

Original Paper

Distance Learning in Greece during Covid-19 Pandemic

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Abstract

The purpose of this study is to investigate the reaction of Greeks to this new educational reality due to the Covid-19 outbreak. Since the first restrictive measures were implemented in March 2020 in Greece, distance learning has become a dynamic part of people's daily lives with the prospect of remain in gas such in the future. A total of N=170 students, parents, teachers, civil servants, private sector employees who were involved in the distance learning process either as instructors or as students in the period of Covid-19 pandemic in Greece, were selected with the use of snowball sampling. A questionnaire using demographic and satisfaction related variables was completed by the respondents, namely citizens across Greece, based on a Likert scale questionnaire which is a useful and multidimensional instrument, to assess satisfaction within the time frame from July 7, 2020 to October 20, 2020; the period when there occurred a loosening in the restrictive measures between the two lockdowns in Greece. It was investigated how the demographic factors, specifically gender, age, occupation, and place of residence, influence the attitude of the respondents towards synchronous and asynchronous distance learning as well as their intention to continue using online education services in the future after the lifting of the restrictive measures. Additionally, the customers' preferences concerning the most enjoyable distance learning experience were examined, so that they will be available to the distance learning program designers. Descriptive statistical analysis and non-parametric statistical hypothesis tests were conducted in SPSS and R. Most of the respondents had not participated in online courses before the Covid-19 outbreak, 46 % did participate in e-learning courses before the Covid-19 lockdown while 54 % did not and 34.1% respondents prefer face-to-face learning, while 15.9% prefer e-learning. Also, 50% respondents prefer a combination of face-to-face learning and e-learning. Hypothesis tests showed that there are statistically significant differences between users' preferences as well as regarding their demographic characteristics. Undergraduate and postgraduate university students continue to participate in online

learning courses and are willing to invest financial resources and time in this new educational process ($\chi^2_{(4)}=10.440$, $p=0.034$), unlike high school students who prefer face-to-face learning ($p=0.042$). The present study will lead to practical implications, such as the formation of e-learning programs which aim for the best user experience and the best learning outcomes. Also, private educational organizations can include the results in the key elements to implementing a strategic marketing mix.

Keywords

Covid-19, e-learning, face-to-face learning, distance learning, student experience

1. Introduction

The coronavirus disease (Covid-19) outbreak has affected millions of people and threatens their lives all over the world. Most countries' governments have ordered a lockdown and mandated that people to stay at their homes due to the transmissibility of this new virus. Therefore, the Covid-19 outbreak has brought about major changes in working conditions all over the globe within a month. In the wake of the worldwide pandemic, most sectors, ranging from economy and industries to education, were severely affected. The consequences of this pandemic have been unstoppable and uncontrollable for many industries all around the world including educational institutions. As a result, principals (headmasters), teachers, and educators in many countries have started using e-learning.

The management of each educational organization is responsible for providing information for the services and curricula offered by the Learning Services Providers (LSP's), as well as for designing innovative, cost-effective, and efficacious solutions. The implementation of innovative curricula, management models and processes ensure efficient management methods, quality services, reduced economic waste and optimal utilization of human resources.

To be able to design and implement innovative schemes, what should be explored and clarified is students' needs and the degree to which organizations offering secondary education services in Greece today were satisfactory, under the current circumstances. The LSP's, more specifically tutorial schools, private tutors, and e-learning platforms, are involved in the educational process, as educational institutions, through the academic support that they offer to elementary and high school students as well as to autonomous students. These are provided with the purpose of filling learning gaps, assisting, and organizing the study process, as well as preparing pupils and students for their participation in exams and competitions (Papakonstantinou, 2016).

2. Market Orientation (MO): A Key Element in Educational Institutions' Marketing

Marketing Orientation is the extent to which an organization creates and uses information about current and future customer needs. It develops a strategy to meet these needs and implements it for that purpose. MO takes into consideration the influence of competitors and integrates it into interoperable co-ordination. It encourages raising awareness, using data accumulated about competitors and employ in integrated and interoperable processes to form a strategic organizational response to marketing

opportunities (Slater & Narver, 2000; Harris, 2002; Helfert, Ritter, & Walter, 2002). All these activities are oriented towards creating and satisfying customers through a continuous assessment of buyers' needs. As far as school context is concerned, it is believed that the focus on current and future clients (Parents, students) should prevail over the other two MO functions. In our opinion, MO is a set of beliefs that prioritizes customer interests but also increases the willingness of the educational organization to obtain information about its competitors and create cross-sectoral activities to gain a distinct advantage within a hectic and highly competitive environment.

3. Distance Learning

Distance learning is defined as the acquisition of knowledge and skills using information and instructions provided by means of online material and courses, as opposed to both teachers and students being physically present during the educational process. Thus, E-learning is covered under a larger term of technology-based learning through websites, learning platforms, video conferencing, mobile apps, and many types of free available websites for blended learning technologies (Bower & Hardy, 2004). Currently, e-learning is enhancing students' knowledge and is assessing the skills of academic staff through the internet (Adams et al., 2018; Chopra et al., 2019). Most higher education institutions are providing online courses for their students both within and off university campuses. Studies also show a mean growth 7.9% in e-learning annually worldwide. More specifically, the highest growth rate is in Asia with 17.3%, followed by Eastern Europe, Africa, and Latin America with 16.9%, 15.2%, and 14.6%, respectively (Rana et al., 2014).

Globally, due to the Covid-19 outbreak, schools and universities halted their function and most teachers and students are satisfied with the progress of the online education. All faculty members of many recognized universities have begun to get online certifications to deliver online lessons. Currently, academic staff members and students are learning how to use the online learning platforms. Before this outbreak, mostly face-to-face teaching was used and this shift to the online courses has raised many queries on the quality of education (Sahu, 2020). Omotayo and Haliru (2020) also added that learners must be motivated to acquire digital competency for them to remain up-to-date and not let their education be impeded in times of crisis.

3.1 E Learning

E-learning not only covers content (Nichols, 2003) and educational methods provided via asynchronous material, the Internet, or an Intranet (Benson et al., 2002; Clark, 2002) but also includes audio and video material, satellite broadcasting, and interactive television (Ellis, 2004). Thus, there is some level of interaction in the learning process (Moore et al., 2010).

3.2 The Importance of Online Learning in the Time of Covid-19 Crisis

The Covid-19 effects can be seen in schools, colleges, and universities. Subsequently, all these online learning platforms can be viewed as a panacea for the crisis. The Covid-19 outbreak has made educational institutions switch from the offline pedagogy mode to online pedagogy. Crisis will force

the educational institutions (which had earlier demonstrated reluctance to change) to accept modern technology. Internet is the state-of-the-art technology that allows both asynchronous distance learning (two-way communication involving intervals between sending and receiving) and synchronous (direct communication without delay), teleconferencing and online chat, which can be used for student-to-student interaction, among students, teachers, but also within large groups of people. The Internet also provides access to digitized educational materials, scholarly articles, books, and current reports. It allows students to take lessons according to their lifestyle and daily schedule, instead of having to compromise with a set time and location. Therefore, it allows students who are unable to get an education due to geographical distance, personal disability, or physical disability, to have access to it (Inman, Kerwin, & Mayes, 1999).

This crisis will show us the lucrative side of online teaching and learning as with the aid of the online teaching tools, we can coordinate many students at any time and in any part of the world. All institutions must use technology more aptly and many universities around the world fully use their digital operations understanding the imposed need that the current outbreak created. Online learning is emerging as something innovative and has increased exponentially after the Covid-19 outbreak in the Greek universities. During this tough time, the concern is how academic institutions will be able to adopt online learning in such a massive manner (Carey, 2020).

Education today must provide opportunities for a variety of socio-economic, national, and diverse social groups. Due to the modern requirements of a changing student population, with a variety of different demographics and increased operating costs, educational organizations are driven to find ways to become more productive in the methods of delivering their courses and educational services (Baker & Gloucester, 1994; Barnard, 1997). Technological developments look to distance education to reduce the cost of building new facilities, while still serving a changing student population (Bothun, 1997). Finally, e-learning has some positive effects on students, it is a crucial platform for extra ordinary circumstances, or even for people who are unable to complete their studies in person (Eltayeb et al., 2020).

3.3 Educational Needs

Exploring and identifying the needs of students and parents is crucial for the development and improvement of the strategic planning of an educational organization. For that reason, in recent decades there has been a systematic effort to categorize them, with the resulting educational needs of students being divided into 6 types (Burton & Merrill, 1991; Alivizos, Apostolos, & Paraschou, 2015):

- Normative Needs, the difference between a person's performance (or a team's), against a given performance standard.
- Felt Needs, an individual or a group desire for improvement.
- Expressed Needs, that arise from the actions of individuals and are identified in practice.
- Comparative Needs, the differences that exist between a group of people with certain characteristics and another group of people with similar characteristics.

- Anticipated/Future Needs, a mismatch between the current situation and the expected future situation.
- Critical-Incident Needs, that may occur infrequently but can have a significant impact on the operation of a system.

3.4 The Main Problems of E-Learning and Solutions

The main problems impeding the effectiveness of online instructions are:

- The content of some educational material is not suitable for students whose learning ability is weak.
- Sometimes online courses are hindered by poor network connection and poor lesson planning/student attentiveness.
- Insufficient teaching resources for online courses.
- Insufficient (financial) support for teachers' teaching space, environment, and equipment.
- Lack of teachers' enthusiasm in teaching.
- It is relatively difficult for teachers to engage students' attention, maintain classroom order and organize classroom discussions, the way they would in face-to-face learning.
- Difficulties in addressing different learning styles.
- Isolation (Sanad & El-Sayyed, 2020).

The solution to those problems is building strong self-motivation skills concerning the online learning environment. Additionally, face-to-face communication with the tutors can be substituted with online communication, and online interactive activities between students should be promoted, similarly to the way they would be in traditional schools or in university classrooms. Also, solving an e-learning problem with a non-e-learning solution (e.g., taking course materials home to have the student's husband read them aloud or writing an exam at a different time from the rest of the class) is an alternate format (Fichten et al., 2009). Both the sentence and the examples in this last period are not adequately explained, further elaboration is needed for them to make sense).

4. Research

The purpose of this quantitative research was to investigate how the Covid-19 pandemic influenced parents' and students' preferences over e-learning or face-to-face learning. Self-completion questionnaires were distributed online, to achieve receiving answers from all over Greece in a short period of time. The population was approximately 7,000,000, i.e., Greek nationals, aged 18 to 65. The survey was conducted between 7 July and 20 October 2020. Snowball sampling was used and applied when it is difficult to access subjects with the target characteristics. In this method, the existing study subjects recruit future subjects among their acquaintances and sampling continues until data saturation (Naderifar, 2017). The 170 questionnaire responses comprised: 56 males (33%), 114 females (67%).

The absolute (relative) frequencies of the occupation of the respondents are: 7% civil servants, 4% graduates, 5% secondary school students, 10% high school students, 10% parents, 12% postgraduate

students, 8% private sector employees, 11% teachers and 35% undergraduate university students.

As for the educational level of the participants, 48% have a bachelor's degree, 7% are secondary school graduates, 21% are high school graduates, 23% have a master's degree and 1% are PhD holders.

4.1 Results and Discussion

4.1.1 Descriptive Statistics

Descriptive statistics summarize various aspects about our data, giving details about the sample and providing information about the population from which the sample was drawn. Each variable's type determines the nature of descriptive statistics that one calculates (Larson, 2006).

An important question of the survey ("Have you participated in distance learning before the Covid-19 lockdown?") focused on the information that shows that in Greece, e-Learning appeared not to have been very popular before the Covid-19 lockdown. 46 % did participate in e-learning courses before the Covid-19 lockdown while 54 % did not. This comes in accordance with Edelhauser et al. (2020) that the e-Learning concept appeared to be considered relevant only after the beginning of the coronavirus pandemic.

One other relevant question shows that students (68 % of our sample, Table 1) have quickly migrated to online courses after the Covid-19 lockdown as well as in Edelhauser et al. (2020) and Kamal et al. (2020).

Table 1. Participation in E-learning due to Access Issues to Face-to-Face Learning

	Frequency	Proportion
Yes	103	60.9 %
No	66	39.1 %

Several questions were asked to trace out the learning status during lockdown that includes modes of learning, number of students participating in an e-learning course and average time in hours per day that an online course last.

Table 2. Questions to Trace Out the Learning Status

Variables	Frequency (n)	Percentage (%)
Mode of learning		
Face-to-face learning	58	34.1
E-learning	27	15.9
A combination of the above	85	50
Replacement of face-to-face learning vs e-learning		
Yes	124	72.9

No	46	27.1
Average time (in hours) per day of online courses		
0-1	31	19.7
2-15	122	77.7
15 and above	4	2.6
Satisfaction with the internet services connection		
Not at all satisfied	9	5.8
Slightly satisfied	19	12.2
Moderately satisfied	48	30.8
Very satisfied	58	37.2
Extremely satisfied	22	14.1

Table 3. Attendance in Distance Learning Courses Per Day

	Hours per day	
	M	SD
Secondary school student	12,86	16,96
High school student	2,86	3,90
Graduate	3,33	1,75
Undergraduate student	4,46	3,41
Occupation Postgraduate student	2,61	1,79
Parent	2,35	1,66
Teacher	4,06	1,98
Civil servant	3,67	2,99
Private sector employee	1,90	1,60

The respondents prefer face-to-face learning 34.1%, while 15.9% prefer e-learning. Also, 50% respondents prefer a combination of face-to-face learning and e-learning. This conclusion comes in agreement with Kapasia et al. (2020) where 37.9% respondents were continuing their study through textbook reading and digital e-learning, while 30.6% students opted for self-studying through reading textbooks not participated in e-learning. Additionally, in the study of Abbasi et al. (2020) it was found that e-learning is perceived to have little impact compared to face-to-face learning as indicated by 86% of the participants. Furthermore, 72.9% participants reported that they believe in a potential replacement of face-to-face learning from e-learning, while 27.1% participants do not believe in such a possibility.

Singh and Min (2017) did a study on the effectiveness of conducting digital lectures on gross anatomy. The study investigated students' satisfaction level towards e-learning, and it was found that most of the students characterized digital learning as efficient. In our study, 40.6 % participants believe that e-learning is moderately effective compared to face-to-face learning, 24.7% slightly effective, 17.1% not at all effective, 14.1% very effective and 3.5% extremely effective. In Ana et al. (2020), 51% of the students expressed agreement related to e-learning preparation and 68% expressed their neutrality about the implementation of e-learning.

Adnan and Anwar (2020) found that most of the students 71.4% voted against the notion that online learning is more motivating than face-to-face learning, which agrees (is in line) with our statement.

Finally, investigated which educational institution offered the e-learning courses. 52.1% of the respondents attended e-learning courses from university, 21.8% from tutorial schools, 19.4% from public schools, 16.4% from private lessons and 10.9% from e-learning services providers.

In reference to the duration of lessons, 10.7% respondents maintain/contend that an online lesson should last 30 minutes while 34.5% believe that it should last 45 minutes. Also, 32.7%, 17.3%, 4.8% respondents believe that an online lesson should have a duration of 60, 90 and 120 minutes, respectively.

4.1.2 Inferential Statistics

The Chi-square statistic is a non-parametric (distribution free) tool designed to analyze group differences when the dependent variable is measured at a nominal level. Like all non-parametric statistics, the Chi-square is robust with respect to the distribution of the data (McHugh, 2013). Fisher's exact test is a statistical test used to determine if there are nonrandom associations between two categorical variables.

A Fisher's test was used, to examine if participation in e-learning courses before the Covid-19 lockdown differs between participants of different occupation. There was a statistically significant difference ($p < 0.001$) between different occupations. Particularly, postgraduate students, teachers, and employees (civil servants and private sector employees) had participated more in e-learning courses before the Covid-19 lockdown (Table 3).

Table 3. Participation in E-learning Courses before the COVID-19 Lockdown Per Occupation

Occupation	Participation in e-learning courses before the COVID-19 lockdown	
	Yes	No
Secondary school student	4 (3%)	3 (1.8%)
High school student	6 (3.6%)	11 (6.5%)
Graduate	4 (2.4%)	2 (1.2%)
Undergraduate student	13 (7.7%)	46 (27.2%)
Postgraduate student	17 (10.1%)	3 (1.8%)

Parent	5 (3%)	11 (6.5%)
Teacher	13 (7.7%)	5 (3%)
Civil Servant	9 (5.3%)	3 (1.8%)
Private sector employee	7 (4.1%)	6 (3.6%)

A Fisher's test was calculated comparing the willingness of investing time and financial resources in e-learning and the age group. A significant interaction was found ($p=0.045$). Respondents aged 18-30 are more likely to invest in e-learning while respondents aged 45-60 are not open to a distance learning module (Table 4).

Table 4. Willingness of Investing Time and Financial Resources in E-learning

		Willingness to invest time and financial resources in e - learning	
		Yes	No
Age	Under 18 years	13 (7.7%)	10 (5.9%)
	18-30	46 (27.2%)	36 (21.3%)
	30-45	28 (16.6%)	11 (6.5%)
	45-60	8 (4.7%)	16 (9.5%)
	Up to 60 years	1 (0.6%)	0 (0%)

A chi square test was calculated to test the relationship between the kind of course implementation that respondents prefer and the participation in e-learning courses before the Covid-19 lockdown. There was a statistically significant difference ($\chi^2_{(2)}=7.492$, $p=0.024$). Supporters of face-to-face learning had not participated in e-learning courses before the Covid-19 lockdown while the exact opposite applies to those of e-learning. Respondents who prefer a combination between the two kinds, have not participated in e-learning courses before the lockdown.

The Kruskal-Wallis test (Kruskal & Wallis, 1952) is the nonparametric equivalent of a one-way ANOVA and is used for testing whether samples originate from the same distribution and test the relationship between a nominal independent variable and an ordinal (or numeric) dependent variable with more than three groups.

A Kruskal Wallis test was used to test if the number of financial resources that the respondents are willing to invest per month in e-learning differs depending on which e-learning module they prefer. Statistical significance exists ($\chi^2_{(2)}=14.457$, $p=0.001$), with a mean rank of 62.67 for the respondents who prefer face-to-face learning, 103.26, for the respondents who prefer e-learning and 73.42 for the respondents who prefer a combination of e-learning and face-to-face learning.

The Mann-Whitney U test is a statistical test that compares two independent groups that do not require large normally distributed samples (Nachar, 2008). Mann Whitney U test was used to assess if there was a statistically significant difference in the effectiveness of distance education compared to face-to-face learning, depending on the perception that due to the Covid-19 outbreak e-learning will gradually replace face-to-face learning. Statistical significance exists ($U=2264$, $p=0.031$). There is a mean rank score of 90 for the respondents who believe in this transition and a mean rank score of 72.73 for those who do not. Conclude that respondents who believe in the replacement of face-to-learning from e-learning believe also that distance education is very effective.

The one-sample Wilcoxon signed rank test was originally designed to test for a specified median, under the assumption that the distribution is symmetric, but it can also serve as a test for symmetry if the median is known (O-Thas et al., 2005). One-sample Wilcoxon non-parametric statistical test was used to test if:

- the median amount of money that the respondents are willing to invest per month is 55 euros. The test indicated that the median was not significantly different from 55 euros ($Z=-0.225$, $p=0.823$)
- the daily median duration of a learning course is 3 hours. The test indicated that the median daily time was not significantly different from 3 hours ($Z=1.541$, $p=0.123$).

5. Conclusions

Covid-19 outbreak has brought on challenges for all educational institutions and especially in higher education. Certainly, like many other aspects of everyday life, Covid-19 has had a serious impact on students, teachers, and educational organizations around the globe (Mailizar, Almanthari, Maulina, & Bruce, 2020). As a result, a transition from face-to-face learning to e-learning has occurred. E-learning accommodates everyone's needs, can be used several times, it is a form of quick delivery of lessons, and it has reduced cost. Due to the wide set of benefits it gives to students, e-learning has become quite popular a solution in the Covid-19 period among students all over the world.

In our quantitative research, a sample of 170 from all Greek territory was used. Many respondents have been diverted to e-learning from the conventional learning and most of them had participated in distance learning before the Covid-19 period. However, a combination of the two modes of learning is widely preferred by the sample. Concerning the effectiveness of e-learning, it is considered moderately effective besides traditional face-to-face learning. Additionally, undergraduate students, postgraduate students, teachers, and employees (civil servants and private sector employees) prefer a combination of e-learning and face-to-face learning while school students and parents prefer mainly face-to-face learning and respondents aged 18-30 are more likely to invest in e-learning while respondents aged 45-60 are not open to a distance learning module. Also, followers of face-to-face learning had not participated in e-learning courses before the Covid-19 lockdown while the exact opposite appears to be the case with the followers of e-learning. About the investment of time and financial resources in distance education, mainly PhD holders and undergraduate or postgraduate students are ardent

supporters. Finally, respondents who believe in the replacement/substitution of face-to-learning from e-learning believe also that distance education is very effective.

Finally, the short period of time available for investigation, was one of the major limitations of this research study. Future research should either extend the sample size to a larger time or focus on the preferences of the educational community in the after Covid-19 period. A study on the appropriate number of financial resources needed to be invested in e-learning is recommended.

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