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EVALUATION OF EXPERIENCE OF DISTANCE-LEARNING THAT WAS PROVIDED BY GREEK PUBLIC INSTITUTES OF VOCATIONAL TRAINING (PIVT) DURING THE PANDEMIC COVID-19 CRISIS

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In the past two years, the sudden outbreak of the coronavirus was a serious problem that affected all areas of social and economic life. This could not leave the education area unaffected at almost all levels, as the traditional education techniques were replaced with distance learning programs. At the sector of professional training, distance education had already done some work before the onset of the coronavirus pandemic, the need for its mass use also highlighted problems arising from its application. The survey aims to find out the degree of satisfaction of Public Institutes of Vocational Training (PIVT) students in Greece during the pandemic Covid-19 crisis. It also attempts to identify the factors that influence the level of satisfaction.
The results of the study demonstrate that the degree of satisfaction with online education depends both on the gender of the participants, as well as on their age and level of education.

Keywords: vocational training, distance learning, perceptions

1. Introduction

The outbreak of Covid-19 has caused a particular upheaval in the field of education over the last two years. In most countries, live lessons were discontinued in favor of online courses. The new educational landscape and the needs brought on by large-scale online education have been a challenge for the global educational community [5–7, 11]. This had to have an impact on vocational education, which, like the rest of Greece's educational levels, adapted its educational plans to the needs of distance education. Although online teaching is not a new pedagogical method, it

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has never been used on such a large scale and has not been adequately evaluated for its effectiveness in meeting educational objectives. Although online education had not been used on a large scale prior to the pandemic's outbreak, there are studies in the literature, evaluating the distance education process.

E-learning is an educational activity that provides personalized, integrated, and dynamic learning content in real time, strengthening knowledge communities and connecting learners and instructors with experts [7]. This process, which takes place through the use of internet technologies, assists learners in improving their knowledge and performance while also allowing them to tailor their experiences and meet their personal learning goals.

For more than a decade, numerous studies have shown that online learning techniques are effective in the case of vocational education, as well as increasing student satisfaction rates through interaction [8,13]. In order to assess the effectiveness of online learning, Cigdem [7] distributed the Hung et al. [12] online Learning Readiness Scale (OLRS) to 725 vocational students in 2014. OLRS is made up of 18 elements that are organized into five factors. Computer/Internet self-efficacy (CIS), self-directed learning (SDL), student control (LC), motivation to learn (ML), and self-efficacy online communication have all been studied concepts (OCS). According to the study, students were generally prepared for online learning, but they needed to improve specifically in the CIS and OCS to succeed. Some OLRS dimensions, particularly the CIS dimension, are significantly influenced by student characteristics (PC ownership, department, and type of high school graduation). Stiller et al. [4] investigated the extent to which learners drop out of a professional online video training in 2016 given the importance of online learning in vocational education over the last 20 years, but the well-known issue of high dropout rates persists. Students who dropped out of school were found to have more negative attitudes toward computers and a higher level of stress for the computer than active students.

Many studies have been conducted around the world since the spread of Covid-19 to investigate the impact of the pandemic outbreak on the educational process of vocational education. Syauqi et al. [9] investigated Indonesian vocational engineering students' attitudes toward online learning in the aftermath of the Covid-19 pandemic in 2020. A structured questionnaire with a Likert scale was administered to 56 students in this study. The findings of this study shows that teachers in charge of online learning did not meet students' expectations. Students believe that online learning can provide motivation and ease of learning, but not a better experience or productivity in skill acquisition. Despite having easy access to resources, some students were hesitant to use them in a sustainable manner in the future. Almusharraf et al. [10] investigated the learning experiences and level of satisfaction of post-secondary vocational students in Saudi Arabia using transformative learning theory [1]. According to the survey results, students are satisfied with the online process as well as the Google Classroom and Moodle platforms. In China, Han et al. [3] conducted a large-scale study. The findings shows that the online learning process in China was successful, with 270 732 vocational students participating, and that the institutions met the challenges posed by the pandemic.

Although the literature provides a multitude of articles in relation to the distance education process provided by vocational schools during the outbreak of the pandemic, there has been no systematic study concerning the case of Greece. The current study aims to assess the experience of distance-learning that was provided by Public Institutes of Vocational Training (PIVT), during the pandemic Covid-19 crisis and to investigate the correlations between the independent variables of the research and the degree of vocational student satisfaction with the distance education process.

Even though the literature review indicates that studies on the level of satisfaction of vocational students with the process of online learning have been conducted in several countries, no corresponding study has been conducted in the case of Greece. The purpose of this paper is to investigate the degree of satisfaction of students of vocational schools in Greece with the process of online education, as well as the extent to which the set educational goals and the challenges posed by the pandemic.

2. Institutional framework of public institutes of vocational training in Greece

In 1992, by the Low 2009, the National System of Vocational Education and Training (NSVET) in Greece was established. Its aims are to promote and to develop vocational education in the country. By the same low, the Organization of Vocational Education and Training (OVET) was established as a legal entity, responsible for organizing, operating and supervising the Institutes of Vocational Training (IVT). The Public Institutes of Vocational Training in Greece dates back to the same times. They are a separate part of the educational system, which does not relate to any educational level, while they are supposed to fulfil specific goals, like the provision of any kind of vocational training, initial or supplementary, as well as the provision of corresponding qualifications of the trainees, by teaching of scientific, technical, professional and practical knowledge and cultivating of corresponding skills, in order to facilitate trainees' professional integration into society and to ensure their adaptation to the changing needs of the production process.

The system of Vocational Education and Training (VET) in Greece was greatly influenced by the relevant EU policies and developed with support by the respective European funding. VET in Greece is a term that includes two different subsystems: **initial or basic** vocational training and **lifelong** vocational training. While the initial vocational training seems to be better organized due to the historical development of technical and vocational education in Greece, continuing vocational training has not been developed in an organized and coordinated manner.

In 2013 the VET was modernized (Low 4186) providing two options for initial vocational training in the frame of general upper secondary education:

- Initial vocational training within the formal education system in the second cycle of secondary education in the Vocational Higher Secondary Schools and in the Vocational Schools of the Labor Organization (OAED) for young people aged 16–23, who have graduate from the first cycle of secondary education.

- Initial vocational training outside the formal education system in vocational training schools for young graduates of compulsory education, vocational training institutes for new graduates of secondary education and vocational training schools, as well as centers and colleges for lifelong learning education up to 29 years or unemployed 18–29 years.

The sample consists of 774 learners from Public Institutes of Vocational Training (PIVT'S) of Western Greece. Specifically from the PIVT'S of Patras, West Achaia, Pyrgos, Amaliadas, Aigio, Nafpaktos, Ioannina, Igoumenitsa, Preveza and Arta, who were trained during the crisis period 2020–2021. The data is collected during all semesters of studies and the internship.

The respondents of the survey are students in following specialties: Chef, Tourism Professions, Pastry Chef and Baker, Radiology - Actinology, Medical Laboratories, Cosmetology, Hairdressing, Network and Computer Technician, Multimedia and Web designer, Management, Pharmacy Assistant, Nursing, Journalism, etc..

3. Research methods and tools

Cohort. In this study, a total of 774 learners were called to anonymously complete a concise and customized questionnaire of total duration about 10 minutes, as provided by Google forms.

Questionnaire. The questionnaire consisted of 28 questions, including both closed-ended and open-ended questions in order to facilitate the evaluation of the experience earned by distance learning, in a more holistic way.

Specifically, the majority of questions, 23 out of 28, were closed-ended questions, of which five questions were about the attendants' demographic characteristics, two questions were about the by public Institutes of Vocational Training, four about the exploitation of asynchronous education platforms, four about the exploitation of synchronous education platforms, two about their general usage, and finally six of them were about the evaluation of the total experience of distance-learning.

On the other hand, the remaining five open-ended questions exhorted attendants to write down their opinions suggesting methods to optimize the efficiency of distance-learning.

Statistical analysis. All the answers given by the 774 attendants were selected, processed, and statistically analyzed, exploiting the Statistical software of SPSS v. 17.0. Aiming to investigate the existence of statistical differences across the variables, the statistical test of Pearson chi-square is employed. Specifically, chi-square is chosen to examine the differences between categorical variables from a random sample in order to judge goodness of fit between expected and observed results.

Given that the demographic variables of gender, age, education level, marital status and number of children are categorical variables, results derived from the Pearson chi-square test are presented on this section.

4. Results

Results of the descriptive statistical analysis provided in Table 1, demonstrate the demographic characteristics of the respondent sample. Regarding the variable of gender, the majority of respondents are females ($n = 532$), while the remaining are males ($n = 242$). The majority of respondents ($n = 274$) belong to the age group of 18–25 years old, followed by the respondents of the age group of 36–45 years old ($n = 198$).

Regarding the effect of gender in the evaluation of the distance education process (Table 2) the application of the chi-square test shows that women consider that the exploitation of the asynchronous platforms is used by the educational staff for the organization of lessons and for communication between professors and students in a greater percentage than men. This difference between the two genders is statistically significant at the 0.05 significance level ($\chi^2(4) = 30.565$, $p = 0.0001 < 0.05$). At the same time, the application of the chi-square test shows that women believe that the content provided by the asynchronous distance learning platform is accurate in a higher percentage than men. This difference between the two genders is statistically significant at the 0.05 significance level ($\chi^2(4) = 13.048$, $p = 0.011 < 0.05$). In addition, it is demonstrated that women make use of the material posted on asynchronous distance learning platforms to a greater extent than men ($\chi^2(4) = 34.004$, $p < 0.0001 < 0.05$), while at the same time their information update made easier using E-class ($\chi^2(4) = 41.532$, $p < 0.0001 < 0.05$). It is also observed that women believe in a greater percentage that the implementation of distance education has optimized the quality of the education provided. The difference shown is statistically significant ($\chi^2(4) = 12.082$, $p = 0.017 < 0.05$). At the same time, women believe in a higher percentage than men that a possible expansion of distance education will lead

Table 1. Demographic results

Demographic variable		Frequency (n)	Frequency %
Gender	Female	532	68.7
	Male	242	31.3
	Other	0	0.0
Age (years)	18–25	274	35.4
	26–35	138	17.8
	36–45	198	25.6
	46–55	128	16.5
	55+	36	4.7
Educational level	Gymnasium	2	0.3
	High School	434	56.1
	High Technical School	176	22.7
	BSc-Technical University (TEI)	45	5.8
	BSc-University (AEI)	48	6.2
	MSc	24	3.1
	PhD	0	0.0

Table 2. Questions that shows statistical significance with respect to gender

Question	p-value
Regarding to the exploitation of **asynchronous** education platforms in what extend do you believe that the e-learning platform is properly used by the educational staff to organize the courses and for the communication between professor and student?	0.001**
Regarding to the exploitation of **asynchronous** education platforms in what extend do you believe that the information provided by the platform was adequate?	0.011*
Regarding to the exploitation of **asynchronous** education platforms in what extend do you look educational material into the E-Class platform?	0.001**
Regarding to the exploitation of **asynchronous** education platforms, do you believe that the E-Class platform has made your information updating, easier?	0.001**
Regarding to the exploitation of **asynchronous** education platforms in what extend do you believe that this application has contributed to the optimization of the educational quality provided by the information management department?	0.017*
Regarding to the exploitation of **asynchronous** education platforms in what extend do you believe that, if this application is fully exploited, it is going to contribute to the optimization of educational quality?	0.010*
Regarding to the exploitation of **asynchronous** education platforms in what extend to do you believe that the application is easy to use?	0.015*

to a further optimization of the quality of the education provided ($\chi^2(4) = 13.197$, $p = 0.010 < 0.05$), while at the same time they consider the use of the asynchronous platform easier than men ($\chi^2(4) = 12.269$, $p = 0.015 < 0.05$). As far as synchronous education platforms are concerned, the application of the chi-square test shows that women have a more positive opinion than men regarding the use of synchronous education platforms. The observed difference between the two genders is statistically significant at the 0.05 significance level ($\chi^2(4) = 9.601$, $p = 0.048 < 0.05$).

Regarding to the effect of age in the evaluation of the distance education process (Table 3), the application of the chi-square test shows that the age group over 55 years considers that through the distance education process they have strengthened the skills related to solving everyday problems. The difference shown in relation to the other age groups is statistically significant ($\chi^2(16) = 41.780$, $p = 0.000 < 0.05$). At the same time, people aged 18–25 appear in a smaller percentage compared to the other age groups to believe that the application is used by the educational staff to organize the courses and for the communication between professor and student ($\chi^2(16) = 32.860$, $p = 0.008 < 0.05$). The same age group appears to refer more often than the other age groups to the educational material posted on the E-Class ($\chi^2(16) = 27.027$, $p = 0.041 < 0.05$), while the 46–55 age group considers in a higher percentage than the other age groups that the use of the E-class has made information updating easiest ($\chi^2(16) = 30.975$, $p = 0.014 < 0.05$). The same age group appears to consider in a higher percentage than the other age groups the E-Class application contributes in a better personal time and schedule organization ($\chi^2(16) = 37.451$, $p = 0.002 < 0.05$). On the other hand, the age group over 55 considers in a higher percentage than the other age groups that

the use of asynchronous education platforms has contributed to the optimization of the educational quality provided by the information management department ($\chi^2(16) = 23.299$, $p = 0.016 < 0.05$). The 18–25 age group believes in a smaller percentage than the other age groups that, if application of asynchronous education platforms be fully exploited, is going to contribute in the optimization of educational quality the full utilization of asynchronous educational platforms ($\chi^2(16) = 77.877$, $p = 0.033 < 0.05$). Regarding synchronous education platforms, the results of the survey show that people in the 18–25 age group have a less positive opinion than people in the other age groups ($\chi^2(16) = 48.418$, $p = 0.000 < 0.05$). The 26–35 age group made more frequent use of synchronous education platforms than other age groups before the outbreak of the pandemic ($\chi^2(16) = 31.371$, $p = 0.012 < 0.05$) while the age group over 55 made more frequent use of asynchronous education platforms than other age groups before the outbreak of the pandemic ($\chi^2(16) = 32.404$, $p = 0.009 < 0.05$). Although before the start of the pandemic the 26–35 age group appeared to rank themselves higher than other age groups in exploiting e-learning platforms ($\chi^2(16) = 52.379$, $p = 0.000 < 0.05$), after the end of the pandemic, the age group that appears to rank the most vulnerable the highest compared to the others is 36–45 ($\chi^2(16) = 56.155$, $p = 0.000 < 0.05$). At the same time, the study shows that the 36–45 age group faced fewer problems in the accessibility of e-learning platforms than the other age groups ($\chi^2(16) = 9.876$, $p = 0.043 < 0.05$). On the other hand, the 46–55 age group considers that the main problem in the exploitation of e-learning platforms is the lack of experience, in a greater percentage than the other age groups ($\chi^2(16) = 22.075$, $p = 0.000 < 0.05$) while the 18–25 age group considers the lack of appropriate equipment ($\chi^2(4) = 24.978$, $p = 0.000 < 0.05$). At the same time, the 46–55 age group appears to communicate more often through the test, compared to the other age groups ($\chi^2(16) = 42.545$, $p = 0.000 < 0.05$) while the over 55 age group uses the phone to communicate with the teacher more often than the other age groups ($\chi^2(16) = 14.976$, $p = 0.005 < 0.05$). The 46–55 age group is more likely than the other age groups to believe that teachers post appropriate educational material in relation to the needs of distance education ($\chi^2(16) = 44.139$, $p = 0.000 < 0.05$), while the 26–35 age group considers in higher percentages compared to other groups that the educators use appropriate multimedia for their courses ($\chi^2(16) = 56.763$, $p = 0.000 < 0.05$). Of particular interest is the fact that the 36–45 age group considers a much larger percentage than the other age groups that distance education is an important tool in the educational process ($\chi^2(16) = 38.066$, $p = 0.001 < 0.05$).

With regard to the effect of the educational level of the participants (Table 4), the application of the χ^2 test shows that graduates of technical high schools believe in a greater percentage than groups of other educational levels that through the distance education process their skills in solving everyday problems have been strengthened ($\chi^2(24) = 78.080$, $p = 0.000 < 0.05$), while at the same time, they believe in a higher percentage than the groups of other educational levels that involvement with the distance education process will be useful to them in the future in their professional environment ($\chi^2(24) = 92.221$, $p = 0.000 < 0.05$). Also the same

Table 3. Questions that shows statistical significance with respect to age group

Question	p-value
In what extent do you believe that your need to enhance your skills (adaptation to new reality, cooperation, optimal problem-solving, new responsibilities, increase of creativeness) useful for solving your daily problems, was satisfied by your studies?	0.000**
Regarding to the exploitation of **asynchronous** education platforms, in what extend do you believe that the e-learning application is used by the educational staff to organize the courses and for the communication between professor and student?	0.008**
Regarding to the exploitation of **asynchronous** education platforms in what extend do you think that the information provided through the application are adequate?	0.041*
Regarding to the exploitation of **asynchronous** education platforms in what extend do you believe that the E-Class application has made your information updating, easiest?	0.014*
Regarding to the exploitation of **asynchronous** education platforms, in what extend do you believe that that the E-Class application contributes in a better personal time and schedule organization?	0.002**
Regarding to the exploitation of **asynchronous** education platforms, in what extend do you believe that this application has contributed to the optimization of the educational quality provided by the information management department?	0.016*
How positive was the experience that you obtained by the exploitation of the e-learning **synchronous** platforms?	0.000**
How often did you use the below mentioned educational platforms before the pandemic of Covid-19: [**synchronous** educational platforms]	0.012*
How often did you use the below mentioned educational platforms before the pandemic of covid-19: [**asynchronous** educational platforms]	0.009**
In a scale, ranging from 1 to 5, in which point would you place yourself regarding the exploitation of e-learning educational platforms **before** the pandemic Covid-19 crisis?	0.000**
In a scale, ranging from 1 to 5, in which point would you place yourself regarding the exploitation of e-learning educational platforms **after** the pandemic Covid-19 crisis?	0.000**
Which was the most difficult thing during the exploitation of e-learning tools: accessibility problems	0.043*
Which was the most difficult thing during the exploitation of e-learning tools: lack of experience	0.000**
Which was the most difficult thing during the exploitation of e-learning tools: absence of appropriate equipment	0.000**
For your communication with the educators, was used: [telephone]	0.005**
For your communication with the educators, was used: [E-Class announcements]	0.000**
Did your educators upload in E-Class, appropriate educational material for your specialty (accurate-sufficient-understable) for e-learning courses according to the platforms standards?	0.000**
Did your educators use audiovisual aids (pictures, videos) for their courses?	0.000**
Do you believe that e-learning is a significant form of education?	0.001**

Table 4. Questions that shows statistical significance with respect to education level

Question	p-value
In what extent do you believe that your need to enhance your skills (adaptation to new reality, cooperation, optimal problem-solving, new responsibilities, increase of creativeness) useful for solving your daily problems, was satisfied by your studies?	0.000**
In what extent do you believe that your need for education, acquiring knowledge and skills, useful for certification as well as for your future professional reinstatement?	0.000**
Regarding to the exploitation of **asynchronous** education platforms in what extend to do you believe that the application is used by the educational staff to organize the courses and for the communication between professor and student?	0.000**
Regarding to the exploitation of **asynchronous** education platforms, in what extend do you believe that the information, provided through the application are adequate?	0.000**
Regarding to the exploitation of **asynchronous** education platforms, in what extend do you you look educational material into the E-Class application?	0.000**
Regarding to the exploitation of **asynchronous** education platforms, in what extend do you think that the E-Class application contributes in a better personal time and schedule organization?	0.003**
Did your educators upload in E-Class, appropriate educational material for your specialty (accurate-sufficient-untestable) for e-learning courses according to the platforms standards?	0.000**
Did your educators use audiovisual aids (pictures, videos) for their courses?	0.000**
Do you believe that e-learning is a significant form of education?	0.001**
Regarding to the exploitation of **asynchronous** education platforms, in what extend do you believe that this application has contributed to the optimization of the educational quality, provided by the information management department	0.000**
How positive was the experience that you obtained by the exploitation of the e-learning **synchronous** platforms?	0.000**

group of participants believe in a greater percentage than the other groups that the application is used by the educational staff to organize the courses and for the communication between professor and student ($\chi^2(24) = 134.847$, $p = 0.000 < 0.05$). University education participants believe in a higher percentage than the other groups that the provided educational material of the distance education is sufficient ($\chi^2(24) = 70.465$, $p = 0.000 < 0.05$), while technical university graduates have more frequent access to E-Class educational material compared to participants of other educational levels ($\chi^2(24) = 58.238$, $p = 0.000 < 0.05$). At the same time, the participants of university education believe in a higher percentage compared to the groups of other educational levels that the use of e-class application contributes in a better personal time and schedule organization ($\chi^2(24) = 47.610$, $p = 0.003 < 0.05$). Also, university level graduates appear to believe in a greater percentage than the other educational level groups that exploitation of asynchronous platforms has contributed to the optimization of the educational quality provided by the information management department ($\chi^2(24) = 58.077$, $p = 0.003 < 0.05$). Finally, the research shows that holders of a master's degree believe in a higher percentage than partici-

pants of other educational levels that the overall experience gained from the use of modern education platforms is positive ($\chi^2(24) = 68.743$, $p = 0.000 < 0.05$).

5. Discussion

The present study aims to evaluate the distance education provided during the pandemic by Public Vocational Training Institutes in Greece and to investigate the factors that influence the participants' opinion on the quality of the education they received. More specifically, it was investigated how demographic factors, such as the age, gender and educational level of the participants, affect the opinion and satisfaction levels of the trainees from the training services provided. The results show that the implementation of distance learning during the pandemic provides many and significant benefits to a large percentage of participants. Learners' perceptions of it are influenced by demographic factors such as age and gender, as well as their level of education. In general, it appears that people with a lower educational level and older age, although they encountered greater difficulties in adapting to the new educational reality, appear to have a more positive attitude towards distance education. On the other hand, younger people and these with a higher educational level, although they appear to have a greater ability to adapt and more skills in relation to new technologies, seem to have a more critical attitude towards the benefits of distance education. Regarding the gender of the participants, the research shows that women show more positive attitude towards the provision of distance education, compared to men. This may be due to the fact that women are more organized, which enables them to respond better to an organized environment such as that provided by synchronous and asynchronous training platforms.

6. Conclusion

In conclusion, this study shows that the participants in a large percentage find many and significant benefits from the implementation of distance learning during the pandemic. Learners' views of it are influenced both by demographic characteristics such as age and gender as well as by their level of education. Future efforts could investigate the effect of other factors such as the economic background of the participants and the type of institution that provides the training.

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