



DIGITAL EDUCATION AND ARTIFICIAL INTELLIGENCE: ATTITUDES AND READINESS OF ECONOMICS TEACHERS IN GREECE

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ABSTRACT. *The rapid development of digital technology and artificial intelligence, combined with their rapid integration into education, is transforming educational processes and methods worldwide. This study investigates the attitudes, familiarity, and experiences of economics teachers in Greece regarding the use of digital tools and artificial intelligence. Using the snowball method, a structured electronic questionnaire was distributed and 100 valid responses were collected from active economics teachers. Factor analysis revealed two key dimensions: (1) attitudes and perceived benefits of artificial intelligence and digital technologies in education, and (2) familiarity and technical skills in using these tools. The results show that teachers recognize the potential of artificial intelligence to contribute to improving learning, student engagement, and the development of 21st-century skills. At the same time, they point out the need for appropriate training and support for its effective implementation. The reliability of the questionnaire was confirmed by a high Cronbach's Alpha index (0.948), and the findings provide important information for policies and practices of digital transformation in economics education.*

Keywords: *Digital Education, Artificial Intelligence (AI), Economics Teachers, Attitudes and Perceptions, Educational Technologies, Educational Innovation, Readiness for Technology Integration*

ABSTRAK. Perkembangan pesat teknologi digital dan kecerdasan buatan, dikombinasikan dengan integrasi cepatnya ke dalam pendidikan, sedang mentransformasi proses dan metode pendidikan di seluruh dunia. Studi ini menyelidiki sikap, pemahaman, dan pengalaman guru ekonomi di Yunani mengenai penggunaan alat digital dan kecerdasan buatan. Dengan menggunakan metode snowball, kuesioner elektronik terstruktur didistribusikan dan 100 tanggapan valid dikumpulkan dari guru ekonomi aktif. Analisis faktor mengungkapkan dua dimensi utama: (1) sikap dan manfaat yang dirasakan dari kecerdasan buatan dan teknologi digital dalam pendidikan, dan (2) pemahaman dan keterampilan teknis dalam menggunakan alat-alat ini. Hasil menunjukkan bahwa guru menyadari potensi kecerdasan buatan untuk berkontribusi dalam meningkatkan pembelajaran, keterlibatan siswa, dan pengembangan keterampilan abad ke-21. Pada saat yang sama, mereka menunjukkan perlunya pelatihan dan dukungan yang tepat untuk implementasi yang efektif. Keandalan kuesioner dikonfirmasi oleh indeks Alpha Cronbach yang tinggi (0,948), dan temuan tersebut memberikan informasi penting untuk kebijakan dan praktik transformasi digital dalam pendidikan ekonomi.

Kata Kunci: Pendidikan Digital, Kecerdasan Buatan (AI), Guru Ekonomi, Sikap dan Persepsi, Teknologi Pendidikan, Inovasi Pendidikan, Kesiapan Integrasi Teknologi

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INTRODUCTION

Educational digital transformation is currently one of the most important areas of innovation in higher and secondary education (Abrahams & Matusheski, 2020; Benlamri et al., 2016; Cayirtepe & Senel, 2022; Halachev, 2023). The integration of digital technologies, in combination with Artificial Intelligence (A.I.), into educational processes is expected to improve the quality of teaching, enhance student interaction, and support the development of 21st-century skills. Such as critical thinking and problem solving, for example (Stoumpos et al., 2025).

However, the full integration of such technologies into educational practice depends significantly on the attitudes, knowledge, and experience of teachers (Acevedo-Duque et al., 2020; Barber, 2015; Darling-Hammond et al., 2017; Ertmer & Ottenbreit-Leftwich, 2010; Mishra & Koehler, 2006; Tondeur et al., 2017). More specifically, understanding teachers' readiness to use digital technologies or artificial intelligence tools in learning environments is a critical factor in implementing effective digital education strategies (Stoumpos & Stoumpou, 2025).

In Greece, research on perceptions and use of artificial intelligence in education, let alone in the field of economics, remains limited. Teachers are called upon to address challenges related to both technical skills and pedagogical adaptations. At the same time, they are called upon to evaluate the effectiveness and ethical dimension of digital tools.

Despite the rapid growth of international literature on digital transformation and Artificial Intelligence in education, the majority of empirical research focuses either on general populations of teachers or on subjects in the sciences and computer science. Focusing mainly on the context of higher education. On the contrary, there is limited focus on objective fields such as the teaching of economics, where the use of digital tools and Artificial Intelligence applications can play a decisive role in both data analysis and decision-making or even in experiential learning. In addition, many studies examine in isolation either teachers' attitudes towards technology or their level of technical familiarity. Without simultaneously exploring the relationship between them.

In the Greek educational context, this specific research gap becomes even more evident. This



is because there are no quantitative studies that systematically examine the attitude and readiness of economics teachers towards the integration of Artificial Intelligence in teaching practice. Whether it is secondary or tertiary education. The present research aspires to fill this gap, utilizing statistical factor analysis techniques to identify the key dimensions that shape the profile of teachers. The simultaneous investigation of attitudes and technical familiarity with digital and AI tools constitutes a key innovation of the study and provides a documented basis for the design of targeted training policies and support for educational innovation in the field of economics.

This study focuses on analyzing the attitudes, familiarity, and experiences of economics teachers with regard to digital technology and artificial intelligence. The ultimate goal is to explore two key dimensions. The first relates to the positive attitude and perceived benefits of artificial intelligence and digital tools in teaching. The second relates to the technical familiarity and teaching skills required to use these tools. The results are expected to provide information for the development of training and support strategies to enhance the effective integration of artificial intelligence into the educational process.

METHODOLOGY

The quantitative study was conducted using a structured questionnaire designed and administered by the researchers. The instrument was developed to capture the attitudes, experiences, and needs of economics teachers in Greece, following established methodological frameworks for questionnaire-based research in education (Cohen et al., 2008; Creswell, 2014). Comparative analysis of the integration of digital technologies and artificial intelligence tools in teaching. The questionnaire was designed in digital form (Google Forms) and included both demographic and professional characteristics. In addition, it included 5-point Likert scale questions to measure attitudes and opinions, as well as multiple-choice questions on the use of digital tools and artificial intelligence.

Specifically, elements from the questionnaires of Halachev (2023), Gayed (2025), D. Johnson (2024), Habib et al. (2024), and Serban et al. (2024) were adopted and adapted (Gayed, 2025; Habib et al., 2024; Halachev, 2023; Johnson, 2024; Serban et al., 2024). These



studies formed the basis for the questionnaire. However, some questions were modified or reworded in order to better respond to the needs of economics teachers and to the particular emphasis of this study on artificial intelligence.

Population

The population of this study includes both active economics teachers in secondary education and higher education who are active in Greece. This population was not selected at random, as it consists of directly involved economics teaching staff who are called upon to apply both pedagogical and technological teaching practices in the context of digital transformation and the integration of artificial intelligence.

The criteria set for the selection of the population are:

- The pedagogical involvement of participants in economics courses.
- Their relationship with digital technologies.

Due to the inability to find a fully updated database on the total number of economics teachers, it was not possible to use probability sampling. On the other hand, by using the snowball method (non-probability sampling), the aim is to investigate the sample within the specific population, through sharing from one economics teacher to another.

In order to draw conclusions that are as reliable as possible, it is imperative to focus on the specific population. Furthermore, by including teachers from different educational levels, the aim is to enhance a comprehensive understanding of the needs, experiences, and attitudes of teachers. At the same time, a comparative assessment of the differences or similarities in the teaching approach to economics between secondary and higher education is achieved.

Sample Selection

In this study, the sample was selected with the aim of collecting as representative a picture as possible of the views and experiences of economics teachers. The research focused mainly on secondary and tertiary education. The aim was to collect data on the use of digital technologies and tools, and even more so on the use of artificial intelligence in the teaching



process.

The sampling strategy applied is the snowball sampling method. In this method, the initially selected participants distribute the questionnaire to other individuals in the population who meet the specified criteria for inclusion in the survey (Noy, 2008). This approach was considered the most appropriate, either because of the difficulty in finding a satisfactory population of economics teachers, or because of the intention to enhance the distribution of the questionnaire through existing professional and institutional networks of teachers.

The criteria for inclusion of participants in the questionnaire were as follows:

- Teach or be able to teach a subject related to economics at secondary or tertiary level.
- Have sufficient background or opinion on digital educational transformation and artificial intelligence.
- Be willing to participate voluntarily in the survey, ensuring their complete anonymity and the protection of any personal data.

The final sample for the survey was formed in a combined manner, utilizing either existing personal networks or contacts at other academic institutions. This selection ensures diversity of opinion and corresponding geographical dispersion. In addition, it includes a variety of educators with different levels of experience and familiarity with digital technologies.

Sample Collection

The research data was collected by distributing an electronic questionnaire on the Google Forms platform. This ensured ease of access, speed of response, and automation in recording responses.

The questionnaire was distributed online only, and the data collection period was from July 1, 2025, to July 14, 2025. The following methods were used to promote the questionnaire link:

- Sending electronic messages (SMS & email).
- Social networking applications (Facebook & Viber).
- Personal contacts with educators and academics in the field of economics (by informing them of or sharing with them the relevant link to the questionnaire).



The invitation to participate included a brief description of the purpose of the study, along with assurances regarding the anonymity and confidentiality of the data. In addition, special mention was made of the voluntary participation of respondents. Participants were informed that they could withdraw from completing the questionnaire at any time without any consequences. Under no circumstances were personal or identifiable details of participants collected.

It was estimated that it would take between 5 and 7 minutes to complete the questionnaire. This was done in order to make it user-friendly and accessible to people with limited time. On the other hand, the use of the Google Forms digital tool allowed for the immediate recording of responses in a spreadsheet. This facilitates further statistical analysis of the data.

In total, the data collection process was completed with 100 valid completed questionnaires.

RESULTS

Statistical analysis and SPSS Program is used to interpret the data collected. This chapter presents the key findings, starting with a description of the demographic characteristics of the sample and then moving on to more complex analyses that highlight the relationships and attitudes that emerge.

The aim of the analysis is not only to present numerical results, but primarily to understand the attitudes and perceptions of participants towards digital educational technologies and Artificial Intelligence.

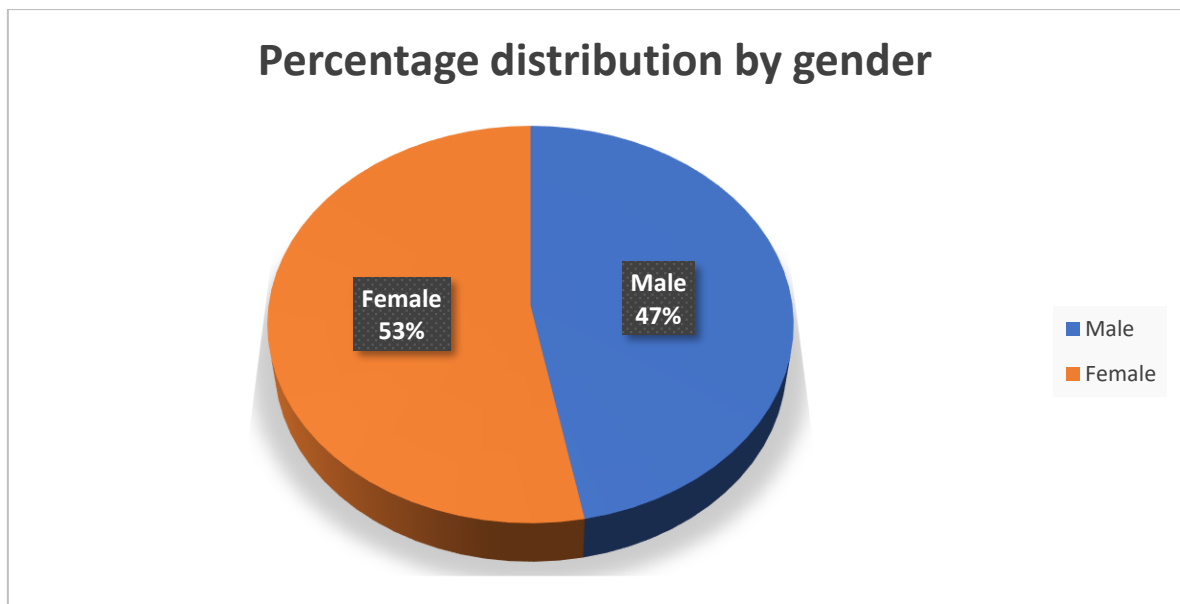
Sample Demographic Data

The basic demographic characteristics of the sample, as derived from the participants' responses, are presented below. In Table 1, the sample shows a balanced distribution in terms of gender, with a slight predominance of women (53%) over men (47%). This relative balance ensures that the views of both genders are adequately represented.

Table 1: Frequency Table by Gender

		Gender:			
		Frequency	Percent	Valid Percent	Cumulative Percent
	Male	47	47.0	47.0	47.0
Valid	Female	53	53.0	53.0	100.0
	Total	100	100.0	100.0	

This distribution is further illustrated in Figure 1, where the marginal preponderance of women compared to male participants is clearly observed. This image reinforces the finding that the sample is balanced, ensuring the validity and representativeness of the research, with respect to this specific demographic characteristic.

**Figure 1:** Percentage distribution by gender

As regards age distribution, which is shown in Table 2, the majority of participants belong to the 30–39 (28%) and 40–49 (23%) age groups. The percentage in the 50–59 age group (19%) is also noteworthy. However, those under 30 represent 17%, while those over 60 represent 13%. This diversity may therefore indicate a range of professional and personal experience.

Table 2: Table of Frequencies by Age

		Age			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 30	17	17.0	17.0	17.0
	30 - 39	28	28.0	28.0	45.0
	40 - 49	23	23.0	23.0	68.0
	50 - 59	19	19.0	19.0	87.0
	60 +	13	13.0	13.0	100.0
	Total		100	100.0	100.0

This distribution is also reflected in Figure 2, where it is clear that the majority of the sample is concentrated in the 30–39 and 40–49 age groups. The extreme age categories (<30 and 60+) appear less frequently. This illustration reinforces the image of the heterogeneity of the sample and confirms the presence of different age and professional experiences.

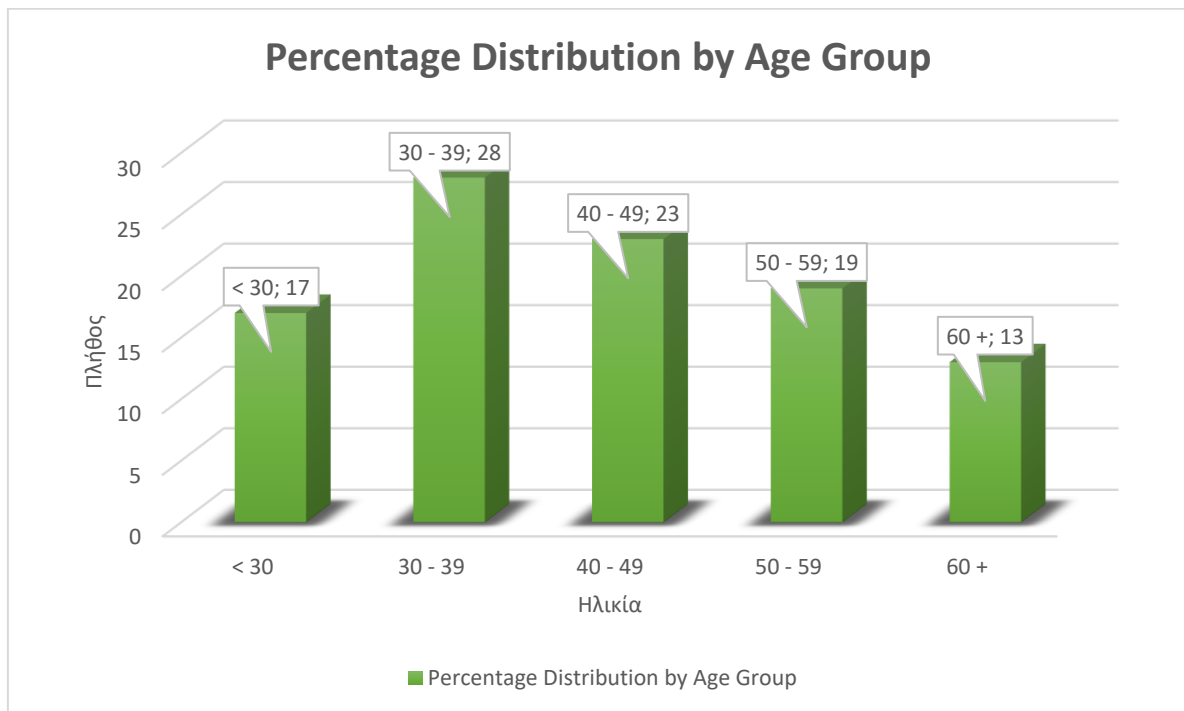


Figure 2: Distribution of participants by age group

Regarding the educational level of the participants (Table 3), the majority of them work in secondary education (63%), while only 34% are employed in higher education. Smaller



percentages relate to non-formal education, individuals outside the education sector, or specialized positions, such as in the Army Economic Corps.

Table 3: Frequency Table by Educational Level of Employment

Educational level at which you teach:		Frequency	Percent Valid	Percent Cumulative
Valid	Secondary	63	63.0	63.0
	Higher education	34	34.0	97.0
	Non-formal education	1	1.0	98.0
	I do not work in education	1	1.0	99.0
	Army Economic Corps	1	1.0	100.0
	Total	100	100.0	100.0

In Figure 3 below, the frequency distribution clearly shows the concentration of the sample in secondary education. However, this is to be expected, as economics teachers are primarily active in secondary education. Meanwhile, the presence of participants from other levels or specific job categories adds an extra dimension of diversity to the sample.

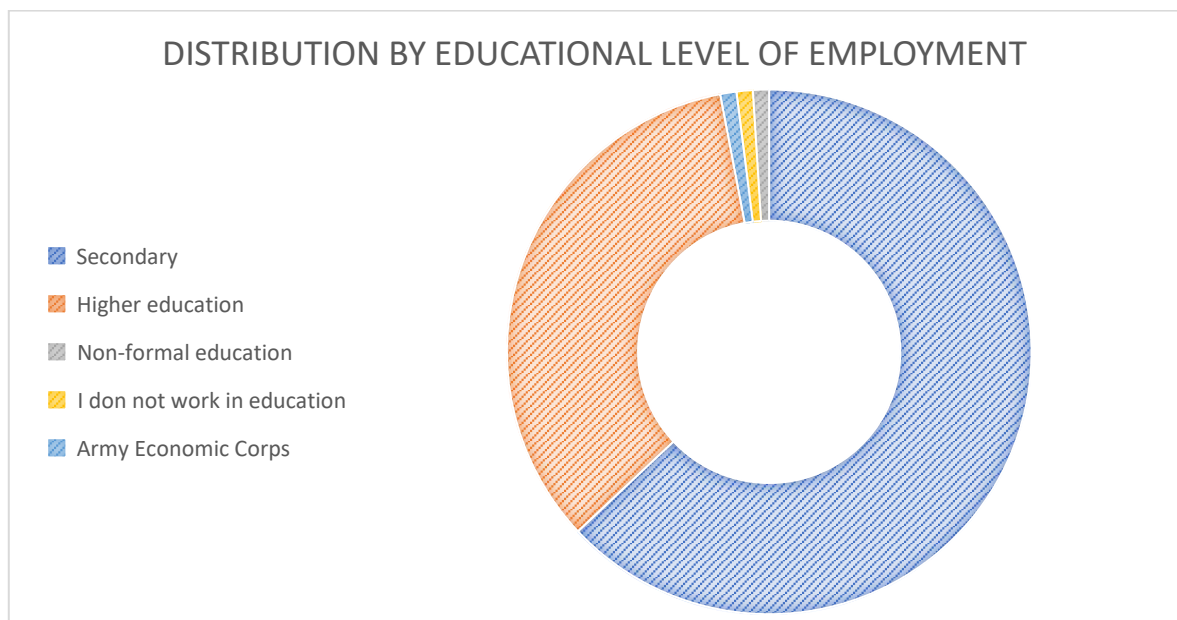


Figure 3: Distribution of participants by educational level of employment



Furthermore, Table 4 shows the frequencies of teachers by specialty. The main specialty is economics (69%), while only 30% are teachers of other specialties who also teach economics (e.g., accountants, tax specialists, marketing, etc.). The prevalence of economics graduates confirms the focus of the research.

Table 4: Frequency Table by Specialty

		Specialty:			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Economic	69	69.0	69.0	69.0
	Teacher of another subject who teaches economics	30	30.0	30.0	99.0
	Philologist	1	1.0	1.0	100.0
	Total	100	100.0	100.0	

In Figure 4, this concentration is clearly depicted, reinforcing the image that the research is based on a basically homogeneous body of experts, with parallel representation of different fields of knowledge.

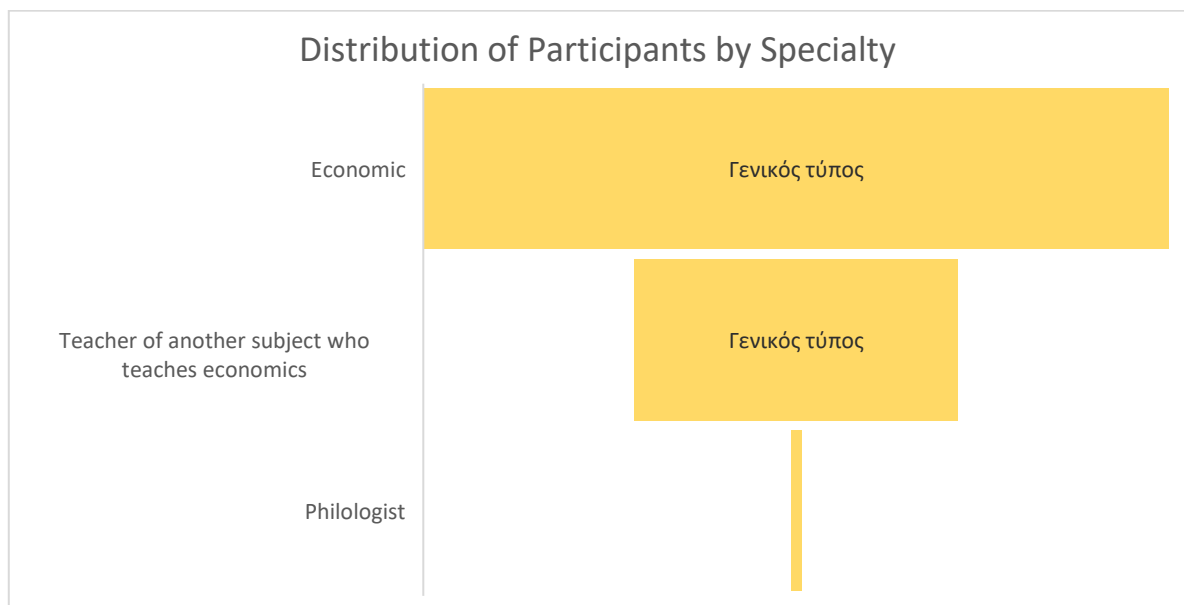


Figure 4: Distribution of participants by specialty

Subsequently, the survey found that 39% of respondents had 0–5 years of teaching experience, while 31% had 6–10 years (Table 5). The most experienced, with 11–20 years



and over 21 years, correspond to 18% and 12%, respectively. This distribution suggests a balance between younger and more experienced teachers.

Table 5: Table of Frequencies by Years of Teaching Experience

Years of teaching experience:					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 – 5	39	39.0	39.0	39.0
	6 – 10	31	31.0	31.0	70.0
	11 – 20	18	18.0	18.0	88.0
	21 +	12	12.0	12.0	100.0
	Total	100	100.0	100.0	

The above distribution is also illustrated in Figure 5, where the greater concentration in the first two categories of teaching competence is clearly visible. These two categories cover a total of 70% of the sample. Therefore, the survey shows that the sample is mainly based on relatively young professionals who are still in the early stages of their teaching career. However, the presence of a significant percentage of teachers with more than 10 years of experience ensures the diversity and completeness of opinions, as the perspectives of the younger teachers are combined with those of the more experienced ones.

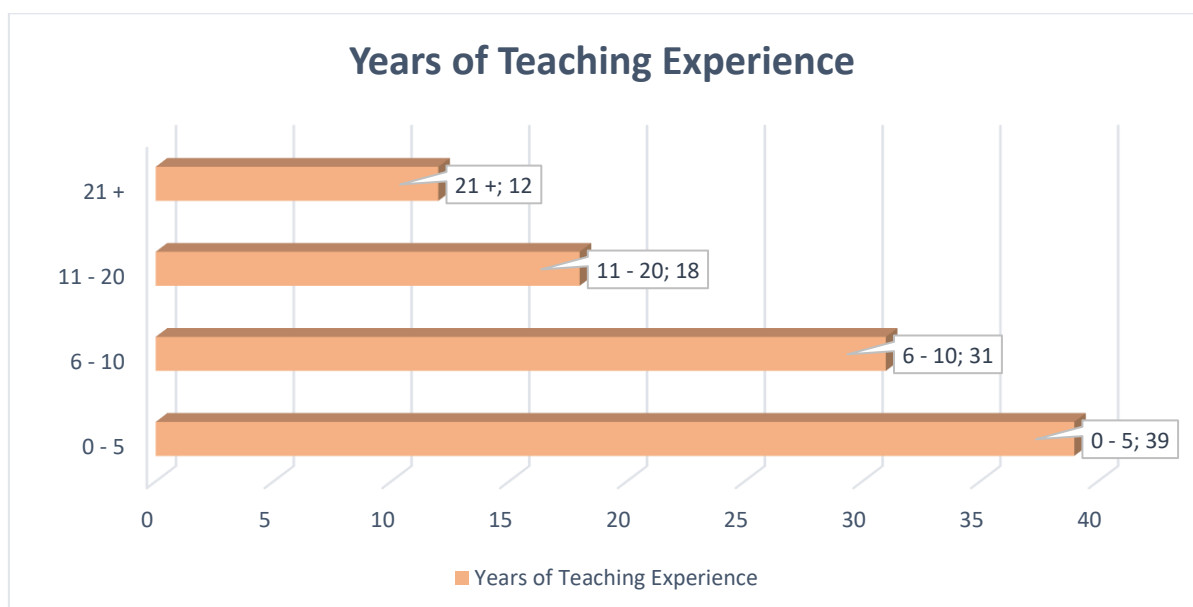


Figure 5: Distribution of participants according to years of teaching experience



With regard to teaching economics over the last three years, Table 6 shows that 80% of participants have taught a similar course, which reinforces the relevance of the responses to the subject of the survey.

Table 6: Table of Economics Teaching Frequencies over the Last Three Years

Have you taught economics courses in the last 3 years?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	80	80.0	80.0	80.0
	No	20	20.0	20.0	100.0
Total		100	100.0	100.0	

Figure 6 also clearly shows the preponderance of the “Yes” category (80%) over the “No” category (20%). Although the smaller percentage offers a different perspective, which can function complementary, the majority of participants have direct and recent experience in teaching economics courses. This fact makes the research result not only more reliable, but also representative.

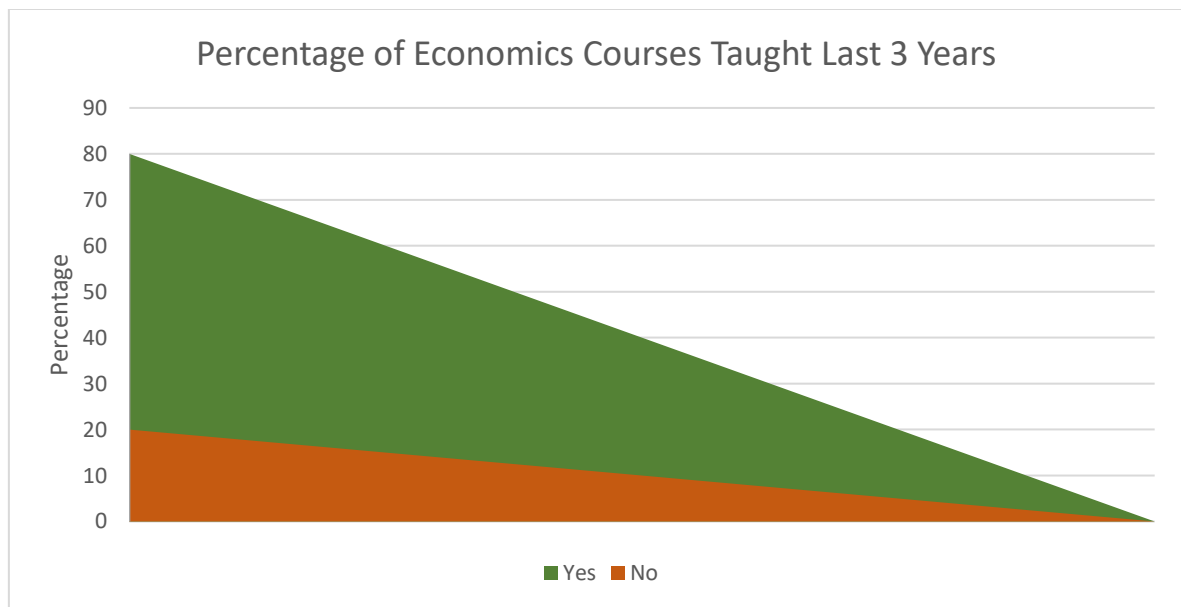


Figure 6: Percentage of economics courses taught in the last three years

The analysis of the above demographic characteristics contributes to a better understanding of the sample profile, as well as to the interpretation of the results of the factor analysis that follows.



Sample Suitability Test

However, before applying factor analysis, the suitability of the data was checked using the Kaiser-Meyer-Olkin (KMO) index and Bartlett's sphericity test. The result in Table 7, from the KMO index = 0.905, indicates the excellent adequacy of the sampling, while Bartlett's test is statistically significant ($\chi^2 = 1335.171$, $df = 78$, $p < 0.001$). This indicates the correlation of the variables and the applicability of factor analysis.

If the KMO value is below 0.5, the adequacy of the sample is questionable. If the value ranges from 0.5 to 0.7, then it is marginally acceptable. From 0.7 to 0.8 it is acceptable, while above 0.9 it is considered excellent.

On the other hand, a small p-value < 0.05 indicates that the variables are correlated and the data are suitable for factor analysis. Whereas, a large p-value > 0.05 indicates that the variables are not sufficiently correlated and the data may not be suitable for factor analysis.

Table 7: KMO & Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.905
Bartlett's Test of Sphericity	Approx. Chi-Square	1335.171
	df	78
	Sig.	<.001

Factor Analysis

Next, factor analysis was performed using IBM SPSS Statistics software. The Principal Component Analysis (PCA) method was applied with Varimax rotation and Kaiser normalization. The aim was to identify the underlying factors that explain the correlations between the questionnaire variables.

The analysis of eigenvalues, as shown in Table 8 below, revealed that there are two factors with eigenvalues greater than 1. The first factor explains 63.53% of the variance, while the second explains 13.80%. Together, they explain 77.33% of the total variance.



Table 8: Total Variance Explained

Component	Total Variance Explained					
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.259	63.532	63.532	8.259	63.532	63.532
2	1.794	13.801	77.333	1.794	13.801	77.333
3	.700	5.387	82.720			
4	.485	3.729	86.450			
5	.382	2.935	89.385			
6	.314	2.415	91.800			
7	.240	1.843	93.643			
8	.205	1.575	95.218			
9	.172	1.320	96.538			
10	.156	1.200	97.738			
11	.120	.926	98.665			
12	.111	.856	99.521			
13	.062	.479	100.000			

The following Table 9: Rotated Component Matrix clearly showed the distinction between the variables in two categories:

- The first factor is primarily related to positive attitudes, perceptions, and perceived benefits of both Artificial Intelligence (AI) and digital educational technologies.
- On the other hand, the second factor focuses more on individual familiarity and user skills, both with digital tools and Artificial Intelligence (AI).



Table 9: Rotated Component Matrix

	Rotated Component Matrix^a	
	Component	
	1	2
How would you describe your general familiarity with digital technologies in education?	.371	.816
How familiar are you with the integration of digital tools specifically in the teaching process?	.411	.784
How familiar are you with the basic principles and capabilities of Artificial Intelligence (AI)?	.189	.903
To what extent do you consider yourself familiar with the use of specific Artificial Intelligence (AI) tools during the educational process (e.g., ChatGPT, Copilot, Adaptive Platforms, etc.)?	.138	.904
Artificial Intelligence (AI) can contribute to personalized learning and feedback.	.796	.436
The use of AI enhances students' creativity and engagement.	.789	.321
AI can improve learning performance.	.872	.313
The use of AI raises pedagogical and ethical issues that need to be addressed.	.734	.197
I have a positive attitude towards the use of Artificial Intelligence (AI) in education.	.730	.478
Digital technologies enhance the teaching of economics courses.	.804	.262
Artificial Intelligence (AI) contributes to the cultivation of 21st century skills (e.g., critical thinking, problem solving).	.849	.205
I would use AI techniques and tools systematically if the appropriate support were available.	.843	.236
Learners are more interested in the lesson when digital or technological tools are used during the educational process.	.881	.112



Rotated Component Matrix^a

	Component	
	1	2

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Convergent validity is considered acceptable when the loadings of all variables are greater than 0.5 and the variables of all factors load on a single factor with an eigenvalue greater than 1 (Table 9).

In conclusion, Table 10: Component Transformation Matrix confirms the orthogonality of the factors after rotation. This table shows how the original axes (factors) were transformed during rotation. If the rotation is indeed orthogonal, the factors remain uncorrelated. The values in Table 10 show clear correlations between the old and new axes, and the diagonal relationships (e.g., 0.835 with itself, -0.550 with the other) confirm that the factors are orthogonal.

Table 10: Component Transformation Matrix

Component Transformation Matrix		
Component	1	2
1	.835	.550
2	-.550	.835

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

The interpretation of the factors indicates that attitudes toward technology and technical familiarity are two distinct but complementary dimensions that make up the profile of the participants.

Reliability Check

The internal consistency of the questionnaire was assessed using Croanbach’s Alpha index.



In Table 11: "Reliability Statistics," it can be seen that Croanbach's Alpha is 0.948, while with standardized data it rises to 0.951 for a total of 13 variables. The first six (06) questions of the questionnaire, which concerned demographic data, were not included.

Table 11: Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.948	.951	13

DISCUSSIONS

The analysis of the data yields important conclusions regarding both the attitudes and perceptions of teachers towards digital transformation and the use of artificial intelligence in the educational process.

Initially, demographic data showed a balanced participation between the two genders (men and women), with the majority of the sample being active in secondary education and having significant teaching experience. In addition, the majority of participants have taught economics courses in the last three years, which lends credibility to the findings, as they are based on individuals with active teaching experience.

With regard to factor analysis, this revealed two distinct components:

1. The axis of the stance towards artificial intelligence and digital educational technologies.
2. The axis of familiarization and knowledge of digital tools and artificial intelligence.

These two factors explain most of the variance (77.3%), suggesting that the questionnaire questions were sufficiently targeted and clearly captured the key dimensions of the phenomenon under study.

In conclusion, the reliability of the questionnaire was deemed extremely high (Cronbach's Alpha = 0.948), confirming that the research tools used are reliable and suitable for drawing reliable conclusions.



Overall, the results show that teachers recognize the benefits of artificial intelligence and digital technologies in teaching economics to a significant degree, while also expressing a willingness to incorporate these new practices into the education they provide. This is on the condition that they receive the appropriate training and support.

Limitations of The Research

Although this study was designed with both consistency and scientific accuracy, we must acknowledge certain limitations that exist and may affect not only the interpretation but also the generalization of the findings.

As far as the empirical research is concerned, the sampling method adopted was snowball sampling, which may have resulted in a non-representative sample. However, this method is notable for its effective access to a specialized population. In the case of our study, this population is economics teachers in both secondary and higher education. The possibility that the participants in the survey belong to the same professional or social network may limit the diversity of the respondents' answers. This reduces the possibility of generalising the results.

In addition, rapid technological developments in the development of educational artificial intelligence may quickly render the data obsolete. The time period of data collection reflects a specific time period, which may not reflect the dynamic and constantly changing conditions of educational technology and digital innovation.

CONCLUSIONS

This study focused primarily on secondary and tertiary education teachers. However, future studies could also examine primary education and non-formal education in order to explore possible differences. According to Holmes et al. (2019), attitudes toward artificial intelligence vary significantly depending on the educational level and context (Holmes et al., 2019).

Furthermore, this study recorded perceptions without empirically evaluating the effectiveness of specific tools, such as ChatGPT or various adaptive platforms. Other studies



could design experimental or semi-experimental studies to record the actual contribution of these tools to learning. According to Luckin (2016), such studies are necessary to bridge the gap between expectations and actual learning outcomes (Luckin et al., 2016).

Furthermore, teachers' attitudes, although dynamic, are influenced by technological progress. Over time, they could reflect how the acceptance and use of artificial intelligence is evolving. Selwyn (2022) points out that the relationship between teachers and artificial intelligence is interactive and requires continuous monitoring in the future (Selwyn, 2022).

In addition, future research could focus on the impact of artificial intelligence on student learning performance, either through quantitative or qualitative data. Studies such as those by Zawacki-Richter et al. (2019) argue that artificial intelligence can enhance differentiated teaching, but documentation is required through measurable results (Zawacki-Richter et al., 2019).

On the other hand, the participants in the study acknowledged the existence of ethical and pedagogical issues. Future research may focus on issues of personal data protection and transparency. Williamson & Eyon (2020) highlight that a critical approach to the use of artificial educational intelligence is just as important as its technological integration (Williamson & Eynon, 2020).

Comparative studies at the international level could shed light on how cultural and institutional parameters influence the adoption of artificial intelligence. The present study focused on Greece. According to the Organisation for Economic Co-operation and Development (OECD) (2013), there are significant differences between countries in terms of both educational policy and digital integration (OECD, 2013).

Last but not least, teachers need to have a positive attitude towards the use of artificial intelligence. Provided, of course, that appropriate training is provided. In the long term, researchers could focus on artificial intelligence training programs. Tondeur et al. (2021) argue that targeted training can be the catalyst for a more effective integration of artificial intelligence into teaching practice (Tondeur et al., 2021).

Undoubtedly, the future of education will be largely determined by how societies choose to responsibly and creatively harness the potential of artificial intelligence.



REFERENCES

- Abrahams, M., & Matusheski, N. V. (2020). Personalised nutrition technologies: A new paradigm for dietetic practice and training in a digital transformation era. *Journal of Human Nutrition and Dietetics*, 33(3), 295.
- Acevedo-Duque, Á., Argüello, A. J., Pineda, B. G., & Turcios, P. W. (2020). Teacher competences in online education in time of COVID-19: Public Universities of Honduras [Competencias del docente en educación online en tiempo de COVID-19: Universidades Publicas de Honduras]. *Revista de Ciencias Sociales*, 26, 206–224.
- Barber, W. (2015). Digital pedagogy and the social construction of knowledge in physical education Teachers. In J. A. Cubric M. (Ed.), *Proceedings of the European Conference on e-Learning, ECEL* (pp. 50–56). Academic Conferences Limited. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-84977109268&partnerID=40&md5=0619fb8c6056547133fd49f30cf188fc>
- Benlamri, R., Klett, F., & Wang, M. (2016). Editorial: Models, technologies and approaches toward widening the open access to learning and education. *Knowledge Management and E-Learning*, 8(1), 1–9.
- Cayirtepe, Z., & Senel, F. C. (2022). The future of quality and accreditation surveys: Digital transformation and artificial intelligence. In *INTERNATIONAL JOURNAL FOR QUALITY IN HEALTH CARE* (Vol. 34, Issue 2). <https://doi.org/10.1093/intqhc/mzac025>
- Cohen, L., Manion, L., & Morrison, K. (2008). *Μεθοδολογία εκπαιδευτικής έρευνας* (Πρώτη Έκδοση). METAIXMIO.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed). SAGE Publications.
- Darling-Hammond, L., Hyler, M., & Gardner, M. (2017). *Effective Teacher Professional Development*. Learning Policy Institute. <https://doi.org/10.54300/122.311>
- Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010). Teacher Technology Change: How Knowledge, Confidence, Beliefs, and Culture Intersect. *Journal of Research on Technology in Education*, 42(3), 255–284. <https://doi.org/10.1080/15391523.2010.10782551>
- Gayed, J. M. (2025). Educators' perspective on artificial intelligence: Equity, preparedness, and development. *Cogent Education*, 12(1), 2447169. <https://doi.org/10.1080/2331186X.2024.2447169>
- Habib, S., Vogel, T., Anli, X., & Thorne, E. (2024). How does generative artificial intelligence impact student creativity? *Journal of Creativity*, 34(1), 100072. <https://doi.org/10.1016/j.yjoc.2023.100072>
- Halachev, P. (2023). Academics' Attitudes toward AI Challenges in Education: Tradition vs Innovation. *Futurity Philosophy*, 2(3), 39–55. <https://doi.org/10.57125/FP.2023.09.30.03>
- Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial Intelligence in Education. Promise and Implications for Teaching and Learning*. Center for Curriculum Redesign.
- Johnson, D. (2024). *Exploring Academic Perspectives: A Survey-Based Study on the Impact of Artificial Intelligence in Education*. EdArXiv. <https://doi.org/10.35542/osf.io/c6bfv>



- Luckin, R., Holmes, W., & Forcier, L. B. (2016). *Intelligence Unleashed: An argument for AI in Education*.
- Mishra, P., & Koehler, M. J. (2006). *Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge*. 108, 1017–1054.
- Noy, C. (2008). Sampling Knowledge: The Hermeneutics of Snowball Sampling in Qualitative Research. *International Journal of Social Research Methodology*, 11(4), 327–344. <https://doi.org/10.1080/13645570701401305>
- OECD. (2013). *PISA 2012 Assessment and Analytical Framework: Mathematics, Reading, Science, Problem Solving and Financial Literacy*. OECD. <https://doi.org/10.1787/9789264190511-en>
- Selwyn, N. (2022). *Education and Technology: Key Issues and Debates* (Third edition). BLOOMSBURY ACADEMIC Bloomsbury Publishing Plc.
- Serban, D., Cristache, S. E., Ciobotar, N. G., Francu, L. G., & Mansou, J. (2024). Quantitative Evaluation of Willingness to Use Artificial Intelligence within Business and Economic Academic Environment. *Amfiteatru Economic*, 26(65), 259. <https://doi.org/10.24818/EA/2024/65/259>
- Stoumpou, A. I., & Stoumpou, R. I. (2025). Modern Digital and Technological Educational Methods. *Trends in Higher Education*, 4(2), 25. <https://doi.org/10.3390/higheredu4020025>
- Stoumpou, A. I., Stoumpou, R. I., Talias, M. A., & Tsiantos, V. (2025). Artificial Intelligence in Economics Education: Research Trends, Scientific Activity, and Future Directions. *Robotics and Automation Engineering Journal*, 6(4). <https://doi.org/10.19080/RAEJ.2025.06.555695>
- Tondeur, J., Petko, D., Christensen, R., Drossel, K., Starkey, L., Knezek, G., & Schmidt-Crawford, D. A. (2021). Quality criteria for conceptual technology integration models in education: Bridging research and practice. *Educational Technology Research and Development*, 69(4), 2187–2208. <https://doi.org/10.1007/s11423-020-09911-0>
- Tondeur, J., Van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2017). Understanding the relationship between teachers' pedagogical beliefs and technology use in education: A systematic review of qualitative evidence. *Educational Technology Research and Development*, 65(3), 555–575. <https://doi.org/10.1007/s11423-016-9481-2>
- Williamson, B., & Eynon, R. (2020). Historical threads, missing links, and future directions in AI in education. *Learning, Media and Technology*, 45(3), 223–235. <https://doi.org/10.1080/17439884.2020.1798995>
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – where are the educators? *International Journal of Educational Technology in Higher Education*, 16(1), 39. <https://doi.org/10.1186/s41239-019-0171-0>