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Enhancing Telework: Public Sector Employees' Attitudes and Key Factors for Effective Implementation

Panagiota Xanthopoulou^{*}, Vassilis Vyttas[†], Afroditi Gaitanarou[‡]

Abstract

Teleworking is a working model that has experienced a substantial increase in recent years at a global level due to the emergence of the COVID-19 pandemic. This study aims to identify employees' attitudes in the public sector regarding the implementation of telework, as well as the recording of the characteristics that contribute to improving performance and, therefore, its more effective implementation. A bibliographic review method was chosen where a total of 46 empirical studies or primary data were studied, both in Greek and foreign language literature. From the literature review results, it was found that those employed in the public sector maintain a positive attitude towards the implementation of telework, provided that appropriate working conditions are ensured, and their expectations are met. Also, it was observed that the existence of the necessary infrastructure, the attitudes of the employees, the provision of suitable working conditions, as well as the existence of the required knowledge and skills are the factors that influence the effectiveness of the implementation of telework. Finally, it is proposed that empirical research be carried out in Greece due to the need for corresponding studies.

JEL Classifications: J24, J38, J28, J45

Keywords: telework, public sector, employee attitudes, telework effectiveness, job satisfaction

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1. Introduction

The concept of telecommuting was first coined in 1975 by Niles to define working from home. In particular, the application of telecommuting in the 1970s described remote work mainly via telephone. Since the 1980s, it has been increasingly applied, which continued into the 1990s, resulting in telecommuting being described as a flexible form of work (Tokey & Alam, 2023). According to the definition given by Rabelo (2000), telework is a condition in which work is transferred to the employee's place of work instead of the other way around. Another definition of telework comes from Perez et al. (2007), according to which telework is an alternative form of work organization that enables employees to use information technologies and work from their homes or other remote places (Filardi et al., 2020; Xanthopoulou, 2020; Xanthopoulou et al., 2022). The development of teleworking has been associated with both advantages and disadvantages for employees and the functioning of the organizations that implement it (Vayre et al., 2022). The positive effects of teleworking include increased flexibility, employee autonomy, increased concentration, improved satisfaction, reduced stress, improved work-life balance, better scheduling of tasks, increased productivity, and improved performance (Filardi et al., 2020). On the other hand, the implementation of telecommuting has been associated with negative effects such as, typically, the risk of increased working hours, workaholism, increased stress due to uncertainty, reduced communication and collaboration with colleagues, feelings of loneliness and social exclusion, reduced job satisfaction, reduced sense of organizational commitment, and increased risk of tensions and conflicts in one's personal life (Filardi et al., 2020; Vayre et al., 2022). Over the last two decades, teleworking has shown an increasing trend. In recent years, technological development, the aging workforce profile in Western countries, increased commuting time to work, and the financial burden on businesses have made teleworking more convenient. The emergence of the COVID-19 pandemic, which has had a rapid impact not only on the health sector, but also on the work environment and society in general, has played a decisive role in the growth of teleworking in the last four years (Ortiz-Lozano et al., 2022).

For teleworking to be effective in the public sector, it must be linked to organizational culture. It has been documented that the absence of a culture in which there will be a lack of trust from senior managers in the workforce, poor communication between employees, and/or no support from managers to subordinates, and telework cannot be made effective (Korkeakunnas et al., 2023). The quality of service delivery in the public sector is closely linked to human resource performance. Therefore, quality of service delivery is linked to the level of satisfaction that public sector employees enjoy through their work. Cailier (2014) found that public-sector employees who perform their duties through telecommuting have a higher level of satisfaction than those employed in the workplace. One of the major challenges faced by public organizations when implementing teleworking is related to its evaluation (De Vries et al., 2018). As De Vries et al. (2018) stated, although the teleworking model is often implemented in the public sector, it is only sometimes effective. The fact that the implementation of teleworking as a working model needs to be evaluated results in negative effects on the employees themselves and, consequently, on the effective functioning of the organization. In particular, it has been reported that, in cases where public managers do not supervise and/or do not identify and understand the needs of employees, the effects of teleworking include reduced performance, feelings of insecurity among employees, poor communication, and reduced organizational commitment. Based on the above, teleworking is a relatively new form of work with both positive and weak points. In the case of the public sector, evaluation of the implementation of teleworking becomes more important as the quality of services is related to the performance of

employees. Therefore, it seems appropriate for senior managers of public organizations and institutions to identify the weaknesses of employees performing their tasks remotely, evaluate the results, and create appropriate conditions to increase employee satisfaction through teleworking (De Vries et al., 2018). Considering that the relationship between teleworking and the effectiveness of public organizations depends on the positive attitude and effective performance of public employees' duties, this study's framework is expected to record employees' attitudes about the contribution of teleworking to the level of satisfaction they experience, as well as the characteristics they believe they need to make it effective.

The purpose of this study is to highlight the attitudes of employees in public sector organizations regarding the implementation of teleworking, and to record the characteristics that contribute to the improvement of performance and, thus, to the more efficient operation of public organizations. Although teleworking as a form of work was pre-existing, interest in research studies has increased after the COVID-19 pandemic. This is because teleworking has become mandatory in recent years; hence, different conditions have emerged regarding employee attitudes. Previously, individuals who chose to work remotely were by choice; therefore, there was a preexisting positive attitude towards the compared type of work (Doberstein & Charbonneau, 2022). The ultimate purpose of this study is to highlight the factors that determine the effective implementation of telecommuting in the public sector to capture the appropriate conditions for more efficient operation of employed staff and public institutions in general. To achieve this study's purpose, two research objectives were created and divided into three research questions. The first research objective relates to the emergence of civil servants' attitudes toward the development of teleworking in the public sector and whether it is related to their level of job satisfaction. The second research objective was to identify the characteristics that public sector employees consider necessary when implementing teleworking to improve employee performance. Based on the above, the following research questions were posed:

- *RQ1. What is the attitude of public-sector employees towards the implementation of teleworking as a working method?*

Both positive and negative attitudes characterize the implementation of teleworking in the public sector. De Vries et al. (2018) found that public sector employees have positive attitudes towards teleworking, which is positively related to increased organizational commitment, while there are employees who have negative attitudes due to the increased risk of isolation from their colleagues. Filardi et al. (2020) indicated that public sector employees' positive attitudes are associated with reduced commuting, a higher sense of security, flexibility in working hours, improved quality of life, and autonomy. Conversely, factors such as lack of communication, isolation, fear of negative evaluation, lack of recognition, and the combination of family and work commitments negatively impacted attitudes towards teleworking.

- *RQ2. How does teleworking relate to the job satisfaction of public-sector employees?*

Novianti and Roz (2020) found that the relationship between teleworking and job satisfaction of public sector employees is positive but not statistically significant. In contrast, in Cailier's (2014) study, a negative correlation between telecommuting and job satisfaction among public sector employees was observed, suggesting that further studies should be conducted to identify the reasons that shape the behavior of public sector employees.

- *RQ3. What are the characteristics of teleworking that are effective for its implementation in the public sector?*

This study aimed to explore the attitudes of public service employees towards teleworking, particularly in light of the COVID-19 pandemic, which transformed telecommuting from a

flexible option to a primary form of work in the public sector for a fixed period. This study emphasizes the importance of understanding how emergencies such as the pandemic can shift attitudes toward teleworking (De Vries et al., 2018). Through a literature review, this study sought to identify the factors influencing public service employees' attitudes toward teleworking and the characteristics necessary for its effective implementation. The significance of this study lies in addressing the lack of evaluation of teleworking practices by public organizations despite the necessity of teleworking that arose during the pandemic (De Vries et al., 2018). More data are needed on the skills and needs of employees to telework effectively. The research findings are expected to have theoretical and practical implications, filling a knowledge gap by identifying the factors that positively or negatively affect teleworking in the public sector. Given the scarcity of primary data on teleworking implementation in Greece's public sector, this study can serve as a valuable resource for researchers seeking to improve the effectiveness of teleworking in public organizations. This study also examines the evolution of teleworking in recent years and offers new insights into existing literature. Understanding these dynamics is crucial, especially if similar situations requiring widespread teleworking arise, as it would provide a framework for effective implementation that considers varied employee needs (Doberstein & Charbonneau, 2022).

On a practical level, teleworking has been associated with numerous benefits, including reduced operational costs, equal employment opportunities regardless of location, continuous skill development and training of teleworkers, and the potential to enhance organizational performance (Filardi et al., 2020; Ma, 2021; Mele et al., 2023; Ortiz-Lozano et al., 2022). By identifying the factors that make telecommuting an effective form of work, this study aimed to provide insights into how telecommuting can improve human resource satisfaction and performance. As noted, teleworking can positively and negatively impact job satisfaction for public-sector employees (Cailier, 2014; Novianti & Roz, 2020) and is linked to creating incentives that enhance performance (Korkeakunnas et al., 2023). The findings of this research are expected to offer valuable guidance for optimizing teleworking practices to maximize these benefits. The first section of the research section includes the research methodology, and the next section presents the research results for each research question. The next section of the research part discusses and interprets the results based on the order of the research questions. The final section presents the conclusions, limitations of the research, and suggestions for future research.

2. Literature review and hypotheses development

2.1 The characteristics of teleworking in the public sector

According to Law 4807/2021, teleworking is governed by the following four principles: voluntary participation, equal treatment, data protection, and respect for privacy. Teleworking is generally voluntary, except in cases involving health risks or permanent health issues where it may be compulsory. Equal treatment ensures that remote and on-site employees have the same rights and obligations. Institutions must protect personal data processed by teleworkers and respect their privacy with limited monitoring of working time to meet operational needs. Teleworking's characteristics include limits on duration (up to 44 days annually) and a cap of 25% of employees participating, except in emergencies such as public health crises. It enables remote task completion, electronic information access, flexible work organization, and digital meetings (Ma, 2021; Mele et al., 2023). Teleworking also uses monitoring software to track performance and

improve efficiency and productivity (Xanthopoulou, 2022). The private and public sectors share similar characteristics of teleworking, offering time and cost savings, flexible hours, better work organization, and improved working conditions, while the negatives include costs such as the Internet and power. According to Ortiz-Lozano et al. (2022), teleworking effectiveness depends on the type of work, organizational support, adequate training, and available resources, although it may increase social isolation and complicate joint decision making.

The implementation of teleworking in the public sector became crucial during the COVID-19 pandemic when over 40% of EU employees had to work from home (Fraij & Aburumman, 2021; Economic and Social Committee of Greece, 2020). Teleworking benefits include enabling business activities across borders, offering employment opportunities for specific groups (e.g., women in single-parent families and people with disabilities), and contributing to social and regional development by equalizing employment opportunities (Economic and Social Committee of Greece 2020). From an organizational perspective, teleworking can enhance performance, reduce costs, improve work environments, and offer flexibility (Filardi et al., 2020). However, it also poses challenges such as social and professional isolation owing to a lack of guidance and poor networking (Doberstein & Charbonneau, 2022; Filardi et al., 2020). Teleworking has also led to shifts in job specializations, with some becoming obsolete and new roles emerging in information and communication technologies (Economic and Social Committee of Greece 2020). Successful teleworking requires suitable infrastructure, technological equipment, and a skilled workforce to maintain productivity equivalent to on-site work (Ameen et al., 2023). Developing collaborative relationships and effective communication between teleworkers and their colleagues are essential. Effective teleworking also depends on managerial support, flexibility in working conditions, and ensuring that teleworkers have clear responsibilities and access to necessary resources (Filardi et al., 2020). The implementation process in Greek public-sector services involves directors determining eligible teleworking roles, followed by employee requests evaluated based on job needs and work conditions (Xanthopoulou, 2022). This structured approach ensures teleworking's success through proper planning, resource allocation, and alignment with employee roles and organizational goals. It could be observed that the literature reveals mixed attitudes toward teleworking, with positive attitudes linked to increased flexibility, autonomy, and work-life balance, while negative attitudes often arise from feelings of isolation and reduced communication. Based on these findings, we propose the following research hypotheses:

H1: Public-sector employees with greater perceived flexibility will exhibit more positive attitudes toward teleworking.

H2: Public-sector employees who experience higher levels of isolation during teleworking will exhibit more negative attitudes.

Studies also suggest that job satisfaction is affected by factors such as adequate technological support, clear communication, and work-life balance. However, there are also challenges such as lack of equipment and increased family conflicts, which can cause dissatisfaction. Therefore:

H3: Adequate technological resources and managerial support positively influence job satisfaction among teleworkers in the public sector.

H4: Family obligations and personal responsibilities negatively affect the job satisfaction of public sector teleworkers.

Furthermore, the effectiveness of teleworking depends on organizational infrastructure, employee skills, and clear guidelines within the organization. Based on these arguments, the following hypothesis was proposed:

H5: The availability of the necessary infrastructure (e.g., technology and Internet access) will positively impact the effectiveness of teleworking.

H6: Teleworkers with higher levels of digital literacy and self-management skills report greater effectiveness.

H7: Organizations that implement clear communication protocols and provide role clarity achieve higher teleworking performance outcomes.

3. Methodology

A literature review was conducted in this study. This method was chosen because it enables a researcher to study and interpret a phenomenon for a given time and to draw conclusions that will enrich the theoretical background (Alasuutari, 2010). The methodology of the literature review was based on the collection of data from other research studies and their analysis and interpretation to reflect their contribution to the achievement of the aim of this study. This study is expected to document findings from empirical studies and primary data on the effectiveness of teleworking in the public sector and the satisfaction of public employees. For the implementation of the research, articles from scientific databases published in the last few years were selected, and their content was written in Greek and English literature. The scientific surveys were divided into subcategories based on their scope and data collection type. In the first case, surveys can be exploratory (collecting information on a topic), descriptive (analyzing a phenomenon), or explanatory (interpreting causal relationships between variables). Second, scientific research can be divided into different categories such as quantitative, qualitative, experimental, and mixed.

In summary, the two most popular research methods are quantitative and qualitative methods. Quantitative research is applied when a researcher wishes to quantify collected data, compare findings from other studies, and highlight trends in the general population. Qualitative research aims to study a topic in depth by recording, processing, and interpreting the personal experiences of a research sample (Creswell, 2021). A literature review was conducted to conduct this research. This approach is one of the primary methodologies for conducting research, which is reflected by the fact that the literature review is included in other types of research (e.g., quantitative and qualitative). What differentiates the literature review as a separate research method is that a more extensive literature search is conducted to develop adequate findings (Saunders et al., 2016). The choice of this method is related to the fact that it enables the researcher to study and interpret a phenomenon for a given time and to draw conclusions that will enrich the theoretical background (Alasuutari, 2009). In addition, the literature review is appropriate in cases in which the researcher seeks to evaluate an existing situation, such as an organization's effective functioning and effective implementation of a model. (Saunders et al., 2016; Xanthopoulou, 2022). The findings were derived through a search for empirical research and primary data on the effectiveness of teleworking when implemented in the public sector and the satisfaction of public employees. The data used have been published recently, and their content has been written in the Greek and English literature. The studies will be searched through reputable databases such as ERIC, Scopus, National Documentation Center, Research Gate, and Google Scholar. Initially, the articles were searched using keywords (Table 1) in the Greek and foreign language literature (telework, public sector, characteristics of telework, telework, AND job satisfaction, effective telework AND public sector, telework, public sector, characteristics of telework, telework, job satisfaction, effective telework, and public sector).

Table 1: Keywords and expressions based on Boolean type

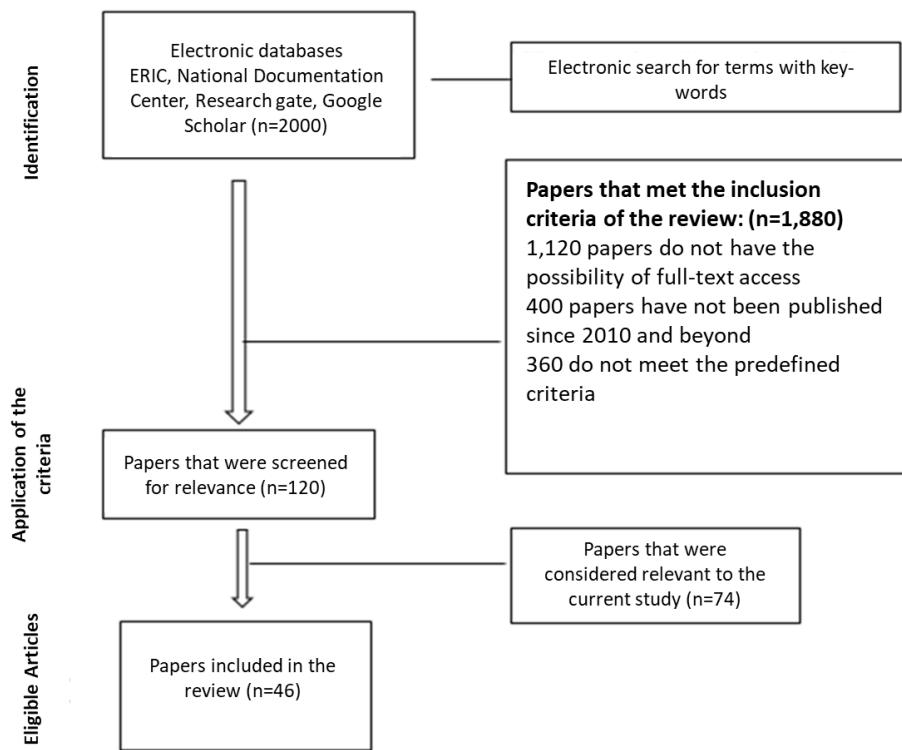
TITLE-ABS-KEY (telework), (public sector), (characteristics of telework), (telework AND job satisfaction), (effective telework AND public sector), (telework), (public sector), (characteristics of telework), (telework AND job satisfaction), (effective telework AND public sector)

In order to select articles for evaluation, the researcher will have full access to the main body of the article, not just the abstract. In general, the following inclusion criteria were set for the selection of articles in this study:

- The publication date of the scientific article must be within the last decade
- Scientific articles must be primary scientific research
- The researcher has full access to the main part of the article
- Scientific articles must be written in Greek or English

After searching the articles, a total of 46 articles were used in this paper. Their selection process is shown in the following Figure 1.

Figure 1: Data collection process diagram



A structured tool was used to collect the data, and the information gathered will answer the individual research questions of this study. The structured tool is chosen because it is divided into axes, which the researcher creates according to the information he/she wishes to gather. In contrast to the case when a researcher chooses an open data collection tool, there is a risk that

the information recorded will not correspond to the research questions and the study's objective. This tool is divided into five axes. The first axis captures the researchers' data. The second axis captures the objective, and the third axis captures the methodological approach. The fourth axis records the research sample, while the fifth axis reports the key findings of each study (Bryman, 2016; Torres-Carrion et al., 2018).

4. Results

Based on the literature review presented in section three of the research, it was found that the implementation of teleworking in the public sector is associated with both positive and negative attitudes, which are shaped by the positive and negative impacts perceived by public sector employees. In summary, the results of the literature review are presented in Table 2 below.

Table 2: Results of the first research question

1st research question: What is the attitude of public sector employees towards the implementation of teleworking as a working method?

Researcher(s)	Aim	Method	Sample	Findings
Evangelou, 2021	Views of primary school teachers on distance education during Covid-19	Quantitative research	116 primary school teachers in Epirus Region	Positive attitude towards distance work. However, they believe that distance work cannot be as effective as conventional education.
Roidis, 2021	Investigation of public employees' attitudes towards teleworking during Covid-19	Quantitative research	107 employees at the Ministry of Environment and Energy	Positive attitude towards establishing telework as a future work model. Negative attitude is associated with feelings of social and professional isolation.
Koula & Zampetakis, 2022	Recording employees' intentions regarding the implementation of teleworking	Quantitative research	83 employees in public organizations or the private sector	Both positive and negative attitudes towards teleworking.
Bagoti, 2022	Views of public servants on teleworking, including benefits and issues arising from it	Quantitative research	239 employees in EFKA, AADE, and OAED	Neutral attitude towards continuing to work with teleworking in the future; considers it moderately useful. Age negatively impacts the intention to telework.
Sarlani, 2022	Investigation of public sector employees' views on the positive and negative effects of teleworking	Quantitative research	135 employees in e-EFKA	Positive attitude towards teleworking, linked to reduced commuting time, increased flexibility and autonomy, and work-life balance.
Varotsi, 2022	Views of public sector employees on the	Quantitative research	178 employees in public services	Both positive and negative attitudes among employees.

	implementation and impact of teleworking			Usually negative, associated with lower organizational commitment, resistance to implementation, and reduced work performance.
Giannioudis, 2022	Investigation of public servants' views on the implementation of teleworking	Quantitative research	124 employees in the Labour Inspectorate	Neutral attitude towards teleworking, with both positive and negative aspects.
De Vries et al., 2018	Views of employees on the extent to which teleworking affects organizational commitment and isolation	Quantitative research	61 employees in municipalities in the Netherlands	Both positive and negative attitudes towards teleworking, with negative attitudes prevailing. Positive attitudes when teleworking is temporary.
Filardi et al., 2020	Identifying advantages and disadvantages of teleworking	Quantitative and qualitative research	(Quantitative): 98 public sector employees in Brazil; (Qualitative): 4 senior managers in public services	Attitudes are shaped by whether teleworking is perceived to have positive or negative impacts. Positive benefits (e.g., autonomy, flexible hours) and negative impacts (e.g., reduced career prospects) recorded.
Cellini et al., 2021	Investigation of public servants' perceptions of various work models	Quantitative research	9,526 public sector employees in Italy	Positive attitude towards teleworking, linked to reduced commuting time and costs and more efficient time management. Loss of social interaction is the only negative aspect.
Dandalt, 2021	Attitudes of public administration executives towards teleworking	Qualitative research	41 interviews with public service executives	Teleworking is associated with both positive (e.g., work-life balance) and negative characteristics (e.g., stress from process organization).
Durbarry, 2021	Recording public sector employees' attitudes towards teleworking	Quantitative research	3,029 public service employees in Mauritius	Positive attitudes towards teleworking are linked to its effective implementation.
Galanti et al., 2021	Highlighting employees' attitudes towards teleworking and its impacts on various areas	Quantitative research	209 employees in the public and private sectors in Italy	Positive attitude towards teleworking, linked to autonomy and handling emergencies (e.g., Covid-19). When feelings of isolation and family conflicts occur, attitudes become negative.
Alainati, 2022	Employees' views on the development of teleworking	Quantitative research	622 employees in the private and public sectors in Kuwait	Despite reduced interpersonal communication between colleagues, attitudes towards

Giauque et al., 2022	Highlighting employees' attitudes towards the impact of teleworking on work relationships, organizational commitment, and perceived job performance	Quantitative research	1,373 public sector employees in Switzerland	teleworking prevail. Positive attitudes linked to autonomy, freedom in work organization, and work-life balance. Negative attitudes associated with lack of cooperation and reduced performance.
Jamsen et al., 2022	Attitudes towards the implementation of teleworking and communication relationships between colleagues	Quantitative research	1,091 employees in public institutions in Finland	Positive attitude towards teleworking if an effective communication framework between colleagues can be maintained.
Madureira & Rando, 2022	Views of employees on the implementation of teleworking	Quantitative research	4,391 public servants in Portugal	Positive attitudes due to time and cost savings, autonomy, and daily balance. Negative attitudes linked to the risk of increased working hours and reduced personal contact.
Korkeakunnas et al., 2023	Highlighting executives' attitudes towards the implementation of teleworking	Qualitative research	27 semi-structured interviews with executives in the private and public sectors in Sweden	Both positive and negative attitudes, depending on their perception of its implementation.
Ma'arof et al., 2023	Investigation of employees' attitudes towards factors determining their intention to work remotely	Quantitative research	102 public service employees in Malaysia	Positive attitude due to economic benefits, improved quality of life, and increased productivity.
Neculaesei & Tocar, 2023	Views of public sector employees on teleworking and factors affecting their performance	Quantitative research	219 teleworking employees in the private and public sectors in Romania	Positive attitudes towards teleworking as a motivator for performance improvement. Negative attitude linked to high need for supervision.

From the list of studies studied in the first research question, it can be seen that public sector employees have developed both positive and negative attitudes towards the implementation of teleworking. This is due to the fact that, their intentions vary depending on how they perceive this form of work and the benefits - difficulties that may arise. Positive attitudes are linked to factors such as time flexibility, better planning of work, cost savings, etc. On the other hand, the feeling of social isolation, the need for supervision and the increase in family conflicts are factors that have a negative impact on attitudes towards teleworking. Table 3 below presents the results of the second research question.

Table 3: Results of the second research question

Researcher(s)	Aim	Methodology	Sample	Findings
Theodoropoulou, 2021	Determining the relationship between job satisfaction and telework.	Quantitative research	126 employees in the public and private sectors	There is a positive correlation. It depends on factors such as the relationship with the job, the sense of security, working hours, flexibility, and relationships with colleagues.
Koula & Zampetakis, 2022	Recording employees' intentions regarding teleworking and how it relates to job satisfaction.	Quantitative research	83 employees in public organizations or the private sector	Telework impacts job satisfaction. It is important that employees feel they can be effective. Job satisfaction also depends on having an appropriately arranged workspace.
Bagoti, 2022	Public servants' views on the relationship between telework and job satisfaction.	Quantitative research	239 employees in EFKA, AADE, and OAED	There is a high level of job satisfaction associated with cooperative relationships with supervisors and colleagues. The more satisfied an individual feels, the less desire they have for telework.
Spiliopoulou, 2022	Investigating the extent to which telework contributes to improving satisfaction, reducing workload, and increasing productivity in the public sector.	Quantitative research	105 teleworkers in the municipalities of AgiaVarvara and Egaleo	There is satisfaction with the information received before starting telework. Dissatisfaction arose due to a lack of technological equipment and the absence of interest from management.
Kokoviadou, 2023	Highlighting the relationship between telework and job satisfaction.	Quantitative research	81 employees in public services in Western Macedonia	Job satisfaction is positively affected by: a) relationships with colleagues and the supervisor, and b) working conditions; and negatively by: a) family obligations, b) having children in the family, and c) the age of employees.
Polyzos &	Investigating the	Quantitative	600 employees in	Telework does not

Chrysomallidis, 2023	relationship between research human resource motivation, performance, and job satisfaction.	the Region of Central Macedonia	significantly affect job satisfaction levels. The main determining factors are the cooperation climate, relationships with colleagues and supervisors, respect, and recognition.	
Cailier et al., 2014	Identifying the relationship between telework, job satisfaction, and job performance.	Quantitative research	266,376 public employees in U.S. agencies and services	There was a reduction in job satisfaction due to decreased motivation among staff.
Bae & Kim, 2016	Investigating the impact of telework on job satisfaction among public sector employees.	Quantitative research	219,450 employees in public agencies in the U.S.	There is a positive correlation between flexible work models and improved job satisfaction. Teleworkers need to have the appropriate knowledge and skills.
Kwon & Jeon, 2016	Contribution of telework to organizational commitment, improved performance, and increased satisfaction levels among teleworkers.	Quantitative research	212,223 and 421,748 employees in federal services in the U.S. (two phases)	There is a positive relationship between telework and increased job satisfaction. This is due to the fact that telework is associated with motivational systems, employee training, recognition of effort, and feedback.
Novianti & Roz, 2020	Investigating whether telework affects satisfaction levels.	Quantitative research	168 employees in public institutions in Indonesia	Increased anxiety when working remotely. However, job satisfaction is influenced not only by telework but also by other factors (e.g., workload).
Toscano & Zappala, 2020	Investigating the impact of telework on job satisfaction.	Quantitative research	265 employees working remotely	Telework can positively (e.g., emergency response) and negatively (creating a sense of isolation) affect job satisfaction levels among employees.
Davidescu et al., 2021	Recording the sense of job satisfaction perceived by employees through work.	Quantitative research	220 teleworkers in the private and public sectors in Romania	Positive impact of telework on the sense of job satisfaction. It depends on time flexibility, satisfaction with financial rewards, age, and the skills of the

Sousa-Uva et al., 2021	Identifying the most important factors contributing to improving job satisfaction through telework.	Quantitative research	1,004 employees in the private and public sectors in Portugal	teleworker. There is a positive correlation between telework and improved job satisfaction. This relates to the fact that employees can concentrate better, there is a balance between work life and personal time, flexible working hours, and a sense of trust.
Alainati, 2022	Employees' views on the development of telework and its impact on job satisfaction.	Quantitative research	622 employees in the private and public sectors in Kuwait	There is a positive correlation between telework and job satisfaction. The positive relationship is linked to protection from Covid-19, maintaining good cooperation with colleagues, and objective evaluation by supervisors.
Blahopoulou et al., 2022	Highlighting the impact of telework on employee satisfaction levels.	Quantitative research	111 employees in the public and private sectors in Italy	There is a positive correlation between telework and job satisfaction. The presence of minor children in the family can negatively impact the sense of job satisfaction.
Capecchi & Caputo, 2022	Investigating the impact of telework on the sense of job satisfaction.	Quantitative research	279 employees in public services in Italy	Telework can contribute to improving job satisfaction levels, provided there are appropriate home infrastructures, the ability to concentrate, balance between workload and personal time, and recognition of effort by superiors.
Jam森 et al., 2022	Capturing the level of satisfaction among public sector employees regarding telework and the communication relationships that develop among colleagues.	Quantitative research	1,091 employees in public institutions in Finland	There is an improvement in job satisfaction through telework when the employee can create a framework of effective communication.
Vinueza-Cabezas et al., 2022	Investigating the public perception of telework.	Quantitative research	542 employees in the private and public sectors in Spain	Telework does not

al., 2022	servants' perceptions of research working conditions created through telework.	public services in Ecuador	affect job satisfaction levels among employees. However, it is considered important that there was communication from the organization's management, and no communication problems with colleagues occurred.	
Seinsche et al., 2023	Investigating teleworkers' views on the requirements of telework and capturing the sense of job satisfaction.	Qualitative research	12 employees in public services in Germany	There is a positive relationship between telework and job satisfaction. It depends on ensuring appropriate conditions and satisfaction from working at home.
Auton & Sturman, 2024	Recording the factors that shape the sense of job satisfaction during telework implementation.	Quantitative research	208 teleworkers in the private and public sectors in Melbourne	Positive factors: ensuring a proper workspace (comfort, privacy), technical support, job security. Negative factors: professional isolation, family conflicts.

From the above research, it is observed that the implementation of teleworking in the public sector can positively impact the feeling of job satisfaction experienced by teleworkers. However, in order to increase the feeling of job satisfaction, the needs and aspirations of employees must be met, such as being provided with a suitable space, being informed about their new tasks, maintaining/building cooperative relationships with colleagues, recognition of effort, respect from colleagues and supervisors, having feedback, etc. On the other hand, factors such as lack of knowledge, creating feelings of isolation, and increased family responsibilities are likely to cause dissatisfaction and thus contribute to a decrease in job satisfaction when implementing teleworking. Based on the literature review presented in section five of the paper, it was found that teleworking can be made effective in the public sector. However, in order for it to be successfully implemented, it is important to have certain characteristics that are related to both ensuring the suitability of the site and the existence of skills by the teleworker. In summary, the results of the literature review are presented in Table 4 below.

Table 4: Results of the 3rd research question

Researcher(s)	Aim	Method	Sample
Kalpakidou, 2021	To record employee attitudes towards the implementation of telework and the desired characteristics	Quantitative research	137 employees in EFKA services
Roides, 2021	To record employee attitudes towards effective, telework implementation in the public sector	Quantitative research	107 employees at the Ministry of Environment and Energy
Koula & Zampetakis, 2022	To record employees' intentions regarding the implementation of telework and how it relates to job satisfaction	Quantitative research	83 employees in public organizations or the private sector
Sarlani, 2022	To explore the views of public sector employees on telework implementation	Quantitative research	135 employees in e-EFKA
Cailier et al., 2014	Identification of telework characteristics that increase work performance	Quantitative research	266,376 public servants in U.S. agencies and services
de Vries et al., 2018	To explore the effectiveness of telework	Quantitative research	61 employees in Dutch municipalities
Filardi et al., 2020	Identification of characteristics that contribute to more effective telework implementation in the public sector	Quantitative and qualitative research	Quantitative: 98 employees in public services in Brazil. Qualitative: 4 senior executives in public services
Kwon & Jeon, 2020	Contribution of telework to organizational commitment, performance improvement, and increased teleworker satisfaction	Quantitative research	212,223 and 421,748 employees in U.S. federal services (in two phases)
Durbarry, 2021	To identify characteristics for effective telework implementation in the public sector	Quantitative research	3,029 employees in public agencies in Mauritius
Sirait & Nugroho, 2021	Identification of characteristics that determine the effectiveness of telework	Quantitative research	745 employees at the Ministry of Communications in Indonesia
Madureira & Rando, 2022	Views of employees on telework implementation	Quantitative research	4,391 public servants in Portugal
Monroe & Haug, 2022	Views of employees on effective telework implementation	Quantitative research	60 employees in public services
Ortiz-Lozano et al., 2022	Identification of factors that enhance the intention to work remotely	Quantitative research	1,091 public sector employees in Spain
Varotsi, 2022	Investigation of the impact of	Quantitative research	178 employees in

Vayre et al., 2022	telework on work performance Recording the organization of remote work	Qualitative research	public services 28 teleworkers in the private and public sector
Ameen et al., 2023	Identification of telework characteristics that contribute to performance improvement	Quantitative research	483 employees in the public and private sector
Korkeakunas et al., 2023	Exploration of the relationship between telework and work performance	Qualitative research	27 semi-structured interviews with executives in the private and public sectors in Sweden
Neculaesei & Tocar, 2023	Views of public sector employees on telework implementation and factors affecting their performance	Quantitative research	219 teleworkers in the private and public sector in Romania
Seinsche et al., 2023	Investigation of teleworkers' views on telework requirements	Qualitative research	12 employees in public services in Germany
Auton & Sturman, 2024	Identification of factors that contribute to teleworkers' performance improvement	Quantitative research	208 teleworkers in the private and public sector in Melbourne

The above studies show that teleworking has specific characteristics that can contribute to its practical implementation. In general, the effective implementation of teleworking in the public sector depends on developing appropriate working conditions and individual characteristics of employees. In the first case, the effective implementation of teleworking requires infrastructure, adequate equipment, suitable space, and so on. In terms of working conditions, the effective implementation of teleworking is linked to the existence of flexibility in terms of working hours, the definition of working hours, the predetermination of responsibilities, the existence of a balance between personal and professional life, and the existence of communication with supervisors. Furthermore, the personal factors that determine the successful implementation of teleworking are the existence of appropriate knowledge and skills, the positive attitude of teleworkers, and the absence of negative factors, such as the feeling of social isolation that can be created through work.

Finally, Table 5 presents the research hypotheses along with their status (confirmed or not) based on the results. It can be observed that all the given hypotheses are confirmed except from the final one which is partially confirmed due to the fact although literature recognizes the important role of communication and clarity, these issues are sometimes insufficiently addressed in public organizations, leading to mixed performance outcomes.

Table 5: Research hypotheses, findings, and their confirmation status

Theme	Research Hypothesis	Status	Findings/Justification
Employee Attitudes Towards Teleworking	H1: Public sector employees with greater perceived flexibility will exhibit more positive attitudes toward teleworking.	Confirmed	Results indicate that flexibility enhances positive attitudes, as it allows employees to better manage time and work-life balance.
	H2: Public sector employees who experience higher levels of isolation during teleworking will exhibit more negative attitudes.	Confirmed	Feelings of isolation and lack of communication with colleagues are identified as key factors contributing to negative attitudes toward teleworking.
Teleworking and Job Satisfaction	H3: Adequate technological resources and managerial support will positively influence job satisfaction among teleworkers.	Partially Confirmed	Technological support is crucial for satisfaction, but lack of interest from management in some cases reduces its overall impact.
	H4: Family obligations and personal responsibilities will negatively affect the job satisfaction of teleworkers in the public sector.	Confirmed	Increased family responsibilities, particularly for employees with children, were found to negatively impact job satisfaction during teleworking.
Characteristics of Effective Teleworking	H5: The availability of necessary infrastructure (e.g., technology and internet access) will positively impact the effectiveness of teleworking.	Confirmed	Access to necessary infrastructure is consistently linked to effective teleworking, as seen in employee feedback emphasizing the importance of adequate equipment and reliable internet.
	H6: Teleworkers with higher levels of digital literacy and self-management skills will report greater teleworking effectiveness.	Confirmed	Digital literacy and self-management were identified as critical personal factors for effective teleworking, enabling autonomy and productivity.
	H7: Organizations that implement clear communication protocols and provide role clarity will achieve higher teleworking performance outcomes.	Partially Confirmed	While communication and role clarity are important, they are sometimes insufficiently addressed in public organizations, leading to mixed performance outcomes.

5. Conclusions

After the emergence of the COVID-19 pandemic, teleworking became an essential form of work in many private and public sectors. Recently, several studies have been conducted on the implementation of teleworking. Because this study is based on a literature review, information was collected from primary data from the last few years to draw useful conclusions about its implementation. It should be noted that most of the research is from foreign language literature, which reflects the need for corresponding studies in Greece. A total of 46 primary

research and scientific articles were studied, of which 20 scientific sources were included in each research question (14 scientific articles were included in more research questions). The first research question used seven sources in Greek literature and 13 in foreign language literature. Critical analysis of the primary data and empirical studies revealed that public sector employees have positive attitudes towards the implementation of teleworking, which is related to time and cost savings, flexibility and autonomy, work-life balance, a supportive environment, and their readiness to work remotely. However, the lack of communication with colleagues and supervisors, feelings of isolation, the need for supervision, and family conflicts form negative attitudes towards teleworking in the public sector. Six primary and 14 foreign language surveys were used for the second negative question. The main conclusions from the primary studies and scientific surveys are as follows: ensuring appropriate working conditions, the possibility of flexibility and autonomy for employees, and dealing with emergencies are positively related to the level of job satisfaction experienced by teleworkers. However, factors such as creating a sense of isolation, lack of experience, and equipment shortages were recorded, which decreased employees' job satisfaction when they changed their work mode from physical space to remote work.

Similarly, conclusions regarding the third research question were drawn from five studies conducted in Greece and 16 studies from public services abroad. Through a critical analysis of the empirical articles and primary data, it emerged that teleworking can be effectively implemented in the public sector, provided that privacy is ensured, appropriate equipment and Internet connections are available, teleworkers have sufficient knowledge and skills to operate with autonomy, as well as the possibility of employee flexibility and the definition of a balanced relationship between personal and professional time. The available number of studies, mainly abroad, shows, on the one hand, the increased research interest in recent years and, on the other hand, the intention of public bodies in various countries to further develop teleworking. On the one hand, teleworking provides significant benefits for the operation of public services, typically by reducing operational costs. On the other hand, through the implementation of teleworking, public service employees will be able to acquire the necessary experience and skills so that, in case of emergencies in the future (e.g., the emergence of a new pandemic), they will be able to cope without having to spend time on training and organizing the teleworking system.

The limitations of this study are briefly mentioned, and the findings resulting from the literature review method should be used with caution. This is because the findings are derived from the subjective judgments of the researchers, which means there is a risk that their content is associated with credibility issues. In addition, the choice of literature review as a research methodology is limited in that the recorded findings may only sometimes be consistent with real-time challenges. For example, the Covid-19 pandemic has been a focal point for the emergence of teleworking in the public sector. Therefore, evaluating studies conducted before or at the onset of the pandemic may provide a partial picture of the factors determining public sector employees' attitudes towards teleworking. In this case, empirical data (e.g., through questionnaires or interviews) would provide a richer assessment of public sector employees' attitudes towards teleworking in the current era. Combined with the above, the constant changes in technology and the existence of different ones that often necessitate the implementation of teleworking introduces a limitation regarding the long-term relevance of the study. Public sector employees' attitudes towards teleworking and its desired practical characteristics will likely change over time, so conducting new studies to confirm or add new findings to existing knowledge is essential.

Given the absence of empirical studies on the implementation of teleworking in the public sector in Greece, it is proposed to conduct future research using a quantitative method to record the attitudes of public sector employees regarding the implementation of teleworking, as well as the characteristics they consider necessary for its effective implementation. The choice of quantitative method will result in the researcher comparing with the findings of other scientific studies. It is also proposed that future qualitative research be conducted so that the researcher can study this issue in depth, as the findings will come from the personal experiences of public sector employees. It is also proposed that a survey of a sample of employees in both the private and public sectors be conducted to investigate whether there are differences in the perceptions and attitudes of employees depending on the employment agency. In this case, the survey could focus on specific issues, such as the technological equipment used by employees, the training they receive before starting teleworking, and the incentives provided by the institution for teleworking. In this way, broader conclusions will be drawn about the culture in the public sector in terms of work performance, staff motivation, and so on. Finally, as future research, it is also proposed that the legislative framework between different countries regarding the conditions in public services be compared. This research aims to identify whether employees are obliged to work through teleworking and, subsequently, whether they create positive attitudes and feel satisfied based on the different characteristics of the organization.

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