding to "completely satisfied". Where necessary, the ten-point scale was converted to three-point scale. The max time to complete the questionnaires was 15 minutes.

Parts	Type of questions	# of questions
First	Demographics	7
Second	Apprenticeship in work place	33
Third	General questions	10

2.4. Validity Check and Reliability Check

The questionnaires in a pilot phase were distributed to 10 students of the apprenticeship department of (V.S/EPA.L) of Paros and were answered in the presence of the researcher in the school room, after the necessary clarifications were made. The number of students was considered satisfactory for the impartial and unbiased submission of their views (Cohen, Manion, & Morrison, 2017). The reliability factor (Cronbach's alpha) was determined to check if the questions were highly consistent with each other (Markos, 2012).

For variables related to apprentices found a = 0.957 (research question A) and a = 0.96 (research question B), while for variables related to employers found a = 0.954 (research question A) and a = 0.952 (research question B). Variables/ questions with a < 0.3 were removed to increase the internal consistency of the project questions.

The reliability of this project is great and this is due to the following:

A) Only the variables related to each other and to the research questions were selected;

B) Factor Analysis limited the variables to the important factors that interpret only the certain research questions;

C) The variables that reduce the reliability of the survey and were present in the questionnaires in the pilot phase were removed from the reliability analysis table and specifically from the column "Alpha if the item was deleted".

2.5. Statistical Data Analysis

Data was analyzed using SPSS 25.0 (academic license). Initially, a descriptive statistical analysis was performed to display the demographic and other selected characteristics of the respondents. Then, factor analysis was performed in order to reduce the variables (research questions) to only the important factors. Factors are real latent variables, which cause variance between variables. The goal is to study all the existing variance in order to "extract" the largest percentage of covariance from the least possible factors (Tsaousis, 2011).

In addition, the chi-square test was applied to investigate the most important correlations between the variables (Siomkos & Vasilikopoulou, 2005) that make up: 1) the degree of satisfaction from the benefits—benefits offered by the A.P. participation; and 2) the degree of satisfaction from the quality of the A.P. as a whole. Pearson's chi-squared test is used to determine whether there is a statistically significant difference between the expected and the observed frequencies in one or more categories of a contingency table, as shown in **Table 3** (Menexes, 2015).

Table 3. The application of chi-square gave a value of P <0.001. The differences are statistically significant. Most of the answers from the tables showed a high degree of satisfaction from participating in the A.P. The application of the 32 similar tables created **Table 4** and **Table 5**. It is reported that the values in the right column (total) remain constant for all 32 tables. The same applies to the tables of the second research question.

			Degree of Satisfaction with the offered knowledge and skills			Total
			Little	Enough	Very	
Degree of satisfaction from your participation in the apprenticeship	Little	Observed count	16	4	8	28
		Expected count	2.4	1.7	23.9	28.0
	Enough	Observed count	16	10	14	40
		Expected count	3.4	2.4	34.2	40.0
	Very	Observed count	21	23	510	554
		Expected count	47.2	33.0	473.8	554.0
Total		Observed count	53	37	532	622
		Expected count	53.0	37.0	532.0	622.0

While the chi-square informs the researcher of the intensity of the variables, it gives no indication of the direction of the correlation. To test the linear relationship between the variables, the Pearson correlation coefficient was applied. Finally, the Mann-Whitney test was used to compare the answers of students and employers (Siomkos & Vasilikopoulou, 2005).

2.6. Ethical Ethics

The ethics committee of the University of West Attica in Athens approved the research. Students and employers were informed of the purpose of the research and agreed to participate. It was clarified that their participation in the research

was voluntary and anonymous so that they could answer honestly and without fear. The research process complies with the provisions of the Helsinki Declaration on Human Research (Greek Ministry of Health, 2014).

3. Results

3.1. Results Analysis

For each research question, the variables/questions were analyzed using the methodology of factor analysis. The aim was to look at the interaction (of variables) with each other in terms of existing covariance, in order to focus on the variables that play a key role in answering the research questions.

The two research questions consist of the same variables and we tried to confirm: a) the statistical significance of the data; and b) the sincerity of the answers. Theoretically, someone who is satisfied with their participation in the A.P. (research question A), should also be satisfied with the quality of the A.P. (research question B).

Then, the relationship of the 31 variables with the variables "degree of satisfaction from the benefits, (benefits of apprenticeship)" (research question A) and "degree of satisfaction from the quality of the program" (research question B), for apprentices and employers (there are a total of 33 variables). For this purpose, 32 separate tables were made for each pair of variables for the research query (A and B), one of which is **Table 3**. For practical reasons, the data of the table are presented in a three-point Likert scale. The responses from these tables were summarized and transferred to **Table 4** and **Table 5**.

Chi-square statistical tests were applied to each data table (**Table 4** and **Table 5**), because there was a large number of data. The boards are made in such a way that we can easily compare how satisfied the students and employers were.

From the factor analysis of the research question A, the variables included in the first four components of the analysis interpret 64.167% of the total variance and are considered as the most important variables for the interpretation of the research question, in terms of students. The most important variables are 22 in total and are indicated by an asterisk (*) in **Table 4**.

Regarding the employers, the factor analysis showed that the first 7 factors interpret 65.904% of the total variance and 22 variables are considered as the most important for the interpretation of the research question A. These variables are denoted by (**) in **Table 4**.

From the factor analysis of the research question B, the variables included in the first four components of the analysis interpret 63.869% of the total variance and are considered as the most important variables for the interpretation of the research question, in terms of students. These variables are 21 in total and are indicated by an asterisk (*) in **Table 5**.

As for the employers, the factor analysis showed that the first 7 factors interpret 66.107% of the total variance and consist of 18 important variables. These variables are denoted by (**) in **Table 5**.

Table 4. Results of the key variables that determine the degree of satisfaction from the A.P. benefits.

Variables of the first research question	A. Degree of satisfaction from the A.P. benefits									
	Apprentices					Employers				
	Little	Enough	Very	Sum of apprentices	*P*-value	Little	Enough	Very	Sum of employers	*P*-value
1. Significant degree of satisfaction with the offered knowledge and skills */**/(A)/(E)	**8 1.3%**	**14 2.3%**	**510 82%**	**622 100%**		**18 6.8%**	**18 6.8%**	**201 75.8%**	**265 100%**	
2. High degree of satisfaction with the provided information about apprenticeship program*/**/(A)	9 1.4%	17 2.7%	470 75.6%	Total number of apprentices who are very satisfied from the A.P. benefits. 554/89%		11 4.2%	8 3%	176 66.4%	Total number of employers who are very satisfied with their participation in the A.P. 209/78.9%	<0.001
3. High relevance between the work and the subject of study of the apprenticeship*/(A)/(E)	7 1.1%	12 1.9%	479 77%		<0.001	14 5.3%	15 5.7%	185 69.8%		
4. Wide variety of activities at work*/(A)/(E)	8 1.3%	11 1.8%	480 77.2%			29 10.9%	27 10.2%	209 78.9%		0.003
5. Significant degree of employment of apprentices in different subjects beyond the vocation*/**	11 1.8%	12 1.9%	292 46.9%			7 2.6%	5 1.9%	62 23.4%		
6. The specialization acquired by the apprentices enable them to a great extent to cope with the vocation*/**/(A)/(E)	8 1.3%	12 1.9%	506 81.4%			8 3%	9 3.4%	143 54%		<0.001
7. The apprentices took several initiatives*	10 1.6%	13 2.1%	454 73%			2 0.8%	4 1.5%	114 43%		
8. The employers had the appropriate facilities with the necessary resources */**/(A)/(E)	12 1.9%	20 3.2%	492 79.1%			25 9.4%	23 8.7%	204 77%		
9. There was a lot of collaboration with the employees and the apprentices*/**/(A)/(E)	9 1.4%	21 3.4%	514 82.6%			10 3.8%	17 6.4%	204 77%		
10. There was extensive guidance from experienced colleagues */**/(A)/(E)	9 1.4%	23 3.7%	504 81%			23 8.7%	21 7.9%	208 78.5%		
11. There was a significant degree of encouragement to the apprentices in the workplace when they had difficulty in*/**/(A)/(E)	7 1.1%	20 3.2%	501 80.5%		<0.001	25 9.4%	25 9.4%	207 78.1%		
12. The work place was very suitable to provide the appropriate education for young people*/**/(A)/(E)	8 1.3%	15 2.4%	497 79.9%			24 9.1%	20 7.5%	204 77%		
13. The extensive existence of an experienced executive of the same or related studies in the workplace with the apprentices	11 1.8%	22 3.5%	512 82.3%			24 9.1%	22 8.3%	201 75.8%		<0.001
14. Sufficient use of the vacation leave that the apprentices are entitled to*/(E)	13 2.1%	26 4.2%	523 84.1%			25 9.4%	22 8.3%	200 75.5%		
15. The existence of several health and safety rules at work*/**/(A)/(E)	10 1.6%	22 3.5%	521 83.8%			25 9.4%	24 9.1%	207 78.1%		

Continued

16. The 9 months at the work place were enough for the professional improvement of the apprentices/(A)/(e)	9 1.4%	14 2.3%	450 72.3%		11 4.2%	9 3.4%	153 57.7%	
17. There were a lot of knowledge and skills that the apprentices lacked and made it difficult to work*/**/(E)	7 1.1%	13% 2.1%	308 49.5%		20 7.5%	11 4.2%	126 47.5%	0.074
18. There was sufficient school-employer cooperation**/(A)/(E)	9 1.4%	16 2.6%	484 77.8%		20 7.5%	18 6.8%	197 74.3%	<0.001
19. Satisfactory salary of the apprentices depending on the work hours	2 0.3%	9 1.4%	319 51.3%		19 7.2%	17 6.4%	153 57.7%	0.543
20. High possibility for the apprentices to stay at their work place, after the end of the program*/**/(E)	4 0.6%	10 1.6%	271 43.6%		17 6.4%	9 3.4%	108 40.8%	0.005
21. High correlation between knowledge provided by the workplace and the school**/(E)	4 0.6%	8 1.3%	308 49.5%		9 3.4%	7 2.6%	137 51.7%	
22. Existence of increased control by the responsible teacher in the workplace**/(E)	8 1.3%	16 2.6%	432 69.45%		17 6.4%	15 5.7%	185 69.8%	
23. Colleagues treated the apprentices extensively as active and equal member of the company*/**/(A)	9 1.4%	15 2.4%	444 71.4%		26 9.8%	20 7.5%	199 75.1%	
24. The apprenticeship met the expectations of the apprentices/ employers in a great extent*/**/(A)/(E)	3 0.5%	4 0.6%	513 82.5%		0 0%	2 0.8%	197 74.3%	
25. The apprentices were extensively employed with real working conditions/(E)	9 1.4%	16 2.6%	517 83.1%		18 6.8%	17 6.4%	204 77%	<0.001
26. During the program the apprentices comprehended the vocation to a great extent**/(A)/(E)	10 1.6%	19 3.1%	525 84.4%		10 3.8%	13 4.9%	197 74.3%	
27. The apprentices acquired skills and knowledge to a large extent in order to claim a job in the future*/**/(A)/(E)	6 1.0%	15 2.4%	502 80.7%	<0.001	5 1.9%	10 3.8%	183 69.1%	
28. High degree of satisfaction with the coordination of the whole process */**/(A)/(E)	4 0.6%	10 1.6%	465 74.8%		12 4.5%	12 4.5%	195 73.6%	
29. At the end of the program the apprentices were considered to be fully trained in the vocation*/**/(A)/(E)	4 0.6%	12 1.9%	455 73.2%		1 0.4%	9 3.4%	139 52.5%	
30. High degree of recommendation for the program by apprentices/ employers */**/(A)/(E)	5 0.8%	13 2.1%	518 83.3%		9 3.4%	10 3.8%	198 74.7%	<0.001
31. High demand for recommendation letters by the apprentices	4 0.64%	11 1.8%	313 50.3%		4 1.5%	4 1.5%	88 33.2%	
32. High degree of satisfaction with the quality of the program	3 0.5%	5 0.8%	484 77.8%		9 3.4%	12 4.5%	195 73.6%	

Table 5. Results of the key questions/variables that determine the degree of satisfaction with the quality of the A.P.

Variables of the second research question	B. Degree of satisfaction with the quality of the whole program									
	Apprentices					Employer				
	Little	Enough	Very	Sum of apprentices	*P*-value	Little	Enough	Very	Sum of employers	*P*-value
1. Significant degree of satisfaction with the offered knowledge and skills*	26 4.2%	45 7.2%	461 74.1%	622 100%		10 3.8%	20 7.5%	207 78.1%	265 100%	
2. High degree of satisfaction with the provided information about apprenticeship program*	16 2.6%	36 5.8%	444 71.4%			9 3.4%	6 2.3%	180 67.9%		<0.001
3. High relevance between the work and the subject of study of the apprenticeship*	23 3.7%	37 5.9%	438 70.4%			12 4.5%	15 5.7%	187 70.6%		
4. Wide variety of activities at work*	21 3.4%	37 5.9%	441 70.9%		<0.001	14 5.3%	21 7.9%	189 71.3%		0.015
5.Significant degree of employment of apprentices in different subjects beyond the vocation*/**	23 3.7%	26 4.2%	66 10.6%	Total number of apprentices who are very satisfied with their participation in the A.P. 492 71%		3 1.1%	9 3.4%	62 23.4%	Total number of employers who are very satisfied with their participation in the A.P. 216 81.5%	0.356
6. The specialization acquired by the apprentices enable them to a great extent to cope with the vocation*/**	22 3.5%	42 6.8%	462 74.3%			5 1.9%	10 3.8%	145 54.7%		<0.001
7. The apprentice took several initiatives*	26 4.2%	42 6.8%	409 65.8%			2 0.8%	5 1.9%	113 42.6%		
8. The employers had all the appropriate facilities with the necessary resources*/**	28 4.5%	47 7.6%	449 72.2%			17 6.4%	28 10.6%	207 78.1%		0.123
9. There was a lot of collaboration with the employees and the apprentices*/**	31 5%	47 7.6%	466 74.9%			12 4.5%	17 6.4%	202 76.2%		<0.001
10. There was extensive guidance from experienced colleagues*/**	32 5.1%	49 7.9%	455 73.2%			15 5.7%	27 10.2%	210 79.2%		
11. There was a significant degree of encouragement to the apprentices in the workplace when they had difficulty in*/**	27 4.3%	50 8%	451 72.5%		<0.001	16 6.%	27 10.2%	214 80.8%		
12. The work place was very suitable for the appropriate education of young people*/**	23 3.7%	44 7.1%	453 72.8%			17 6.4%	24 9.1%	207 78.1%		<0.001
13. The extensive existence of an experienced executive of the same or related studies in the workplace with the apprentices	36 5.8%	47 7.6%	462 74.3%			13 4.9%	26 9.8%	208 78.5%		
14. Sufficient use of the vacation leave that the apprentices are entitled to*	41 6.6%	54 8.7%	467 75.1%			17 6.4%	25 9.4%	205 77.4%		0.208
15. The existence of several health and safety rules at work*/**	36 5.8%	53 8.5%	464 74.6%			15 5.7%	28 10.6%	213 80.4%		<0.001

Continued

16. The 9 months at work place were enough for the professional improvement of the apprentices	23 3.7%	36 5.8%	414 66.6%		8 3%	8 3%	157 59.2%	
17. There were a lot of knowledge and skills that the apprentices lacked and made it difficult to work*/**	17 2.7%	26 4.2%	285 45.8%		11 4.2%	15 5.7%	131 49.4%	0.316
18. There was sufficient school-employer cooperation**	24 3.9%	29 4.7%	456 73.3%		12 4.5%	21 7.9%	202 76.2%	<0.001
19. Satisfactory salary of the apprentices depending on the work hours	12 1.9%	15 2.4%	303 48.7%		12 4.5%	17 6.4%	160 60.4%	0.066
20. High possibility for the apprentices to stay at their work after the end of the program*/**	17 2.7%	18 2.9%	250 40.2%		7 2.6%	10 3.8%	117 44.2%	0.053
21. High correlation between knowledge provided by the workplace and the school**	12 1.9%	18 2.9%	290 46.6%		3 1.1%	8 3%	142 53.6%	<0.001
22. Existence of increased control by the responsible teacher in the workplace**	23 3.7%	36 5.8%	397 63.8%		12 4.5%	15 5.7%	190 71.7%	<0.001
23. Colleagues treated the apprentices extensively as active and equal member of the company*/**	28 4.5%	36 5.8%	404 65%		14 5.3%	23 8.7%	208 78.5%	
24. The apprenticeship met the expectations of the apprentices/ employers in a great extent*/**	15 2.4%	32 5.1%	473 76%	<0.001	4 1.5%	5 1.9%	190 71.7%	
25. The apprentices were extensively employed with real working conditions	33 5.3%	47 7.6%	462 74.3%		12 4.5%	18 6.8%	209 78.9%	
26. During the program the apprentices comprehended the vocation to a great extent**	32 5.1%	50 8%	472 75.9%		5 1.9%	14 5.3%	201 75.8%	
27. The apprentices acquired skills and knowledge to a large extent in order to claim a job in the future*/**	23 3.7%	40 6.4%	460 74.0		3 1.1%	8 3%	187 70.6%	<0.001
28. High degree of satisfaction with the coordination of the whole process*/**	1 0.2%	14 2.3%	464 74.6%		2 0.8%	6 2.3%	211 79.6%	
29. At the end of the program the apprentices were considered to be fully trained in the vocation*	14 2.3%	29 4.7%	428 68.8%		4 1.5%	4 1.5%	141 53.2%	
30. High degree of recommendation for the program by apprentices/ employers*/**	14 2.3%	40 6.4%	478 76.8%	<0.001	3 1.1%	7 2.6%	207 78.1%	
31. High demand for recommendation letters by the apprentices	17 2.7%	25 4%	286 46%		3 1.1%	3 1.1%	90 34%	
32. High degree of satisfaction from the benefits of the apprenticeship	24 3.9%	46 7.4%	484 77.8%		4 1.5%	10 3.8%	195 73.6%	

In Table 4, the variables presented with (A) for apprentices or (E) for employers have the highest relevance with each other, with Extraction value of Factor Analysis greater than 0.6 (Bersimis, 2020) and value of the statistical criterion Kaiser Meyer Olkin very high 0.962 and 0.965 for the research question A while 0.905 and 0.906 for the B, students and employers respectively.

The chi-square test performed on the same employer and student variables showed a P value > 0.05, therefore: 1) the populations (apprentices and employers) from which the independent samples came, are represented in equal percentages in the survey (test of homogeneity of independent populations) (Zavras, 2004) and 2) the populations are independent of each other (independence control) (Antoniou & Costoglou, 2017).

While the chi-square informs the researcher about the intensity of the variables, it does not give any indication for the direction of the correlation (Siomkos & Vasilikopoulou, 2005). To test the linear relationship between the variables of the research queries, the Pearson correlation coefficient was applied (Table 6).

Table 6. Pearson coefficient.

Variables with the highest/lowest correlation coefficient with the research queries	Research queries	
	Degree of satisfaction from the A.P. benefits	Degree of satisfaction with the quality of the whole A.P.
5. Apprentices were employed in different tasks beyond the vocation	0.104	0.116
6. The specialization acquired by the apprentices enables them to cope with the vocation	0.701	0.644
17. The apprentices lacked knowledge/skills that resulted in difficulties at work	0.224	0.231
20. Possibility of the apprentice to stay at work place after the end of the program	0.237	0.247
24. The apprenticeship program met the students' expectations	0.787	0.773
28. Degree of satisfaction with the coordination of the whole process	0.703	0.915
30. Degree of recommendation for the apprenticeship program by apprentices/employers	0.736	0.750
31. Demand for letters of recommendation	0.306	0.267

The table above presents only the values of the coefficient that have a high and low linear correlation with the research questions. There is no negative sign in the results of the correlation coefficient, meaning that the variables have a positive correlation with each other (when one variable increases, the other also increases).

3.2. Comparison of Student and Employer Responses

The Mann-Whitney or "U" test was applied to compare the students and employers answers (comparison of attitudes, perceptions and habits) (Siomkos & Vasilikopoulou, 2005). At first glance, Table 4 and Table 5 show that the answers (in percentages) of students and employers were almost the same. All the comparisons with P value < 0.05 are considered statistically significant (Table 7, bold values).

Table 7. Results from the Mann-Whitney test.

Mann-Whitney test	*P* value
1. Degree of Satisfaction with the offered knowledge and skills	**<0.001**
2. Degree of satisfaction with the provided information about A.P.	**<0.001**
3. Relevance between the work/subject of study of the A.P.	0.850
4. Variety of activities at work	0.116
5. Apprentices were employed in different tasks beyond the vocation	**<0.001**
6. The specialization acquired by the apprentices enables them to cope with the vocation	**<0.001**
7. The apprentices took initiatives	**<0.001**
8. The employers had the appropriate facilities with the necessary resources	0.109
9. There was collaboration between the other employees and the apprentices	**<0.001**
10. There was guidance from experienced colleagues	0.863
11. The apprentices were encouraged when they had difficulty in the workplace	0.452
12. The work place was suitable for the appropriate education of young people	0.184
13. There was an experienced executive of the same or related studies in the workplace with the apprentices	0.160
14. The apprentices used the vacation leave they were entitled to	0.869
15. There were health and safety rules at work	**0.001**
16. The 9 month period at work was enough for the professional improvement of the apprentices	**<0.001**
17. The apprentices lacked knowledge/skills that resulted in difficulties at work	0.318
18. There was cooperation between the school and the employer	0.631
19. The apprentices salary compared to the work hours was satisfactory	**<0.001**
20. Possibility of the apprentice to stay at work place after the end of the program	0.182
21. The knowledge provided by the school and the work place was relevant to the vocation	**<0.001**
22. A responsible teacher supervised the workplace	**<0.001**
23. The employees treated the apprentice as an active and equal member of the work place	0.207
24. The apprenticeship program met the students' expectations	**<0.001**
25. The apprentices dealt with real working conditions	0.602
26. During the A.P. the apprentices comprehended the vocation	**<0.001**
27. The apprentices acquired skills/knowledge in order to claim a job in the future	**<0.001**
28. Degree of satisfaction with the coordination of the whole process	**0.020**
29. At the end of the program the apprentices were considered to be fully trained in the vocation	**<0.001**
30. Degree of recommendation for the apprenticeship program by apprentices/ employers	**<0.001**
31. Demand for letters of recommendation	**<0.001**
32. Degree of satisfaction with the quality of the program	**0.003**
33. Degree of satisfaction from the benefits of the apprenticeship	**<0.001**

Table 7 shows in bold all the values of $P < 0.05$ which means that in these proposals there is a statistically significant difference in the answers given by apprentices and employers.

Table 8 both summarizes and analyzes the results for the two research project questions from both apprentices and employers.

Table 8. Total results of each variable from the statistical analysis. Where there is (*) the variables coincided, without coming to a conclusion. In the questions with (√) the variables interpreted the research questions satisfactorily. In the questions with (-) either the variables did not satisfactorily interpret the research questions, or the answers of the apprentices and employers were different. In column (1) the variable contains a significant percentage of covariance. It contains information related to the other variables. In column (2) the variable satisfactorily interprets the research question A. In column (3) the variable satisfactorily interprets the research question B. In column (4) employers and apprentices answered almost the same research questions (10% margin). In column (5) [results from Table 7 (U-test) are also contained)] it seems that there was a statistically significant difference in the answers of employers and apprentices.

	(1) Each variable contains a percentage of covariance	(2) Degree of satisfaction from the benefits of the apprenticeship		(3) Degree of satisfaction with the quality of the program.		(4) Employers and apprentices answered almost the same to the research questions (10% margin).		(5) There is a statistically significant difference in the responses of employers and apprentices
		Apprentices	Employers	Apprentices	Employers	1 Query Table 4	2 Query Table 5	
1. Degree of satisfaction with the offered knowledge and skills	√	√	√	√	-	√	√	Employers were more satisfied with the knowledge they have provided, than the apprentices with the knowledge they have received
2. Degree of satisfaction with the provided information about A.P.	√	√	√	√	-	√	√	The apprentices were more satisfied with the information received about the A.P. than the employers
3. Relevance between the work and the subject of study of the apprenticeship	√	√	-	√	-	√	√	There was no notable difference
4. Variety of activities at work	√	√	-	√	-	-	√	There was no notable difference
5. Apprentices were employed in different tasks beyond the vocation	-	√	√	√	√	-	-	A larger percentage of apprentices reported that they were engaged in subjects beyond their studies, compared to what the employers reported
6. The specialization acquired by the apprentice enable them to a great extent to cope with the vocation	√	√	√	√	√	-	-	A larger percentage of the apprentices considered that the acquired knowledge will help them to get involved in the vocation, compared to the employers
7. The apprentices took initiatives	-	√	-	√	-	-	-	A larger percentage of apprentices stated that they have taken initiatives, compared to the percentage reported by the employers
8. The employer had the appropriate facilities with the necessary resources	√	√	√	√	√	-	-	There was no notable difference

Continued

9. There was collaboration between the other employees and the apprentices	√	√	√	√	√	√	Apprentices were more satisfied compared to the employers
10. There was guidance from experienced colleagues	√	√	√	√	√	√	There was no notable difference
11. The apprentices were encouraged in when they had difficulty the workplace	√	√	√	√	√	-	There was no notable difference
12. The work place was suitable for the appropriate education of young people	√	√	√	√	√	-	There was no notable difference
13. There was an experienced executive of the same or related studies in the workplace with the apprentices	√ only for employers	-	-	-	-	√	There was no notable difference
14. The apprentices used the vacation leave they were entitled to	√	√	-	√	-	√	There was no notable difference
15. There were health and safety rules at work	√	√	√	√	√	√	Employers considered that safety rules were followed to a greater extent, compared to the apprentices
16. The 9 month period at work was enough for the professional improvement of the apprentices	√ only for employers	-	-	-	-	-	Apprentices considered that 9 months were enough for their professional improvement at a higher percentage, compared to the employers
17. The apprentices lacked knowledge/skills that resulted in difficulties at work	√ only for employers	√	√	√	√	-	There was no notable difference
18. There was cooperation between the school and the employer	√	-	√	-	√	√	There was no notable difference
19. The apprentices salary compared to the work hours was satisfactory	-	-	-	-	-	-	The employers reported in a larger percentage than the apprentices that the apprentices' salary was quite satisfactory
20. Possibility of the apprentice to stay at work place after the end of the A.P.	√ only for employers	√	√	√	√	-	There was no notable difference
21. The knowledge provided by the school and the work place was relevant to the vocation.	√ only for employers	-	√	-	√	-	A higher percentage of employers considered that work and school knowledge are related, compared to the apprentices
22. A responsible teacher supervised the workplace	√ only for employers	-	√	-	√	-	Employers were more satisfied with the supervision of teachers in the workplace, compared to the apprentices
23. The employees treated the apprentice as an active and equal member of the work place	√ only for apprentices	√	√	√	√	-	There was no notable difference

Continued

24. The apprenticeship program met the apprentices and the employers expectations	√	√	√	√	√	-	-	Apprentices were more satisfied, compared to the employers
25. The apprentices dealt with real working conditions	√ only for employers	-	-	-	-	√	√	There was no notable difference
26. During the program the apprentices comprehended the vocation	√	-	√	-	√	√	√	A larger percentage of apprentices considered that they have comprehended the vocation, compared to the employers
27. The apprentices acquired skills/knowledge in order to claim a job in the future	√	√	√	√	√	-	-	A larger percentage of apprentices considered that with the knowledge they had acquired they could more easily claim a place in the labor market, compared to the employers
28. Degree of satisfaction with the coordination of the whole A.P.	√	√	√	√	√	√	√	Employers were more satisfied with the coordination of the program, compared to the apprentices
29. At the end of the program the apprentices were considered to be fully trained in the vocation	√	√	√	√	-	-	-	A greater percentage of apprentices considered that they were fully trained by the end of the A.P. compared to the employers
30. Degree of recommendation for the A.P. by apprentices/employers	√	√	√	√	√	√	√	More apprentices would recommend apprenticeships than the employers
31. Demand for letters of recommendation	-	-	-	-	-	-	-	A greater percentage of apprentices had requested a letter of recommendation, compared to what the employers reported
32. Degree of satisfaction with the quality of the whole A.P.	√	√	√	*	*	√	*	Employers were more satisfied with the quality of the program, compared to the apprentices
33. Degree of satisfaction with the benefits of the A.P.	√	*	*	√	√	*	-	Apprentices were more satisfied with the benefits they had gained from the apprenticeship, compared to the employers

4. Conclusions

The initial information received about the A.P. by apprentices and employers from the institutions was quite satisfactory (Question 2). The apprentices acquired sufficient knowledge and skills (Question 1) that will substantially help them in the future to practice individually in their professions (Question 6) or to claim a place in the labor market (Question 27) as they dealt with various subjects concerning their vocations (variety of activities) (Question 4). In rare cases, it was reported by the apprentices that they were also engaged in subjects beyond their re-

sponsibilities (Question 5). In each case, the needs and expectations of the concerned parties were met (Question 24). Overall, respondents indicated that the program organization was fairly good (despite the existing bureaucracy) (Question 28) and would highly recommend the A.P. to other organizations and students (Question 30).

The selected workplaces were deemed suitable to train the apprentices (Question 12) since they had all the necessary material, technical infrastructure and the required equipment (Question 8). In addition, safety and hygiene rules were applied in the workplace by all staff (Question 15). There was guidance from experienced colleagues (Question 10) with studies in the same or related subject with the vocation (Question 13). Colleagues treated apprentices as equal members of the group (Question 23). The cooperation between the employees was quite good (Question 9) and in case the apprentices met difficulties during the A.P., there was support and encouragement from all the members of the team (Question 11).

It is worth noting that: a) there was no required correlation between the curriculum and the subject of employment in the workplace (Question 3); and b) school knowledge was not relevant to the knowledge provided in the workplace (Question 21).

There were many cases where different views were expressed from the apprentices and employers.

In order to reflect the quality of the whole A.P., the apprentices considered it is important to receive opportunities for initiatives that would familiarize them with the vocation (Question 7). Employers, on the other hand, considered initiative-taking to be insignificant, because they want the apprentices to deal strictly with only what was assigned to them.

The apprentices considered that it is important to use the leave to which they are entitled (Question 14) but not the employers, although they consider the students as equal members of the team.

In addition, as reported by all and especially the employers the apprentices lacked knowledge and skills that made it difficult for them to exercise the vocation (Question 17). Employers consider it important that at the end of the A.P., the apprentices have a full understanding of the nature of the vocation (Question 26), which is related to the professionalism of employers and their desire to train the staff properly.

The benefits of participating in the A.P. (Research question A) are directly related to the degree of education and training of apprentices in the workplace (Question 29). For employers, apprentices were not fully trained in the vocation. However, we can mention that for the employers the quality of the education they offered (research question B) was not related to the training of the students and finally to what the apprentice obtains (Question 29).

Employers considered that there was room for improvement in the context of employer-school cooperation (Question 18). Supervision by teachers in the workplace is not considered important by learners (Question 22). The duration (9 mon-

ths) of the A.P. (Question 16), does not determine either the quality or the degree of satisfaction from participating in the A.P. Most of the apprentices wanted to continue their work after the end of the A.P. The apprentices were not satisfied with the salary they received for their work hours (Question 19), while the employers considered that the salaries given were satisfactory.

It was found that for both groups of respondents, the employment of apprentices in real working conditions (Question 25) is not considered important for the research questions. Obviously, it was taken for granted that working conditions in the workplace were real.

Finally, apprentices had few probabilities to retain their working position after the end of the program (Question 20).

5. Suggestions for Improving A.P.

Present research showed that apprentices and employers were satisfied with the A.P., however, a number of critical suggestions for further A.P. improvement and efficacy, are listed shortly below:

- Employers should encourage apprentices to take initiatives;
- Apprentices should not fall victims to exploitation by employers;
- Apprentices have to be granted the leave which they are entitled to;
- School has to fill the gaps that arise in the cognitive subjects of the apprentices through courses of study;
- School and supervisors should coordinate more often with the employer;
- Visits of the supervisors to the workplace are substantial and constructive;
- Basic salary should be increased to attract more apprentices;
- Award premiums establishment e.g. reducing taxation, etc.;
- Employers should regularly inform the Ministry over the latest developments in their vocation, for the improvement of the curricula, since the vocational education and A.P. must be up-to-date and meet the changing needs of the labor market;
- Knowledge offered by the school has to be relevant with the knowledge/skills offered in the workplace;
- Apprentices should be employed only in positions that are directly related to the vocation;
- A.P. should substantially reduce existing bureaucracy for participation in the program.

Author Statement

I formally declare that academic ethics are observed, supporting the strict study style. No published or written content is included by anyone other, than what is expressly stated in the paper.

Conflicts of Interest

The authors stated that there are no competing interests.

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