Measuring Job Satisfaction of Government Employees and the Impact of Digital Transformation in the Public Sector

Vasiliki Tzavella, Athanasia Konstantinopoulou, Athina Lazakidou

Abstract

Job satisfaction among government employees has always been a critical area of research, and its importance has only grown in the face of rapid digital transformation within the public sector. As governments increasingly embrace digital tools and technologies, understanding how these changes affect employee satisfaction is crucial for ensuring effective and efficient public service delivery. This study aims to explore the relationship between digital transformation in the public sector and job satisfaction among public administration employees. The research specifically focuses on local government workers in the Peloponnese region, a geographically diverse area characterized by both urban and rural challenges.

The research employs a quantitative methodology, utilizing a structured questionnaire based on a comprehensive literature review. The survey is designed around key factors that influence job satisfaction in the context of digital modernization: Human Resources Management, Training and Development, Administrative Procedures, and Digital Skills. Simple random sampling was used to select respondents, ensuring a representative sample of government employees within the Peloponnese Region. One of the primary objectives of this research is to evaluate how employees perceive the region's efforts to modernize its public administration through digital tools and technologies. This includes assessing their satisfaction with the training programs offered to improve their digital skills, as well as the overall effectiveness of the new digital systems in enhancing work productivity and efficiency.

This study also examines whether the conditions in the Peloponnese are conducive to the successful implementation of digital tools aimed at improving government services. This involves evaluating employee perceptions of whether the infrastructure, resources, and organizational support are sufficient to ensure successful digital transformation in public administration. Through a detailed analysis of survey responses, this research will provide insights into the correlations between digital transformation initiatives and various aspects of employee satisfaction. The findings will help identify the key factors that drive satisfaction among government employees and inform future strategies for improving public sector management in the digital age. Finally, the study proposes recommendations for further research to deepen our understanding of the impact of digital transformation on employee well-being and public sector performance.

Keywords: Digital Transformation, e-Government, Digital Skills, Human Resources

JEL Classification: L86, M53, 033, J24, H83

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DOI: 10.32725/acta.2025.001

Introduction

Digital transformation is the process of integrating digital technologies into every aspect of a company, which results in significant adjustments to how services are provided and run (Deloitte, 2020). Digital transformation in the public sector seeks to enhance citizen-centric services, expedite administrative procedures, and raise public administration's general efficacy and efficiency. Public organizations can provide more inventive and flexible services by utilizing data, automation, and connectivity through the adoption of Information and Communication Technologies (ICT).

The accomplishment of programs intended to modernize digital processes is contingent upon the contentment of personnel. Positive perceptions of digital transformation initiatives among employees increase their propensity to adopt new technology, accept change, and actively support business goals (Liberal, 2021). Assessing employee satisfaction provides information about the advantages of digital modernization as seen by the workforce as well as pinpointing areas that can use improvement.

This study intends to determine areas that need attention and gauge the effectiveness of digital modernization activities by evaluating employee satisfaction levels in the Peloponnese Region. Employees must participate in successful training programs in order to gain the knowledge and abilities needed to use modern information systems. This research aims to evaluate the efficacy of current learning methods and pinpoint areas for improvement by measuring employee satisfaction with the training programs and technologies used. It will be easier to create specialized strategies to improve the development of digital skills and guarantee the successful integration of new information systems by looking at employee perspectives and comments on training programs.

ICT utilization has a significant positive impact on public sector organizations' productivity and efficiency. ICT can enhance resource allocation, lower costs, and improve service delivery through data-driven decision making and streamlined procedures (Cascio and Montealegre, 2016). This study intends to determine the influence of ICT on the performance of the Peloponnese Region and identify areas where further improvements can be achieved through the examination of pertinent indicators and employee input.

A few requirements need to be satisfied for the use of digital technologies to be implemented successfully. These include having the right infrastructure in place, having an innovative organizational culture, having the resources needed, having laws and rules that support them, and having employees that are ready to use digital technologies (Scott and Grattion, 2016). The purpose of this study is to evaluate whether the Peloponnese Region possesses the prerequisites for the effective use of digital solutions that enhance employee digital competencies.

Theory

The penetration of modern IT and communications technologies gives priority to the provision of services, from the public or private sector to the citizen, in a continuous, uninterrupted and customer-centric manner. (Mergel et al., 2018). Digital transformation (digital transformation) is a continuous procedure, which aims to get better an organization or an entity (as a whole of the state apparatus or even an individual public service) through the activation and initiation of significant changes in all dimensions of the organization, which implemented through combinations of telecommunications, information, connectivity and computing technologies (Vial, 2019).

Defining the concept of digital technologies, they combine communication, information, connectivity and computing (Bharadwaj et al., 2013). Such is the interaction and identification of the above technologies that their common name has prevailed with the characteristic

acronym "SMACIT", which is used to describe very powerful readily available technologies, such as technical intelligence, robotics, virtual reality (Sebastian et al., 2017).

Digital competence, which aims at information, communication and solving basic problems reliably, is one of the basic human abilities and refers to the full use of digital technologies (Stiakakis et al., 2019).

Information and Communication Technologies (ICT) education refers to the set of IT skills that allow active participation in a society. Technological literacy necessitates a profound understanding of digital technology, encompassing both user skills and technical computing abilities (Madalina, 2021).

Since digital technology is now widely used and employed for a wide range of applications, the concept of digital competence has expanded. In the digital world, efficiency, creativity, and critical thinking are linked to digital competence (Muller, 2015). According to Manco-Chavez et al., digital competence is the broad range of knowledge, abilities, and attitudes needed in a digital context (Manco-Chavez et al., 2020).

Depending on the audience, the goal, and the situation, digital skills might have different definitions (Kauffman et al., 2017). According to Van Dussen et al. (2012), digital skills are the abilities needed to use the Internet to its full potential while accounting for variables like age, gender, and educational attainment.

Due to its low level of digital maturity and the speed at which technology is advancing, Greece must act quickly, simultaneously, on several fronts, and within a constrained amount of time. As a tool for measuring the digital performance of EU member states, the European Commission established the Digital Economy and Society Index (DESI). The index is made up of both quantitative and qualitative dimensions that show the digital development of EU member states (European Commission, 2020). It should be remembered that the DESI index is a ranking indicator, meaning that it shows a country's performance relative to others rather than its absolute performance.

While significant steps have been taken for e-government in Greece, the Public Administration still suffers from costly, time-consuming services, complex procedures, bureaucracy and opacity. The Digital Economy and Society Index (DESI) tracks the progress of EU countries and summarizes indicators of Europe's digital performance.

Aim

To realize the goal, the digital transformation of the administrative processes of the Peloponnese Region was chosen as a case study for investigation. The pre-existing knowledge, as captured by the theoretical overview, forms the basis of the present study, in order to investigate reality using techniques and methods capable of capturing it objectively and impartially.

The four criteria identified for the Digital Transformation of the Peloponnese Region (1. Human resources, 2. Partnerships and resources, 3. Administrative Processes and 4. Digital skills) are interrelated influencing factors in the adoption and success of digital technologies. Human resources include the skills, abilities and attitudes of employees. Partnerships and Resources include collaboration with external stakeholders, allocation of resources and access to necessary infrastructure. The administrative procedures concern the efficiency and effectiveness of the operational procedures of the region. Digital skills refer to the ability and proficiency of employees to use digital tools and technologies.

The research aims to examine the correlation between these criteria, in order to determine the extent to which they influence each other and collectively contribute to the digital

transformation of the Region. An attempt is made to investigate the opinions of administrative officials in order to analyze the different conditions - criteria for the effective implementation of tools, aimed at the digital modernization of the Peloponnese Region.

Methodology

Initially, the theoretical framework was examined through a literature review and a thorough investigation of the existing legislation governing e-government and digital transformation, the use of digital tools in Greek Public sector generally, the digital skills and abilities of human resources and the conditions of digital maturity, as recorded by specific measurement indicators, the main research questions were defined that delimit the contribution of the present research to the existing reality. The research aims to evaluate the satisfaction of employees from the digital modernization actions, the existence of a correlation between the four criteria / conditions that will be analyzed extensively below and which constitute the four areas of research for the digital transformation of the Peloponnese Region. It also investigates the degree of satisfaction of the employees of the Peloponnese Region with the training programs and the technologies used to learn the new information systems and whether the use of ICT contributes to the efficiency and productivity improvement of the employees of the Peloponnese Region. Finally, is examined whether the conditions are ripe in the Peloponnese Region for the effective and efficient implementation of digital tools that upgrade the digital skills of its employees.

The research was carried out in June 2023 using an online questionnaire for the employees of the Peloponnese Region. The entire research conducted was based on the tool provided by the Google platform, "Google Forms", through which a structured questionnaire was formulated. For the selection of the sample, the method of simple random sampling was followed. Based on the available literature, sampling corresponds to the process of collecting observations from a random sample, which is a part of the individuals of a random population. By using this specific method, the representativeness of the characteristics of the population under consideration is ensured. A total of 206 questionnaires were collected among 750 permanent, private law fixed-term and indefinite-term employees and Public Service employees, consisting of (37) closed-type Likert scale questions, as well as multiple-choice questions, structured in (5) sub-sections:

- Demographic characteristics
- Human resources and digital transformation of the Peloponnese Region
- Partnerships and resources for the digital transformation of the Peloponnese Region
- Administrative procedures - functions of the Peloponnese Region
- Digital skills of human resources of the Peloponnese Region

After the data was collected, the statistical processing followed with the statistical packages SPSS 25 and JASP 0.17.0. The reliability of the research instrument was assessed using the Cronbach a index. The results indicate a high level of internal consistency between the items of the scale, with a Cronbach's Alpha coefficient equal to 0.923. The value of the coefficient indicates that the scale items are highly correlated with each other, indicating that they measure the same underlying construct. The high reliability coefficient provides strong evidence for the internal consistency and stability of the research instrument.

The results of the normality statistical tests, performed through the Kolmogorov-Smirnov and Shapiro-Wilk tests, show that statistically higher values indicate a distribution that is closer to normality.

The review of relevant literature guided the formulation of research hypotheses, in order to draw conclusions that confirm or reject the theory. This research should answer the following research questions:

- To what extent are employees satisfied by the actions of the Peloponnese Region for its digital modernization?
- Is there a correlation between the four criteria/conditions - Human Resources, Partnerships and Resources, Administrative Processes, Digital Skills - that constitute the four areas of research for the digital transformation of the Peloponnese Region?
- To what extent are the employees of the Peloponnese Region satisfied by the training programs and the technologies used to learn the new information systems?
- Does the use of ICT contribute to the efficiency and productivity improvement of the Peloponnese Region employees?
- Are the conditions ripe in the Peloponnese Region for the effective and efficient implementation of digital tools that upgrade the digital skills of its employees?

Demographic Characteristics

The majority of research participants were women. Specifically, in the "Gender" category, 44.7% declared men and 55.3% women. The specific ratio is equivalent to the ratio of the actual population of employees of the Peloponnese Region.

Based on the age group, it is found that 12.6% of the people were aged 25 - 34 years, while 18.9% of the participants belonged to the age group of 35 - 44 years. The largest percentage (44.7%) were aged 45 - 54, and 23.8% of participants reported age 55 or older.

Regarding the educational level, the compulsory education category represents only 1.0% of the sample. The secondary education category reached 19.9% of the sample. The percentage of the technological education category was smaller, comprising 15.0% of the sample. Holders of a university degree correspond to 25.7%, while a master's degree holds the highest percentage with 35.9%. Finally, 2.4% of the sample holds a PhD, as expected. The findings highlight the prevalence of postgraduate degree holders and the diversity of educational backgrounds represented in the sample.

In the category of computer operation knowledge, 75.7% of the participants declared certified knowledge, while 24.3% declared the possession of empirical knowledge.

The percentage distribution of participants in the category of previous service in the Peloponnese Region, 8.7% state that they have worked up to 1 year. 24.8% reported working years between 1 and 5 years, while 5.3% have worked between 6 and 10 years and 14.1% have worked between 11 and 16 years. The majority of the participants, which make up 47.1% of the sample, have more than 17 years of work experience in the Region. These figures are about the actual distribution of labor in the Peloponnese Region.

In the category of employment relationship, the percentage distribution reveals that the vast majority (71.4%) belong to the category of permanent employees. They are followed by employees with a fixed-term employment contract (12.6%), while 10.2% have an indefinite-term employment contract. Finally, 5.8% work through Community Service Work Programs.

Results

Employee Satisfaction from the Use of Digital Tools

With the first research question, it was examined to what extent the employees of the Peloponnese Region are satisfied by its digital modernization. First, descriptive statistics were calculated for the two variables (diagram 1): satisfaction by the use of digital tools and the

digital transformation level. The sample size is equal to 206, with a minimum value of [1] (= not at all) and a maximum value of [5] (too much). The mean satisfaction score reached 3.38, with a standard deviation of 0.823, indicating a moderate level of satisfaction. The digital transformation variable also had a range of values from [1] to [5]. The mean level of digital transformation reached 3.14, with a higher standard deviation of 1.152, indicating greater variation in responses regarding digital transformation.

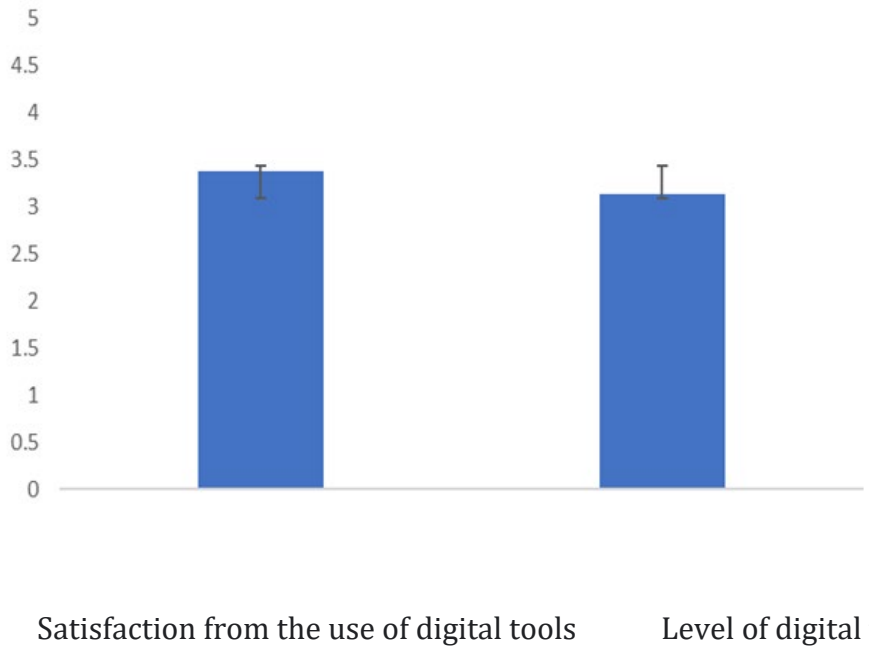


Fig. 1. Satisfaction from the Use of Digital Tools and the Level of Digital Transformation.

Digital Transformation Research

With the second research question, it was examined whether there is a correlation between the four criteria / conditions - Human Resources, Partnerships and Resources, Administrative Procedures, Digital Skills - which constitute the four areas of research for the digital transformation of the Peloponnese Region.

Four new variables, one for each criterion, were calculated as mean values of the corresponding questions. Then the linear correlation (table 1) between the new variables was calculated. The correlation table shows the linear correlation between the four variables: "Partnerships and Resources", "Administrative Processes", "Digital Skills" and "Human Resources". The results show that all correlations are statistically significant at the 0.01 level and therefore there is a linear correlation in the population. The highest correlation coefficient of 0.729 is observed between the variables "Partnerships and Resources" and "Human Resources", indicating a strong positive correlation. Similarly, "Administrative Processes" shows a positive linear correlation with both "Partnerships and Resources" (0.577) and "Human Resources" (0.614). In addition, "Digital Skills" show a positive linear correlation with Partnerships and Resources (0.547) and Administrative Processes (0.562).

		PARTNERSHIPS AND RESOURCES	ADMINISTRATIVE PROCEDURES	DIGITAL SKILLS	HUMAN RESOURCES
PARTNERSHIPS AND RESOURCES	Pearson Correlation Sig.(2-tailed) N	1	.577** .000 206	.547** .000 206	.729** .000 206
ADMINISTRATIVE PROCEDURES	Pearson Correlation Sig.(2-tailed) N		1	.562** .000 206	.614** .000 206
DIGITAL SKILLS	Pearson Correlation Sig.(2-tailed) N			1	.580** .000 206
HUMAN RESOURCES	Pearson Correlation Sig.(2-tailed) N				1

**. Correlation is significant at the 0.01 level (2-tailed).

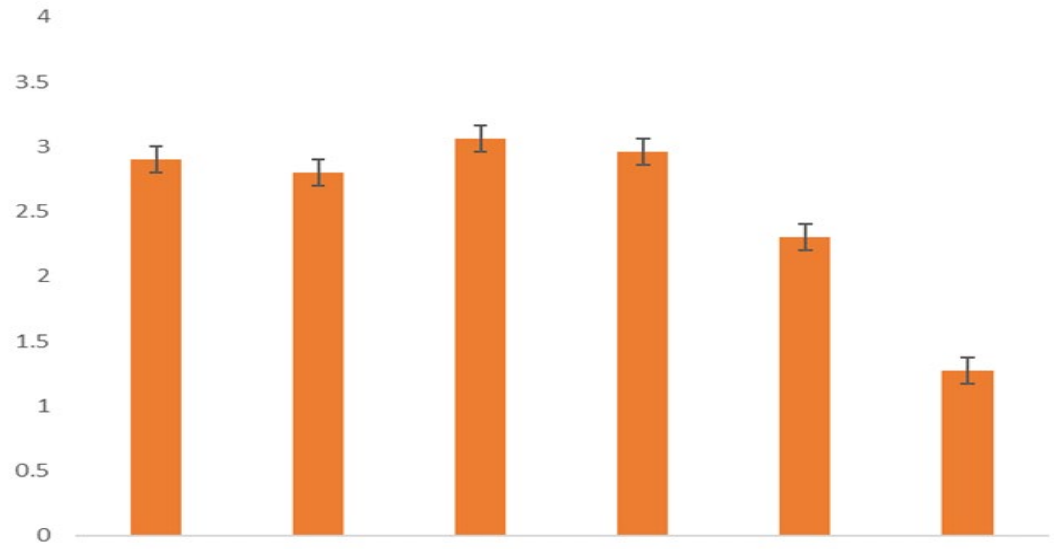
Table 1. Linear Correlation between Criteria/Conditions

Employee Satisfaction by Training Programs

With the third research question, was examined the extent to which the employees of the Peloponnese Region are satisfied by the training programs and the technologies used for learning the new information systems, by the employees (diagram 2). Answers were given on a five-point LIKERT scale.

First, descriptive statistics of the sample responses were calculated. Values mainly below the middle of the scale, were observed. The degree of satisfaction with the staff training framework received a mean score of 2.90 with a standard deviation of 0.902. Designing modern training programs adapted to existing and future organizational and individual needs received a mean score of 2.80, with a standard deviation of 0.975, below the scale mean. In addition, utilization of modern training methods received a higher mean score of 3.06, albeit with a relatively larger standard deviation of 1.060. Similarly, the use of e-learning as a training method had a mean value of 2.96, with a slightly larger standard deviation of 1.164.

In contrast, attending training activities to develop digital skills among employees received a lower mean score of 2.30, with a standard deviation of 1.001. In addition, respondents reported a mean score of 1.27, with a standard deviation of 0.446, regarding their participation in educational programs aimed at enhancing their digital skills.



Is the necessary training and work environment provided?	Is the formation of modern training programs intented?	Do modern training methods used?	Is distance learning used as a training method?	Are educational activities monitored?	Have you participated in any educational program?

Fig. 2. Degree of Satisfaction with Training Programs

Contribution of ICT to the Efficiency and Productivity Improvement

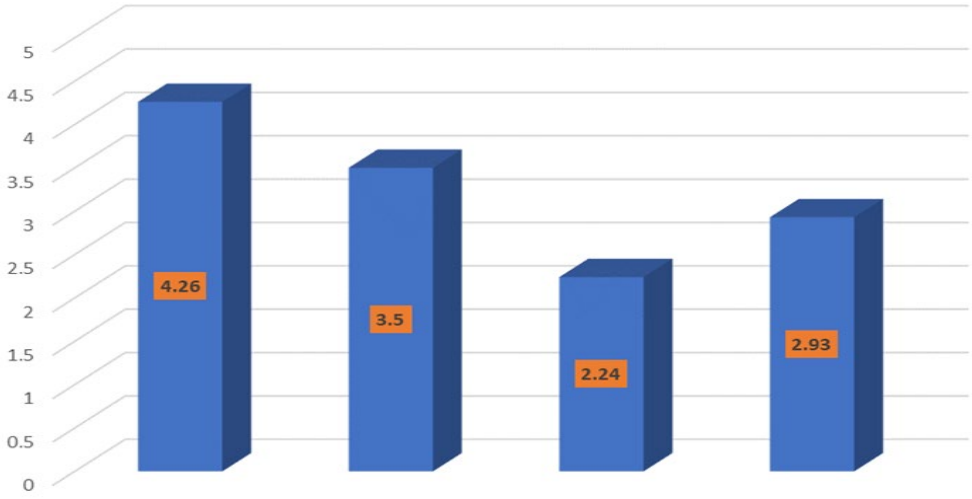
To what extent the use of ICT contributes to the efficiency and productivity improvement of the Peloponnese Region employees, was the subject of the fourth research question (diagram 3). There were four individual questions regarding the contribution of ICT but also the application of methods to measure the efficiency and productivity of employees. Answers were given on a five-point scale, with [3] being the moderate agreement.

Four variables related to the degree of agreement on whether the use of ICT contributes to improving employee efficiency and productivity, were examined.

- Regarding the extent to which the use of ICT contributes to the improvement of services provided to citizens - clients, the average value reached 4.26, indicating a high level of agreement. The standard deviation was 0.763, indicating moderate variability.
- Similarly, for the variable that examined whether the use and maintenance of technical equipment contributes to the realization of digital transformation goal, the mean value reached 3.50, indicating a moderate level of agreement. The larger standard deviation of 1.016 indicates a greater degree of response variability compared to the previous variable.
- The existence of indicators to evaluate the effectiveness of administrative procedures was rated low with a mean response value of 2.24, indicating a lower level of agreement

between respondents. The relatively large standard deviation of 1.034 indicates a wide range of opinions and evaluations on this variable.

- Finally, for the degree to which the influence of internet and e-government applications on the processes is assessed, the average value reached 2.93, indicating a moderate level of agreement. A standard deviation of 1.026 indicates considerable variation in responses.



Does the use of ICT contribute to the improvement of the services provided?	Does the use and maintenance of technical equipment contribute to the realization of the goal of digital transformation?	Are there indicators for evaluating effectiveness?	Is the impact of web and e-government applications being evaluated?

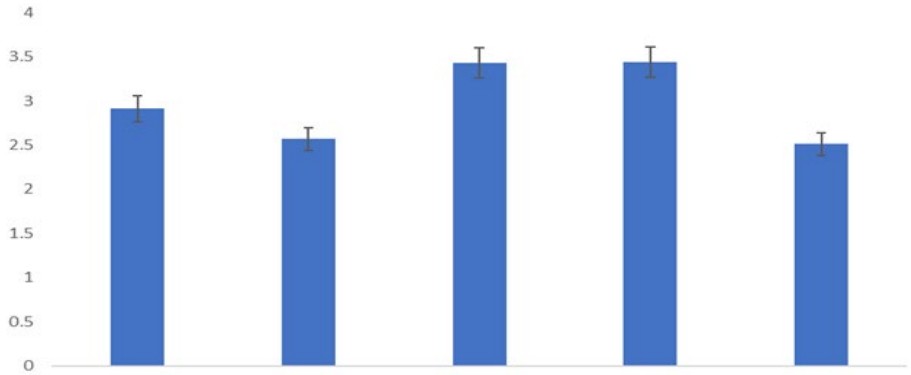
Fig. 3. ICT Contribution to Efficiency and Productivity improvement

Maturity Stage of the Conditions for Digital Tools Application

In the fifth research question, it was examined whether the conditions in the Peloponnese Region are ripe for the effective and efficient application of digital tools (diagram 4). Questions were asked about the extent to which changes in the external environment are taken into account in goals and processes, the evaluation and review of processes, the effects of new digital applications on employees and their skills, and the relationship of digital skills development to educational level of employees. The research focuses initially on sample descriptive statistics that provide information about the central tendency and dispersion of responses in the sample.

- For the extent to which changes in the external environment and objectives are taken into account when evaluating management processes, the mean of responses was 2.91 with a standard deviation of 0.961. This shows a relatively moderate – neutral attitude and some variability in responses.

- The responses for the degree of evaluation and review of administrative procedures moved slightly lower, as a result of their efficiency. The average value of the responses reached 2.57 and the standard deviation reached 0.979. These values indicate a slight disagreement about the assessment and review processes.
- For upgrading employees' digital skills through new digital functions and applications, the responses corresponded to a relative agreement, since the mean reached 3.43 and the standard deviation 0.954. It shows a moderate positive effect on improving participants' digital skills, with moderate variability.
- The assessment of the relationship of digital skills development with the level of education, by the participants, led to a relative agreement with the mean value equal to 3.44 and the standard deviation to 1.038.
- Also, the participants reported that those in a position of responsibility were not preceded in training seminars on the development of digital skills. The mean reached just 2.51 and the standard deviation was 1.168. These values suggest that people in positions of responsibility were not preceded by educational seminars on the development of digital skills, according to the survey participants.



what extent are changes in the external environment and objectives taken into account when evaluating management processes?	To what extent are processes evaluated and reviewed based on their effectiveness?	Do you think that new digital features and apps have upgraded your digital skills?	the development of digital skills considered related to your level of education?	Have those in positions of responsibility went before to attend training seminars on the development of digital skills?

Fig. 4. Maturity of Conditions for the Effective and Efficient Application of Digital Tools.

Conclusion

This study explores research questions related to the digital transformation of a public organization, specifically the Peloponnese Region. It first examines employee satisfaction with the Region's efforts toward digital modernization. The findings indicate a neutral to slightly positive attitude regarding the use of ICT and a neutral stance on the overall level of digital modernization.

An analysis of the relationships between the four key factors of digital transformation revealed statistically significant correlations. A strong positive linear correlation was observed between "partnerships and resources" and "human resources." The variable concerning administrative processes showed a positive correlation with both partnerships and resources, as well as human resources. Additionally, digital skills were positively correlated with both collaborations and administrative processes. Overall, the findings highlight significant interdependencies among the four criteria for digital transformation in the Peloponnese Region.

Employee satisfaction with the training programs and technologies used for learning new information systems was found to be moderate. Satisfaction with the staff training framework and the development of modern training programs scored below the midpoint on the scale. Even lower levels of satisfaction were recorded for participation in specific educational programs and, more broadly, in programs aimed at enhancing digital skills.

Regarding the contribution of ICT to employee efficiency and productivity, responses showed strong agreement. In contrast, there was disagreement about the existence of indicators for evaluating the efficiency of administrative processes, and a moderately positive view on the impact of the internet and e-government applications on these processes.

Employees expressed a negative view of the maturity of conditions for effectively implementing digital tools. Similarly, they assessed negatively the extent to which administrative procedures are evaluated and revised based on efficiency. Their views were nearly neutral regarding how well external changes are considered in planning. Individually, employees believe they have improved their digital skills relative to their educational background. However, those in managerial positions were not given priority in training opportunities. A lack of time and motivation to attend training were identified as key barriers. On the positive side, organizational improvement was seen as the most important benefit of digital transformation, according to participants.

This study provides a snapshot of the current situation and assesses the level of administrative functionality. The data collected from employee responses largely align with findings from the literature review. The sample included 206 employees from all Regional Units of the Peloponnese. Expanding the research to other regions would provide a broader basis for generalizing the results.

It is recommended that employee opinions be re-evaluated in the future to further support the study's theoretical framework. Additionally, future research should examine employee satisfaction with organizational leadership, planning, and strategy.

Lastly, assessing citizen satisfaction with the quality of digital services during interactions with the Peloponnese Region's services would be valuable. Furthermore, evaluating the digital maturity of society and citizens' digital skills is essential for the comprehensive implementation of digital transformation. This would aim to simplify and digitize administrative procedures, reduce the administrative burden, and ultimately enhance competitiveness, productivity, investment, and citizen engagement.

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