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Article

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Investigating the Greek general government accounting reform: The challenging task of staff training

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Abstract

Purpose – This article explores the status of public sector accounting education in Greece and assesses the readiness of the Greek general government financial employees to implement accrual accounting.

Design/methodology/approach – Using a mixed-research design combining online research with quantitative and qualitative analysis, we record the available public sector accounting vocational programs and assess the financial employees' educational level and training status.

Findings – The online research and quantitative analysis findings suggest limited availability of suitable vocational training programs and a low level of readiness to implement IPSAS-based accrual accounting in the Greek public sector. The qualitative analysis indicates the need to design specialized vocational programs that address the needs and specificities of different government sub-sectors.

Originality – The study is the first to analyze the educational adequacy and availability of vocational programs in Greece and assess the educational and professional competence of Greek general government financial employees vis-à-vis the requirements of the ongoing accrual accounting reform.

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1. Introduction

During the last two decades, many countries have carried out significant public sector accrual accounting reforms to modernize their public financial management systems (Bekiaris & Paraponti, 2023; Adhikari & Gårseth-Nesbakk, 2016). Despite the trend toward adopting accrual accounting, there are various obstacles to successfully implementing public sector accounting (PSA) reforms, with the lack of staff training being one of the most significant. Extant research supports that staff training plays a key role in the successful implementation of public sector accruals (Bekiaris *et al.*, 2024; Polzer *et al.*, 2021; Ismail *et al.*, 2018; Brusca *et al.*, 2016) and highlights the need for constant training to build and maintain the technical knowledge and expertise required for a smooth transition and a successful implementation process (Jafi & Youssef, 2021; Gomez-Villegas *et al.*, 2020).

Based on this finding, several researchers (e.g., Adam *et al.*, 2020; Abdulkarim *et al.*, 2020; Heiling, 2020) have been motivated to examine different aspects of public sector accounting education (PSAE) and its relationship to the implementation of government accounting innovations. However, most studies focus either on the role of PSAE in promoting the implementation of accrual accounting (e.g., Bekiaris *et al.*, 2024; Christensen *et al.*, 2019; Argento *et al.*, 2018; Brusca *et al.*, 2016) or on the status of PSAE in higher education institutions (HEIs) (e.g., Karatzimas *et al.*, 2022; Adam *et al.*, 2020; Heiling, 2020; Pitulice *et al.*, 2018). Instead, the area of PSA vocational training seems to be understudied despite evidence of its positive connection to successful PSA reforms (OECD/IFAC, 2017). Our study helps fill this gap by investigating the status of PSA vocational training in the Greek public sector and the educational background and training status of financial employees within the ongoing general government accrual accounting reform. Ultimately, we aim to answer the following research questions:

RQ1. Are suitable vocational programs available to train public sector financial employees in the new system?

RQ2. Is the training status and educational background of Greek public sector financial employees adequate for implementing the new system?

RQ3. How is the ongoing reform perceived by Greek public sector financial employees?

Greece is an interesting research setting because of the heterogeneity between the accounting systems of the different government subsectors and the recent attempt of the Greek government to harmonize them by implementing a new accounting framework at the general government level (Presidential Decree (PD) 54/2018). The new framework provides a single chart of accounts for all subsectors of the general government and all the necessary information, which is to be presented on an accrual basis. Its implementation was initially set for the beginning of 2023, but in 2022, it got put off for 2025 (Law 4964/2022). Given that Greek public sector accounting reforms have been postponed several times, it is worth investigating the current status of PSAE of the Greek public sector financial employees and how it could possibly influence the outcome of the ongoing reform. Furthermore, country-specific studies are essential for understanding how local conditions influence the harmonization of public accounting systems at the international level (Abdulkarim *et al.*, 2020; Christiaens *et al.*, 2015).

To answer the research questions, we combine two approaches: first, we conduct online research, examining the availability and characteristics of PSA vocational training. Second, we adopt a mixed-research design, combining quantitative and qualitative analysis. More specifically, we employ a primary research approach using a structured questionnaire distributed to financial department officers and employees of different public entities within the general government. The aim is to examine their educational background and training status and to assess whether the new system is understood, how the change is perceived, and to what extent the employees feel ready to implement it. To further explore the findings of the primary research, we apply Partial Least Squares Structural Equation Modeling (PLS-SEM), aiming to identify the factors influencing the readiness to adopt the new system. Finally, to achieve a more in-depth analysis of the findings, we employ qualitative analysis by conducting interviews with selected individuals within the sample.

Our study adds to the existing literature on PSAE by providing valuable insights to several parties: first, it is useful to all actors involved in the Greek PSA reform, such as politicians, policymakers, regulators, and public sector educational organizations, as it sheds light on possible shortcomings in the design of the reform process. Second, it is useful to PSA researchers; at the national level, the findings are important because PSAE is an understudied area in Greece. At the international level, the analysis of the Greek context contributes to understanding the challenges of public sector accounting reforms and the factors inhibiting international convergence. Therefore, examining the Greek case could provide helpful insights to researchers investigating international trends in PSAE or assessing reforms' outcomes versus training strategies.

The rest of this paper is organized as follows. Section two presents the relevant literature on PSAE. Section three discusses Greece's public sector accounting

reforms and the new accounting framework. Section four outlines the research methodology, and section five presents the results. Finally, section six discusses the findings and concludes the paper.

2. Literature review

It is generally accepted that technical knowledge, experience, and training are essential for implementing accounting reforms successfully (Amiri & Hamza, 2020; Christensen *et al.*, 2019; Argento *et al.*, 2018). Several jurisdictions give a prominent role to staff training for the smooth transition from cash to accrual accounting (OECD/IFAC, 2017). This has also been verified by studies examining the factors influencing the implementation of accrual accounting reforms (e.g., Bekiaris *et al.*, 2024; Polzer *et al.*, 2021; Brusca *et al.*, 2016). Research has shown that, regardless of jurisdictional differences, staff training is a critical driver and a necessary precondition for successfully implementing PSA reforms (PULSAR, 2021; Hepworth, 2003).

This is evident from the latest OECD survey on public sector accrual reforms (OECD/IFAC, 2017). The survey explores the accrual practices and reform experiences of OECD countries and identifies a significant trend towards the adoption of accrual accounting. As illustrated in the individual analyses of each country's reforms, staff training played a critical role in the success of the reforms. Pioneer accruals adopters such as Australia, New Zealand, and the United Kingdom (UK) placed particular emphasis on staff training and followed similar paths: before implementing accrual accounting, they assessed the technical knowledge and capacity of their employees, and then they developed high-quality training programs, accompanied by guidelines and manuals that facilitated implementation (OECD/IFAC, 2017: 38, 94, and 110). Furthermore, several countries with successful reform experiences (e.g., Australia, Denmark, New Zealand, Spain, Switzerland, and the UK) involved consultants and auditors in the implementation process to provide technical assistance to the preparers of financial statements (OECD/IFAC, 2017).

Staff training facilitates an in-depth understanding of the principles and benefits of accrual accounting from relevant stakeholders (e.g., accountants, auditors, and staff), who can contribute to its promotion and facilitate the implementation process (PULSAR, 2021). This indicates the need for qualified financial managers with comprehensive training before the new system's implementation so that the use and benefits of accrual accounting are fully understood (Bekiaris *et al.*, 2024). Within this process, professional accounting organizations and academics can play a critical role in driving accrual accounting reforms through technical support and training (PULSAR, 2021; Hepworth, 2003).

The lack of technical knowledge that allows the comprehension and acceptance of a new accounting system can seriously undermine the reform process (Hepworth, 2003). In this respect, Cohen *et al.* (2007) provide evidence of the significance of accounting knowledge and training for accrual accounting reforms. Their study explores the reasons behind the failure to implement an appropriate Information Technology (IT) system in Greek municipalities during the accrual accounting reform. The findings suggest that the financial employees' lack of accounting knowledge and training prevented them from contributing to the development of an appropriate IT system because they could not evaluate the system's functionality and usefulness. Ultimately, the lack of accounting knowledge resulted not only in the failure to develop suitable software but also in the delay of the accounting reform.

Similarly, studies of Italian universities (e.g., Gigli *et al.*, 2018; Gigli & Mariani, 2018; Agasisti *et al.*, 2015) demonstrate how the lack of staff training and a deeply rooted cash accounting culture can undermine the implementation of accrual accounting and the quality of financial information. In a more recent study, Chytis *et al.* (2020) also find that the lack of experienced personnel and the educational inadequacy of financial employees are among the factors impeding the accounting reform of Greek municipalities and the adoption of IPSAS-like standards, despite the employees' positive attitude. Furthermore, Bekiaris *et al.* (2024) identify the lack of staff training as one of the most important barriers to the implementation of Greece's ongoing accounting reform and show how this, combined with the complexity of accrual accounting can have a negative influence on users' intention to adopt the new system, as well as on its implementation.

In less developed countries, technical knowledge and training are critical for the smooth transition from cash to accrual accounting. For instance, the high level of professional qualifications of public sector accountants in Qatar and Malaysia suggests that the transition to IPSAS in these countries should be smooth, without significant difficulties (Abdulkarim *et al.*, 2020; Ismail *et al.*, 2018). In contrast, Latin American countries such as Colombia and Peru present a low level of convergence of national standards with IPSAS due to several factors, among which organizational and administrative issues, as well as a lack of technical knowledge and expertise of key actors in the reform process (Gomez-Villegas *et al.*, 2020; Brusca *et al.*, 2016). The same is true for Bangladesh, where weak accounting education and training are among the main inhibiting factors for adopting IPSAS (Rajib *et al.*, 2019).

Extant research highlights the complexity of PSA and identifies the need for PSAE to be included in the curricula of universities to provide a pool of skilled professionals for the public sector (Pauluzzo *et al.*, 2024). Indeed, the continuous increase in countries transitioning to accrual accounting suggests that university curricula must be transformed and include more PSA-related courses (Wilson, 2013;

Sciulli & Sims, 2008). Recent studies (e.g., Adam *et al.*, 2020; Heiling, 2020) verify a lack of such courses in university curricula and generally low interest in PSA studies, both from students and university professors (Jafi & Youssef, 2021). Heiling (2020) supports that due to PSA's complicated and interdisciplinary nature, targeted postgraduate programs should be designed to offer the specialized technical knowledge and expertise to successfully implement accrual accounting and IPSAS-like standards. Especially in the EU case and the European Public Sector Accounting Standards (EPSAS) development, researchers support that PSAE will be critical for the project's successful outcome (Heiling, 2020; Adam *et al.*, 2019).

Scholars suggest several ways to deal with the complicated and interdisciplinary nature of PSA, among which the use of ICTs and active learning tools (Cohen & Karatzimas, 2022), courses in statistics and management accounting (Heiling, 2020; Pitulice *et al.*, 2018), and the development of interpersonal skills (Budding *et al.*, 2022). Furthermore, they propose the development of technical knowledge and competencies of public sector accountants and employees through the provision of training programs and the creation of an appropriate environment and organizational culture (Antipova & Yhuhertiana, 2014; Upping & Oliver, 2012).

However, despite the identified significance of staff training by many studies (e.g., Bekiaris *et al.*, 2024; Polzer *et al.*, 2021; Brusca *et al.*, 2016), prior research has mainly focused on the need to include PSA courses in the curricula of universities (Wilson, 2013; Sciulli & Sims, 2008) and to design specialized postgraduate programs (Adam *et al.*, 2020; Heiling, 2020). In contrast, little or no attention has been paid to the vocational training strategies that have been followed by countries transitioning to accrual accounting and how these may have influenced the outcome of the reforms. Thus, there is a need for a detailed analysis of prior vocational training processes to uncover best practices and provide insights for future reforms, but also to identify what went wrong in cases where the reforms were not successful.

3. Greece's public sector accounting reforms

3.1 An overview of prior reforms

In Greece, public financial management reforms began in the late 1990s, with the introduction of accrual accounting in various government subsectors; legal entities of public law and Greek municipalities were the first to adopt accrual accounting in 1998 and 1999 respectively (Cohen, 2015; Cohen *et al.*, 2007). In 2003, accrual accounting was also introduced in public hospitals, but the actual implementation began in 2009 (Dalla *et al.*, 2023). In regions, the implementation of accrual accounting has been delayed significantly despite the existence of relevant legislation since 2011 (Cohen, 2015). Similarly, in social security funds, the

respective PD existed since 1997, but the practical implementation of the new system never took place (Cohen & Karatzimas, 2021).

At the central government level, the accounting reforms began in 2011; while the Greek economy was under close supervision by the Troika (the EC, the IMF, and the European Central Bank (ECB)), modified cash accounting was introduced to the Greek central government as a first step toward the implementation of accrual accounting (Cohen & Karatzimas, 2017). Although the modernization of the Greek public financial system was originally a priority for the Troika, the bureaucratic nature of the Greek public sector, the lack of knowledge and expertise of financial employees, and the inadequate IT systems made the implementation difficult (Cohen & Karatzimas, 2016).

3.2 PD 54/2018

Although the sovereign debt crisis resulted in repeated postponements of the Greek PSA reforms, it also highlighted the need for more transparency and accountability in public financial management. To this end, the Greek government initiated a new reform plan, issuing Presidential Decree (PD) 54/2018, which introduced a new, IPSAS-based accrual accounting framework for all entities of the general government. The new accounting framework provided for the use of a single chart of accounts by all general government entities and for the preparation of financial statements according to international standards, especially IPSAS (PD 54/2018). The implementation date by all general government entities was initially set for the 1st of January, 2023. As of 2019, the central administration has partially implemented PD 54/2018, except for specific provisions (e.g., the paragraphs related to property, plant and equipment, intangible assets, inventories, and provisions, as well as the paragraph related to the preparation of consolidated financial statements).

In 2021, significant additions were made to the PD 54/2018, defining the objectives of financial reporting, qualitative characteristics of general-purpose financial reports, key implementation principles, and a glossary of terms and general accounting definitions to facilitate understanding and implementation. In July 2022, the implementation date of PD 54/2018 was postponed until January 1st, 2025 (Law 4964/2022). Until then, it has been stipulated that the central administration will continue implementing the new framework with the above exemptions, and the general government entities will continue implementing their distinctive accrual accounting systems.

The Greek general government accounting reform is included in the EU Recovery and Resilience Fund (RRF) and consists of five sub-projects: the first sub-project is related to the gradual issue of the basic accounting policies (standards); the second is related to the development of a new ERP system (govERP) supporting the

adoption of accrual accounting; the third concerns incorporating e-invoicing in the new ERP system, to underpin the recognition and measurement of assets, receivables, liabilities, etc., in real-time and the transition from cash to accrual accounting; the fourth sub-project concerns the provision of vocational training to public sector financial employees. Finally, the fifth sub-project is related to the preparation of consolidated financial statements for the general government (HCA, 2023). A small number of central administration employees (mainly employees of the General Accounting Office (GAO) and of some Ministries' Financial Directorates) have already been trained, whereas further 103 training programs are scheduled to take place in 2025 and 2026 (HCA, 2022 and 2023).

4 Methodology

To answer the research questions, we followed two different approaches. First, we conducted online research to identify and assess whether the available vocational training programs for public sector financial employees are appropriate to support the accounting reform. Second, we followed a mixed-research design, combining quantitative and qualitative methods (Modell, 2005), to assess the educational and training status of Greek public-sector financial employees and their readiness to adopt the new system. The two approaches are presented in subsections 4.1 and 4.2.

4.1 Training programs

In Greece, the educational level and training of civil servants are subject to the staffing and training processes of the Greek public sector, which follow specific regulations: the recruitment of public sector employees is handled “*by competitive entry examination or by selection based on predefined and objective criteria*” (Greek Constitution, article 103, paragraph 7), and is subject to the control of an independent authority, the Supreme Council of Civil Personnel Selection (ASEP), whose task is to ensure transparency, publicity, objectivity, and merit during the recruitment process (ASEP, 2023).

In addition, the need for qualified public sector employees is covered by the National School of Public Administration (ESDDA), the educational unit of the National Centre for Public Administration and Local Government (EKDDA), with a mission to provide the Greek public administration with specialized officials. ESDDA's candidates may be higher education graduates, private employees, or civil servants. To be accepted, they need to successfully sit for an entrance examination. The attendance lasts for 18 months, and it is structured in three phases: a common phase with general administrative courses, a specialization phase, and a preparation phase before they are assigned to administrative positions in the Greek public sector. ESDDA's curriculum is structured in five fields: law, economy, public administration, digital governance, and foreign languages. Thus, accounting is not

included in the school's fields of study. Regarding vocational training for civil servants, EKDDA provides educational programs to support reforms and allow public sector employees to develop knowledge and expertise through its Training Institute (EKDDA, 2023).

To answer the first research question, we conducted online research to identify the vocational programs addressed to public sector financial employees. Our primary focus was on programs covering the training needs of existing civil servants, so we excluded undergraduate and postgraduate university programs from our research. In addition, we excluded ESDDA's academic program because accounting is not included among its specialization departments.

Our online research focused on three providers: the Training Institute of EKDDA, Greek universities, and private educational organizations. Only accounting programs were considered, as these are relevant to the study's objectives. IFRS and private sector Greek Accounting Standards (GAS) related programs were also included in the analysis, the former due to their similarities with IPSAS (Adhikari & Garseth Nesbakk, 2016) and the latter because of their significant influence on the accounting practices of several public entities.

The online research was initially conducted within three months, from May to August 2022, and then repeated in May and June 2023, to examine for any possible additions. For the EKDDA programs, we visited EKDDA's website of vocational training programs and handpicked the accounting programs listed in the "Economy and Fiscal Policy" category. For the university vocational programs, we visited the websites of vocational training at Greek public universities and handpicked all related programs from the "Finance and Accounting" category. Only five universities returned relevant results. Finally, we performed online research for private sector programs, using keywords related to PSA, IPSAS, accounting for legal entities of public law, financial statements analysis, and GAS. Our search returned six private educational organizations providing ten vocational programs. After the initial selection, we examined the content of each program and retained only those suitable for public sector financial employees. For each program, we assessed the following characteristics: the program's provider, the program's content and its relevance to the new system, the program's duration, the training method, the provision of certification, and the cost.

4.2 Quantitative analysis

4.2.1 Primary research data and sample

To answer the second and third research questions, we first followed a descriptive methodology to derive comparative results for the educational status and the state of training of Greek public sector financial employees, as well as their perceptions

regarding the readiness to implement IPSAS-like accounting standards. Then, we tested our findings using Structural Equation Modelling (SEM) to assess which factors mostly influence the readiness to adopt the new system.

To obtain the data, we used a structured questionnaire distributed via e-mail to financial department officers and employees of different public entities within the general government. Relevance was the primary criterion for selecting the sample's participants; thus, the questionnaires were sent only to directorates or departments performing public sector accounting functions, whose employees can be assumed to have an accounting capacity. In line with prior studies (e.g., Abdulkarim *et al.*, 2020), we used judgmental sampling to improve the study's response rate and ensure relevant responses (Smith, 2003). The contact details of the financial directorates or departments were identified on the websites of the relevant public entities. After obtaining the contact details, we contacted the heads of the directorates or departments by phone, requesting permission to conduct the research. Besides giving us permission, the directors also referred us to the appropriate employees within the financial departments who performed accounting functions.

Before being sent out, the questionnaire was examined by two accounting researchers outside the research unit, who served as validators of the research design. Then, a pilot questionnaire was sent to 15 financial employees. Once its validity was verified, it was distributed to 256 recipients. To improve the response rate, we contacted the recipient departments and directorates by phone and sent reminder emails. By the end of October 2023, we had collected 97 usable questionnaires. To increase our sample and to document possible changes in the training status of Greek public sector financial employees, we re-sent the questionnaire in September 2024 to 59 recipients and received 26 additional responses by the end of October 2024. In total, we collected 123 usable questionnaires, corresponding to a response rate of 39%. Regarding the population and sample size, we used Hussey & Collins's (2013) 8% threshold concept. The sample consisted of public entities of all general government sub-sectors, namely ministries and independent authorities from the central government, municipalities and regions from the local government, legal entities of public law, health insurance funds, and public hospitals. Table 1 presents the population, the number of questionnaires distributed per category, and the number of responses.

Table 1. Population and sample analysis

Public sector entities	Population	Number of recipients	Number of responses
Ministries	19	55	27
Independent authorities	28	30	14
Municipalities	332	60	9
Regions	13	12	4

Public sector entities	Population	Number of recipients	Number of responses
Health insurance organizations	3	38	15
Legal entities of public law	1136	80	42
Public hospitals	106	40	12
Total	1637	315	123
%		0.13	0.39

Source: Hellenic Statistical Authority (<https://www.statistics.gr/en/statistics/-/publication/SEL08/->)

The questionnaire contained 23 questions: 22 closed-end and one open-ended question, divided into three sections (see Table A1 in the Appendix). The first section contained demographic data adapted from Abdulkarim *et al.* (2020), aiming to identify the basic characteristics of the study's participants, such as gender, age, educational level, and accounting knowledge, and to illustrate how the participants were distributed within the different general government sub-sectors.

The second section examined the employees' knowledge and perceptions about PD 54/2018. It contained nine questions. The first two questions aimed to identify the participants' familiarity with PD 54/2018 and their organization's current accounting system. Questions 3-7 explored the employees' perceptions about the possible negative aspects of the accounting reform, such as the complexity of the new system, the creation of insecurity and work problems due to the pressure and increased requirements, and the factors impeding its implementation. These were adapted from several studies (e.g., Abdulkarim *et al.*, 2020; Ademola Ambimbola *et al.*, 2020; Brusca & Martinez, 2016). Conversely, questions eight and nine aimed to identify possible drivers of the reform, namely staff training and technical support. These were adapted from Abdulkarim *et al.* (2020) and Gomes *et al.* (2021).

Finally, the third section evaluated the employees' training status and their views on the adequacy of the training programs. The questions in this section were designed based on the characteristics of vocational programs identified during our online research. They aimed to examine whether the financial employees attended training programs relevant to the accounting reform, by which provider, and if the programs were mandatory. Furthermore, the participants who attended the training programs were asked to assess them in terms of four elements: their duration, content, practical exercises, and written guidelines.

4.2.2 Data analysis

The data were collected and analyzed through SPSS. The responses were then processed through Excel. We used two different scales to codify the data: a 5-point Likert scale for responses ranging from "strongly disagree" to "strongly agree" and a binary scale for "no-yes" type responses. These were converted to scores from 1-5

and 1-2, respectively. In line with prior studies (e.g., Thompson *et al.*, 1991), the scoring of questions with negative content was reversed.

4.2.3 Model specification

To test the relationship between staff training and the readiness to implement PD 54/2018, we performed PLS-SEM using ADANCO. PLS-SEM is more flexible than Covariance-Based SEM, particularly with the sample size, the type of measurement indicators, and the normality of data distribution. Furthermore, PLS-SEM allows for a simultaneous assessment of both the measurement model and the structural model (Hair *et al.*, 2011). In line with prior studies (e.g., Bekiaris *et al.*, 2024; Brusca & Martinez, 2016) and to achieve model identification, we included additional measures in the model besides variables related to staff training. These were based on the codified data of the questionnaire and are presented in Table 2.

Table 2. SEM constructs

	Constructs	Items
Dependent variable	Readiness	Familiarity with PD 54/2018
Independent variables	Drivers	Professional qualification Working experience Training seminars
	Barriers	Low employee skills Lack of staff training Adequacy of current accounting system Lack of IT systems Resistance to change Inadequate legal framework
Control variables		Complexity Gender Age

Source: Compiled by the authors

The dependent variable, “Readiness”, was constructed using a single indicator, the familiarity with PD 54/2018. We argue that the respondents’ perceptions of familiarity with the new system reflect their views about the preparedness or unpreparedness to implement it. The independent variables consisted of two main constructs: the factors positively influencing the readiness to implement PD 54/2018 and the factors that impede it. The former construct, named “Drivers,” was built on three indicators that research has shown positively influence the implementation of accrual accounting in the public sector: professional qualification, working experience, and staff training (Bekiaris *et al.*, 2024; Gomes *et al.*, 2021; Abdulkarim *et al.*, 2020). Conversely, the latter construct, named “Barriers”, included six factors that prior studies suggest impede the implementation of accrual accounting: low

employee skills, lack of staff training, adequacy of the current accounting system, lack of IT systems, resistance to change, and inadequate legal framework (Bekiaris *et al.*, 2024; Abdulkarim *et al.*, 2020; Brusca & Martinez, 2016).

To further explore the factors influencing the readiness to implement PD 54/2018, we included three additional variables in our model: two demographic variables exploring the possible effects of gender and age and a third one related to the new system's complexity. Prior studies (e.g., Matekele & Komba, 2020) have shown that the implementation of accrual accounting presents a negative relationship with age and with the female gender. Furthermore, Bekiaris *et al.* (2024) showed that complexity has a negative impact on the implementation of accrual accounting, mainly through its negative influence on the employees' behavioral intention. In line with this study, besides testing the direct influence of these variables on the readiness to implement PD 54/2018, we also examined the mediating role of gender and age in the relationship between Complexity and Readiness. Regarding the minimum sample size requirements for PLS-SEM analysis, the 123 observations of our model satisfy the ten times rule, as suggested by the literature (e.g., Barclay *et al.*, 1995).

4.3 Qualitative analysis

After the quantitative analysis, informal interviews were conducted, aiming to supplement and validate the questionnaire findings (Creswell & Plano Clark, 2018). The interviews took place in October 2024, one year after the first round of the primary study. Just as in the quantitative part of the study, we used purposeful sampling to select the interview participants. The criterion for selection was representativeness at both agency and geographical levels.

Following Creswell (2009) and Onwuegbuzie and Collins (2007), we limited the interviews to a small sub-group of the quantitative study's participants. To ensure the sample's representativeness, we selected three heads of directorates or departments from each government sub-sector (central government, local government, legal entities of public law, health insurance funds, and public hospitals). The rationale for selecting heads of directorates or departments for the interviews was that they had a clear view of the current status of staff training within their directorates or departments, as well as knowledge about any planning for future training programs by their agencies. In total, we conducted 15 interviews.

For geographical representativeness, we considered two elements: first, the population density. In Greece, half of the population is concentrated in the Attica region. This is also reflected in the distribution of public entities. Therefore, for each government sub-sector, we included one participant from the Attica region. Second, the dispersion of entities. To ensure that our findings reflect the status of staff

training throughout Greece, the additional two participants for each government sub-sector were from different regions.

Upon the participants' requests, we did not record the interviews but took notes. Furthermore, the interviewees' personal data were anonymized and codified. Each interview lasted approximately 30 minutes. Table A2 in the Appendix presents the profiles of the interviewees.

The interviewees were asked to respond to five questions:

1. Has your staff been trained for the implementation of PD 54/2018? If not, is there any relevant planning for their training? What is the timeline?
2. Are you implementing PD 54/2018 on a pilot basis?
3. Who provides the training programs?
4. Do you believe that your training will affect the implementation of PD 54/2018?
5. Do you believe that the training programs for implementing PD 54/2018 provide the necessary knowledge for its application? If not, what additional elements do you think would be needed?

The questions were focused on the employees' training for PD 54/2018 and allowed us to update the information received during the primary research regarding the status of staff training and the employees' perceived readiness to adopt the new system.

5. Results

5.1 Training programs' analysis

The results of the online research are presented in Table 3.

Table 3. PSA training programs

Providers	Number of programs	Training method	Number of programs leading to diploma or certificate	Program duration			Program content			Cost (€)
				Short-term <60 hours	Medium-term 60-100 hours	Long-term >100 hours	IFRS	IPSAS	PD 54/2018	
EKDDA	10	e-learning	3	7	1	2	2	1	1	0.00
Public universities	18	e-learning	10	6	7	5	6	7	2	291.00-1,700.00
Private sector	10	e-learning, online courses	6	0	6	4	6	1	0	650.00-2,100.00
Total	38			13	14	11	14	9	3	
Total %	100			34.21	36.84	28.95	36.84	23.68	7.89	

Note: EKDDA programs are free of charge for public servant

Source: Authors' compilation based on online research

As illustrated in Table 3, our online research returned 38 accounting programs; of these, only ten (26.32%) are from EKDDA. These programs are free of charge for civil servants. Greek public universities provide eighteen programs (47.37%), whereas private educational organizations offer ten (26.32%). The cost of the university and private sector vocational programs depends on their duration and the provision of any certification. The most common training method is e-learning.

Most of the EKDDA programs (70%) are short-term, with an average duration of 35 hours. Among these, one program addresses accounting standardization and presents a short analysis of IFRS, IPSAS, and GAS. Four programs deal with national accounts and budgeting issues for general government entities and legal entities of public law. One program addresses the existing accrual accounting systems of different general government entities and the role of financial statement analysis. Finally, one program addresses the general government accounting reform (PD 54/2018). This program's objectives are to facilitate the comprehension by public sector financial employees and auditors of the new accounting framework, to familiarize them with the principles, concepts, and practices of accrual accounting implementation, and to provide the relevant expertise for preparing financial statements. The program contains fifteen sections; the first four offer general information about the accounting reform, an introduction to accrual accounting, and a presentation of the chart of accounts and the PD's conceptual framework. The next three sections analyze the accounting policy for the first implementation of PD 54/2018, accounting policies, changes in accounting estimates and errors, and accounting events after the balance sheet date. Finally, the remaining eight sections analyze the treatment of specific issues such as service concession arrangements, leasing, impairment of assets, provisions, contingent assets, and contingent liabilities.

Of the remaining three EKDDA programs, one has a medium duration (70 hours) and deals with financial management issues of general government entities. This program mainly focuses on the legal framework of public sector entities and analyzes the procedures governing the operation of financial directorates. Finally, the last two programs are long-term, each with a duration of 140 hours, and provide training on financial statement analysis (the first on a fundamental level and the second on a more advanced one using software). These programs are very comprehensive and facilitate understanding of the content of financial statements, the way they are prepared, and the meaning of financial information. However, they are not relevant to IPSAS or other internationally accepted standards,¹ and according to their stated scope, they are mainly addressed to financial auditors and secondarily to financial directorates' employees.

Public universities provide eighteen vocational programs with different durations and content. Most of these programs (59%) address private sector accounting

standards (IFRS or GAS), one provides an extended program on double-entry bookkeeping for legal entities of public law, and seven focus on IPSAS; among these, only two programs address PD 54/2018, one with a short-term duration, and one with a medium-term duration. The short-term program presents international trends in public sector accounting and the requirements of PD 54, analyzes the chart of accounts and the accounting treatment of basic elements (assets, liabilities, revenue, expenditure, and accounting errors), provides instructions for the transition to the new accounting framework and the presentation of financial statements, and offers plenty of examples and practical exercises. The medium-term program presents general government entities' existing accrual accounting systems, the new accounting framework, IPSAS, and the Greek legislation for public sector financial management. In addition, it references the European System of Accounts (ESA) and links it to financial reports. Furthermore, it addresses additional issues, such as performance budgeting, spending reviews, and green budgeting, and presents the latest international trends and their influence on the Greek public sector management system.

Finally, private-sector educational organizations provide only medium and long-term programs. Of the ten programs available, six are IFRS-related, two focus on double-entry bookkeeping using software, one addresses financial accounting, and only one provides training on IPSAS and a relevant diploma.

Overall, 50% of the available programs focus on PSA, but only three (one EKDDA program and two university vocational programs) address PD 54/2018. Nevertheless, the comparison between our 2023 and 2022 online research showed that the vocational programs addressing PD 54/2018 have tripled. Thus, to answer the first research question, despite their small representation, the PD 54/2018-related vocational programs present a significant increase from 2022 to 2023. The development of EKDDA's program on PD 54/2018 is a first positive step toward the provision of training to public sector financial employees and demonstrates the government's determination to promote the reform. Similarly, the increase in the university vocational programs related to PD 54/2018 could reflect the academic community's view that the reform will be taken further.

5.2 Primary research findings

5.2.1 Demographic data

Table 4 presents an analysis of the demographic data. Although most respondents possess an academic degree and over ten years of experience in financial units, only a few are professional accountants (38 of the 123). Of the remaining 85 respondents, only 30 possess a relevant degree. Cross-tabulation between professional qualifications and government sub-sectors shows that professional accountants are evenly distributed to the different government subsectors.

Table 4. Analysis of demographic data

Respondent categories	Number of respondents	%
<i>Professional qualification</i>		
Accountant	26	21
Chartered accountant	12	10
No professional qualification	55	45
No professional qualification, but relevant degree	30	24
Total	123	100
<i>Work experience in financial units</i>		
<5 years	14	11
5-10 years	18	15
11-15 years	27	22
16-20 years	26	21
>20years	38	31
Total	123	100
<i>Government subsector</i>		
Independent Authority	14	11
Legal entity of public law	42	34
Hospital	12	10
Social Security Organization	15	12
Local Government	13	11
Ministry	27	22
Total	123	100
<i>Job title</i>		
Head of directorate	11	9
Head of department	25	20
Employee	87	71
Total	123	100
<i>Academic qualification</i>		
Bachelor's degree	48	39
Diploma	7	6
Highschool	11	9
Master's degree	57	46
Total	123	100
<i>Gender</i>		
Male	45	37
Female	78	63
Total	123	100
<i>Age</i>		
25-34	7	6
35-44	27	22
45-54	57	46
55-64	28	23
>64	4	3
Total	123	100

Source: Compiled by the authors

Examining the job titles of the respondents with an accounting capacity, we found that most of them serve as employees. Overall, the percentage of managerial positions in directorates and departments among professionally qualified employees is low (11% and 32%, respectively). This could be attributed to the Greek public sector's promotion system, which does not consider professional qualifications for promotions. The criteria for selecting public managers are a combination of academic qualifications, years of service, relevant experience in management positions, and a personal interview (Law 3528/2007).

5.2.2 Knowledge and perceptions about the accounting reform

This section corresponds to the second part of the questionnaire. Regarding the knowledge of PD 54/2018, 50% of the respondents declared little or no knowledge, whereas the other 50% gave a positive answer.

Concerning their current accounting system, the respondents were given five choices, ranging from a cash-based accounting system with no preparations for PD 54/2018 to a system partially applying PD 54/2018 and having completed the necessary preparations. Table 5 presents the five alternative systems and the respondents' answers. When matched to the respondents' agencies, these findings are somewhat puzzling because there seems to be no consensus among the financial employees of any agency concerning their currently used accounting system. Moreover, in most cases, the reported accounting system does not correspond to the actual system in use. Surprisingly, a significant percentage of the respondents report using a purely cash-based accounting system, which does not correspond to any of the existing accounting systems.

This finding can have many interpretations; first, it may reflect an overall lack of technical knowledge and training during accounting reforms. According to Peterson (2001), comprehension of one's current financial management system is necessary before complicated PSA reforms are introduced; thus, this finding has significant implications for developing the new accounting framework. This view could also be supported by the identified lack of professional qualifications; as the majority of the respondents do not have an accounting capacity, it is possible that they cannot distinguish between the different systems, especially if they are positioned in departments irrelevant to financial reporting activities. Finally, and perhaps most importantly, it could be a result of the strong reliance on budgeting, which is cash-based; since budgeting information is used for decision-making, accounting information may be rendered irrelevant for public sector financial employees.

Table 5. Employees' responses regarding the accounting system currently used by their agency

Currently used accounting system	Ministry	Independent authority	Municipality	Region	Legal entity of public law	Hospital	Social security organization	Total	Total %
Cash-based accounting system - no preparations are made for the implementation of PD 54/2018	4	1	1	2	9	3	1	21	17%
Modified cash accounting system - no preparations are made for the implementation of PD 54/2018	6	3	5	0	10	2	5	31	25%
Accrual-based accounting system - no preparations are made for the implementation of PD 54/2018	4	1	1	0	4	5	3	18	15%
Modified cash accounting system - preparations are made for the implementation of PD 54/2018	6	5	3	1	16	2	6	39	32%
Partially implementing PD 54/2018 - preparations for its full implementation have been completed	7	4	0	0	3	0	0	14	11%
Total	27	14	10	3	42	12	15	123	100%

The next questions examine the employees' perceptions regarding the new system's complexity and challenges. Although accrual accounting is perceived as complicated by the respondents, a large percentage (48%) consider that the employees will have a positive attitude toward it. However, almost half of the respondents think that the new system's requirements may cause insecurity and work problems.

Regarding the barriers to implementing PD 54/2018, we considered seven possible factors, following Abdulkarim *et al.* (2020), Ademola Ambimbola *et al.* (2020), and Brusca and Martinez (2016). These are low employee skills, lack of staff training, resistance to change, inadequate legal framework, adequacy of the current accounting system, lack of appropriate IT systems, and long realization period. Table 6 presents the percentage of affirmative responses.

Table 6. Factors impeding the implementation of PD 54/2018

Factors impeding the implementation of PD 54/2018	% of positive responses
Low employee skills	75.6
Lack of staff training	93.5
Resistance to change	69.9
Inadequate legal framework	87.0
Adequacy of the current accounting system	78.0
Lack of appropriate IT systems	91.9
Long realization period	72.4

Source: Compiled by the authors

As illustrated in Table 6, all of the above factors are identified as barriers to implementing accrual accounting, with the lack of staff training being the most influential, with 93.5% of affirmative answers. The lack of appropriate IT systems and the inadequacy of the legal framework follow with 91.9% and 87% positive responses.

These findings are also corroborated by the last two questions of this section. The first examines the importance of staff training for the successful implementation of PD 54/2018 and has a 99% positive response rate; the second examines the need for technical support by professionals from the private sector and also presents a high rate of positive responses (80.5%), a fact indicating a strong reliance on external factors for the successful implementation of the reform and a lack of adequate training processes.

5.2.3 Staff training

The third section assesses the status of staff training among the respondents. It includes seven questions. First, we examined how many employees attended seminars relevant to public sector accounting and PD 54/2018. 37% of the

respondents (46 employees) gave a positive response. 26 employees attended EKDDA seminars, 11 attended private sector programs, and nine attended university vocational programs. Of the 46 respondents, only seven reported that some seminars were compulsory. Participation was mostly optional and depended on the employees' interests.

The low number of trained employees is also corroborated by the Hellenic Court of Audit's annual report for the years 2021 and 2022 (HCA, 2022 and 2023), where it is highlighted that only a few employees (mainly employees of the GAO and some ministries) have been trained on the new accounting framework. According to the reform's timeframe, the employees' vocational training will take place in 2025 and 2026, at the end of the project's implementation.

The above findings indicate a low prioritization of staff training in the agenda of the Greek administrative authorities, which contrasts with the key role assigned to it by the relevant studies (e.g., Jafi & Youssef, 2021; Polzer *et al.*, 2021; Gomez-Villegas *et al.*, 2020; Ismail *et al.*, 2018; Brusca *et al.*, 2016). Furthermore, as prior research has shown, staff training should take place before implementing accrual accounting to successfully address its complexity (Godfrey *et al.*, 2001) and to positively influence the employees' behavioral intention to use it (Bekiaris *et al.*, 2024), thus suggesting a need to reorient the Greek government's training strategy.

Focusing on the attendants of relevant seminars, we examined their views regarding the adequacy of the training programs in terms of four points: their duration, their comprehension, practical implementation exercises, and available manuals. The results showed that most of the attendants were satisfied with the duration of the training programs (61%) and reported a satisfactory level of comprehension (80%) and a positive view of the manuals (78%). However, the majority (54%) reported none or a low level of practical exercise and were dissatisfied with this aspect of the seminars.

Turning to the second research question, our findings indicate that the educational and training status of Greek public sector financial employees are inadequate for the adoption of the new system since the majority have no professional qualification and are unfamiliar with PD 54/2018 (as well as with the currently applied accounting systems), and have no or little training. Furthermore, in response to the third research question, the employees are aware of the new system's complexity and acknowledge the need for training and technical assistance from experts to ensure the reform's successful implementation. Despite some concerns regarding the new system's challenges, most of the respondents have a positive attitude and consider the implementation of the new system as necessary.

5.3 SEM results

5.3.1 Measurement model

Following our initial model specification (Table 2), we examined the measurement model to assess the composite reliability and validity of our basic constructs: Drivers and Barriers (Dash & Paul, 2021). To do so, we examined the factor loadings of each construct's indicator variables, which should be ≥ 0.50 (Stevens, 1992). According to Dash & Paul (2021), the indicator variables that do not meet the specified cutoff values should be removed from the model. As a result, the following variables were dropped: working experience from the Drivers construct, resistance to change, and inadequate legal framework from the Barriers construct. Figure 1 presents the graphical illustration of the revised model, whereas Table 7 presents the factor loadings of the remaining indicator variables, which surpass the specified cutoff values. The revised model presents a good overall fit, with an SRMR value of 0.0760. The results show that the most significant barrier is the low employee skills, followed by the lack of staff training. Regarding the drivers, both staff training and professional qualification are found to be significant facilitators.

Table 7. Factor loadings of indicator variables

Indicator	Barriers	Drivers	Gender	Readiness	Complexity	Age
Familiarity with PD54/2018				1.0000		
Complexity					1.0000	
Low employee skills	0.8799					
Lack of staff training	0.6631					
Adequate current accounting system	0.5455					
Lack of IT system	0.5384					
Professional qualification		0.7376				
Seminars		0.7449				
Gender			1.0000			
Age						1.0000

As a second step, we assessed the reliability of our constructs through three additional tests (Table A3 in the Appendix), namely Dijkstra-Henseler's rho (ρ_A), Jöreskog's rho (ρ_C), and Cronbach's alpha (α). In all cases, the constructs' values were above the specified threshold of 0.70 (Hair *et al.*, 2011). Furthermore, to assess the convergent validity, we examined the average variance extracted (AVE) coefficients (Table A4 in the Appendix), which were all above the 0.50 cutoff point (Hair *et al.*, 2016). Finally, discriminant validity was assessed through three tests, namely the Heterotrait-Monotrait Ratio of Correlations (HTMT), the Heterotrait-Monotrait Ratio of Correlations (HTMT2), and the Fornell-Larcker Criterion (Tables A5, A6, and A7 respectively in the Appendix). For each pair of variables, the upper limit of

0.85 is not exceeded (Hair *et al.*, 2016). To address possible multicollinearity problems, we evaluated the variance inflation factor (VIF) for each indicator, which did not exceed the 3.3 cutoff value (Table A8 in the Appendix) (Diamantopoulos & Siguaw, 2006).

5.3.2 Structural model

After confirming the reliability and validity of the constructs, we evaluated the model fit using two criteria: R^2 and adjusted R^2 , to assess the significance of the independent variables' effects on the endogenous variables (Hair *et al.*, 2011). The R^2 and adjusted R^2 of the model were 0.56 and 0.54, respectively, implying that approximately 55% of the dependent variable is explained by the set of independent variables. The path analysis of the model is presented in Table 8. The effect size of each independent variable on the dependent variable(s) was calculated using Cohen's f^2 (Hair *et al.*, 2016). The " f^2 " values in Table 8 indicate that the Drivers construct has a strong positive effect on Readiness ($f^2=0.88$), whereas the Barriers construct exhibits a weak negative influence ($f^2=0.067$). The same is also valid for the influence of Age on Readiness ($f^2=0.025$), whereas Complexity's and Gender's direct effects on Readiness are unsubstantial. However, the model identifies a weak indirect negative effect of Complexity on Readiness through the mediation of the female gender, suggesting that Complexity affects women's perceived readiness to implement the new system more than it affects men's.

Table 8. SEM path analysis

Effect	Beta	Indirect effects	Total effect	Cohen's f^2
Barriers -> Readiness	-0.1794		-0.1794	0.0673
Drivers -> Readiness	0.6486		0.6486	0.8803
Gender -> Readiness	-0.0940		-0.0940	0.0194
Complexity -> Gender	-0.1496		-0.1496	0.0229
Complexity -> Readiness	0.0455	0.0258	0.0714	0.0044
Complexity -> Age	0.1094		0.1094	0.0121
Age -> Readiness	0.1077		0.1077	0.0253

5.3.3 Alternative variables

To further test the possible influence of demographic variables on the employees' perceived readiness to adopt the new system, we ran three additional tests. Due to the sample's limitations and to satisfy the ten times rule, as suggested by the literature (e.g., Barclay *et al.*, 1995), we replaced the Gender variable, which was found to be statistically insignificant, and ran the tests separately.

First, we tested the influence of Work experience in financial units. Although this variable was excluded from the model due to low factor loading, we considered testing it as a separate variable influencing readiness both directly and as a mediator of Complexity. The f^2 value indicates that the influence of Work experience on Readiness is unsubstantial ($f^2=0.014$). The same holds for Work experience as a mediator of the influence of Complexity on Readiness ($f^2=0.009$).

Then, we tested the possible influence of Education on the readiness to adopt the new system. The findings show that the education level has no influence on the employees' perceived Readiness, neither directly ($f^2=0.000$) nor as a mediator of Complexity. Finally, we tested the influence of Job titles on the perceived Readiness to adopt the new system. The results in this case indicate a weak negative influence of managerial positions on the Readiness to adopt the new system ($b= - 0.1116$ and $f^2=0.0219$). Furthermore, the Job title variable also mediates Complexity's influence on Readiness, suggesting a weak negative influence ($b=-0.1820$ and $f^2=0.0343$). One possible explanation for this finding is that managers have a better understanding of the difficulties and complexity involving the adoption of PD 54/2018.

The findings highlight the importance of addressing key drivers of the reform, such as professional qualification and staff training, to boost readiness. At the same time, there should be efforts to minimize the barriers to reduce negative impacts. Demographic variables such as age, gender, and job title play minor but contextually relevant roles, particularly as mediators of Complexity. Interestingly, traditional predictors like education and work experience appear insignificant in shaping readiness, suggesting that factors beyond personal qualifications, such as organizational support and system design, are more decisive.

5.4 Interviews' results

As mentioned in the methodology section, the informal interviews took place in October 2024, one year after the first round of the primary study. This time gap between the majority of the questionnaire responses and the interviews allowed us to assess the progress of the financial employees' training from the perspective of the heads of the financial directorates or departments.

In response to the first question, i.e., whether the staff has been trained to implement PD 54/2018, and if not, whether there is relevant planning and with what timeline, most interviewees gave a negative answer. Among the five government sub-sectors (central government, local government, legal entities of public law, health insurance funds, and public hospitals), systematic staff training on PD 54/2018 has taken place only in central government entities (i.e., ministries and independent authorities), where the personnel are trained gradually. In addition, systematic training took place in one municipality and one health insurance fund. Both these entities were situated in the Attica region and selected for a pilot implementation of PD 54/2018. The municipality officer (participant code C2) reported:

Our Municipality was selected as a pilot to implement PD 54/2018. Targeted seminars were provided by a public university, first at a theoretical level and then at a practical one, because our employees did not have accounting knowledge and needed to understand the accounting process.

Similarly, the health insurance fund officer (participant code A2) commented:

Our department's staff has not been trained in programs specifically targeted at our Agency for the adoption of PD 54/2018 but has attended two programs currently being conducted by EKDDA with instructors who are employees of the General Accounting Office. These programs cover the philosophy of PD 54/2018. In a one-week seminar, however, it's not possible to learn how PD 54 works. You need the appropriate knowledge to understand the accounting differences introduced by the new PD.

Among the respondents who gave a negative answer regarding the provision of training programs, two reported that there is planning for the employees' training, although not systematic. Both were officers from legal entities of public law, one head of directorate and one head of department. The head of the directorate (participant code B2 from the Peloponnese region) commented:

Some of the employees asked to participate in EKDDA programs, and I have approved two of these requests. I believe the seminars will take place at the beginning of next month.

On the other hand, the head of the department (participant code B3 from the Attica region) reported:

My agency, in collaboration with the GAO, will organize some training programs. In fact, a public university will also contribute to the training program (the supervising ministry has not shown any interest, in general).

In response to the second question, i.e., whether PD 54/2018 is implemented on a pilot basis, only two participants (one health insurance fund officer and one municipality officer) responded positively. However, the health insurance fund officer (participant code A2 from the Attica region) pointed to the lack of an appropriate ERP system as an inhibiting factor for the pilot implementation:

Since 2010, our organization has implemented the accrual basis of accounting; for this reason, we were selected by the GAO to adapt our financial statements in accordance with the requirements of PD 54. However, we do not yet have a new ERP system and are trying to find a company to take on this project for us.

The municipality officer (participant code C2 from the Attica region) commented:

Currently, both systems are running in parallel. We have the accounting system for Local Government Organizations (LGOs), while at the same time, the IT system has been configured to produce financial statements in accordance with PD 54. The IT system currently supporting our Municipality is provided by a private company.

Moving to the third question, regarding who provides the staff training on PD 54/2018, most responded that EKDDA provides the training. Some respondents also mentioned a public university's involvement in the training process (for instance, participant coded B3 from the Attica region mentioned that the training programs are planned in collaboration with the GAO and will be provided by a public university). Furthermore, the municipality officer coded C2 from the Attica region (where PD 54/2018 is implemented on a pilot basis) commented:

The Municipality, in collaboration with a public university, organized seminars for the employees' training.

Nevertheless, it is obvious from the interviewees' responses that, in most cases, the provision of training is not yet systematized, neither in terms of a specific timeline nor in terms of a specific provider. This is obvious from the responses of the central government interviewees, where a gradual training process has been reported; all three central government participants gave us the same response, reflected in the comments of participant coded D2 from the Western Greece region:

No organization has undertaken the training of our employees. I know that some have applied to attend seminars at EKDDA, and some have attended seminars at universities.

Question four examined the participants' perceptions about the usefulness of training programs in implementing PD 54/2018. All of the interviewees responded positively to this question. However, nine out of the fifteen made additional comments related to certain preconditions for the success of the training process, namely the trainers' qualification, the training programs' adequacy, and a more practical focus. For instance, a health insurance fund officer (participant code A2 from Central Macedonia) commented:

Training, to me, is meaningful when the people providing it have deep expertise in the subject rather than just presenting a theory they've read. I believe that if specialized employees are trained and truly understand the philosophy behind PD 54, they can bring this knowledge into the workplace, filling in gaps and addressing any questions.

Furthermore, an officer from a legal entity of public law (participant code B2 from Peloponnese) reported:

I believe that if the training is thorough and focuses not only on theory but also on practical application, employees will be more willing to embrace the changes introduced by the new system. Moreover, if, during the implementation phase of PD 54/2018, employees receive support from professionals—specifically from those who will assist with implementing the new system's provisions—there will likely be a greater willingness to adopt the new system, and I believe they will respond positively to the new requirements.

Finally, in response to the last question regarding the adequacy of the currently available training programs for PD 54/2018, none of the interviewees answered positively. In fact, besides those who responded that they had no knowledge about the training programs' characteristics, the rest indicated that they are inadequate because they provide general information about PD 54/2018 and do not address the needs and specificities of their agencies. For example, an officer from a legal entity of public law (participant coded B1 from Central Greece) commented:

The effectiveness of training programs for implementing PD 54/2018 depends on how well-designed they are, their content, and how they are adapted to the needs of the departments that will apply it. If these programs thoroughly cover the legal and practical aspects of the new framework, include implementation examples and case analyses, and emphasize real-life situations that one might encounter in practice, they are likely to provide the necessary knowledge.

Similarly, a hospital officer (participant code E1 from Attica) reported:

I attended a related seminar, and although I have an accounting background, I didn't fully understand much about implementing the new accounting framework because it essentially changes the entire philosophy of how we have been recording accounting events up until now. Since, in our hospital, the employees in the finance department have secondary education and don't have a strong grasp of accounting, I believe that customized seminars, specifically focused on our domain, should be organized to allow employees to ask questions and understand the new logic. I think it will require a lot of work, and I'm not sure that all of this will be achieved within the set timeframe.

Overall, the findings from the interviews reveal significant challenges and gaps in the training of financial employees for implementing PD 54/2018 across various public sector entities. While systematic training efforts have been observed in central government institutions, such as ministries and independent authorities, they are notably absent in most other sectors. Pilot implementation has taken place in select entities, often with the support of a public university. However, these efforts remain isolated and lack a standardized approach.

Furthermore, the availability of training programs and systematic planning vary significantly between regions. Systematic training was primarily observed in central government entities and a few selected organizations, notably in the Attica region. The involvement of institutions like EKDDA and a public university was more pronounced in pilot implementations, such as in a municipality and a health insurance fund in Attica. Respondents from regions outside Attica, such as Western Greece and the Peloponnese, reported less systematic access to training programs. Finally, while some regions benefited from collaborative efforts between universities and government agencies, others relied on individual employee initiatives to access available training programs, indicating disparities in organizational support.

The Interviewees emphasized the inadequacy of the existing training programs, which provide only general information without addressing specific needs or practical applications. Despite any shortcomings, the participants unanimously recognized the importance of training in ensuring the successful adoption of PD 54/2018. They suggested that tailored programs, practical examples, and ongoing technical support during the implementation stage would enhance the effectiveness of vocational training.

6 Discussion and conclusions

This study contributes to the recent literature on PSAE by examining the availability and adequacy of PSA vocational programs in Greece and assessing the Greek

financial employees' training status and preparedness to implement a new, IPSAS-based accrual accounting system. Given that the reform is to be completed by the beginning of 2026, our findings on the status of PSAE are highly relevant. The primary research results suggest a low level of readiness to implement the new system. Most financial employees do not possess the professional qualifications or the training required. In addition, it has become clear during the research that most employees do not have a holistic view of the existing accounting system. Limited to their tasks, this fragmented knowledge may prevent them from acquiring more advanced skills and competencies (Peterson, 2001) and may ultimately inhibit the overall reform process.

The lack of technical expertise and training has delayed the implementation of previous accounting reforms in the Greek public sector by reducing the new systems' comprehension and creating resistance to change (Cohen & Karatzimas, 2015; Cohen *et al.*, 2007). In the context of the current reform, our study showed that only a few financial employees have participated in vocational programs on PD54/2018. This finding is also corroborated by the HCA's audit reports (HCA, 2022 and 2023). Moreover, the results of the interviews show that there is no systematization of the training process, nor has there been any planning for staff training. According to the reform's timeframe, employees' training will take place in 2025 and 2026 (HCA, 2023).

Regarding vocational training, our research identified three programs addressing PD 54/2018, one provided by EKDDA and two by public universities. The development of vocational programs addressing the Greek general government accounting reform is an encouraging first step toward building the capacity to implement the new system successfully. However, the EKDDA program is short-term and provides an introductory analysis of the new system without addressing the technical aspects of accrual accounting. The same holds for the medium-term university program, which, despite giving a holistic view of the Greek public financial management system, a brief analysis of the new framework, and links to international trends and statistical reporting, does not address the technical aspects of PD 54/2018. The third university program, although short-term, does offer guidance on the accounting treatment of assets and liabilities and revenue and expenditure, as well as the necessary preparations for the first-time adoption of the new system by general government entities. Thus, the findings suggest the need for more comprehensive, longer-term vocational programs dealing with the technical aspects of the new system.

The need for more comprehensive vocational programs was also highlighted during the interviews. Those interviewees who had already participated in any of the three available vocational programs on PD54/2018 supported that the programs were too general and only presented the basic information about PD 54/2018. They underscored the need for a more structured, inclusive, and practical approach to

training, focusing on aligning program content with the specific requirements of different public sector entities.

The existing programs, though recognized as essential by all respondents, fall short of addressing the specific and practical needs of the employees. In line with prior studies (Bekiaris *et al.*, 2024; Gomes *et al.*, 2021; Abdulkarim *et al.*, 2020), ours also corroborates that staff training is an important driver of public sector accounting reforms. The results of the PLS-SEM show that staff training has a strong and statistically significant positive influence on the readiness to adopt the new system and is equally important to professional qualifications. Furthermore, the model's results suggest that to improve readiness for adopting PD 54/2018, organizations should focus more on strengthening supportive mechanisms than mitigating barriers.

The above findings have significant practical and policy implications. On the practical side, it is unclear how the implementation of the new system from January 2025 will progress, considering that the vast majority of public sector financial employees are unfamiliar with the new accounting system. Prior studies (e.g., Bekiaris *et al.*, 2024; Gigli *et al.*, 2018) have shown that staff training should precede the implementation of accrual accounting. Otherwise, the lack of knowledge and understanding has a significant negative influence on the intention to use the new system.

Regarding policy implications, the findings highlight a fragmented and inconsistent approach to training. While central government institutions and a few pilot entities in the Attica region demonstrate promising efforts, most other sectors and regions lack systematic planning and access to adequate training programs. To bridge these gaps, a tailored and hands-on training framework, coupled with sustained technical support, is imperative to ensure the successful and uniform adoption of PD 54/2018 across all public sector entities. Policymakers should expedite the training process to ensure that the employees of the relevant directorates and departments supporting the financial reporting processes are adequately trained by the implementation date. To this end, more comprehensive and customized programs should be designed, which address the employees' training needs and the different public entities' specificities. To maximize the benefits of vocational programs, the latter should be systematized and incorporated into the standard training of public sector financial employees (Abdulkarim *et al.*, 2020).

Although prior studies suggest the need to include PSA courses in the curricula of universities (Wilson, 2013; Sciulli & Sims, 2008), we argue that the emphasis should be placed on vocational training. This is because university students exhibit low interest in PSA studies (Jafi & Youssel, 2021). Therefore, it is not clear how the inclusion of PSA studies in the curricula of universities could provide a substantial contribution to the improvement of public sector employees' accounting capacity, at

least in the medium term. On the other hand, designing specialized postgraduate programs (Adam *et al.*, 2020; Heiling, 2020) specifically addressed to public sector financial employees' needs could have better results, especially if governments subsidized the employees' participation in such programs.

Furthermore, as research suggests (e.g., PULSAR, 2021; Hepworth, 2003), other actors, such as professional accounting organizations and academics, could be brought into play to facilitate the vocational training process and provide technical support during the implementation stage. This strategy has been followed by many countries with successful outcomes in the accounting reforms (OECD/IFAC, 2017).

Finally, focusing on the Greek context, ESDDA cannot be excluded from the training process. To ensure that a pool of specialized professionals is available to underpin PSA reforms, PSAE should become part of the school's curriculum as one of its specialization fields. The school's graduates could then become agents of change and drive accounting reforms in the Greek public sector (PULSAR, 2021).

Of course, as with any research, this has certain limitations. These are mainly related to the small sample and the specific Greek context of the study, which prevent us from generalizing our findings and should be considered when interpreting the results. Future studies could explore additional aspects of PSAE in the Greek public sector, such as trends for specialization through postgraduate programs. Furthermore, this study has highlighted the need for further research in the field of PSA vocational training, either in specific jurisdictions or at the international level. Cross-country comparisons of vocational training strategies versus reforms' outcomes would significantly benefit the field and provide valuable insights for countries transitioning to accrual accounting or designing future reforms.

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Appendix

Table A1. Questionnaire

Section 1: demographic information

1. Professional qualification

Accountant
Chartered accountant
No professional qualification
No professional qualification, but relevant degree

2. Work experience in financial units

<5 years
5-10 years
11-15 years
16-20 years
>20years

3. Government subsector

Independent Authority
Legal entity of public law
Hospital
Social Security Organization
Local Government
Ministry

4. Job title

Head of directorate
Head of department
Employee

5. Academic qualification

Bachelor's degree
Diploma
Highschool
Master's degree

6. Gender

Male
Female

7. Age

25-34
35-44
45-54
55-64
>64

Section 2: knowledge and perceptions about PD 54/2018	Answers' scale
1. Are you familiar with PD 54/2018?	1 - 5 (1=strongly disagree, 5=strongly agree)
2. Select the accounting system currently implemented by your agency.	see Table 4
3. Do you think that the implementation of accrual accounting will be complicated?	1-2 (1=yes, 2=no)
4. If so, do you think the employees' stance toward the complexity of accrual accounting will be positive?	1 - 5 (1=strongly disagree, 5=strongly agree)
5. Do you think that the new knowledge requirements will cause insecurity to the employees?	1 - 5 (1=strongly disagree, 5=strongly agree)
6. Do you think that the pressure for the implementation of the new system will cause work problems?	1 - 5 (1=strongly disagree, 5=strongly agree)
7. Which factors do you think that might impede the successful implementation of PD 54/2018?	see Table 5
8. Do you consider staff training as an important factor for the successful implementation of PD 54/2018?	1-2 (1=yes, 2=no)
9. Do you consider technical support by private sector specialists as necessary?	1-2 (1=yes, 2=no)
Section 3: training status and perceptions about the adequacy of the training programs	
1. Have you attended any training programs related to the implementation of PD 54/2018?	1-2 (1=yes, 2=no)
2. If so, please define the type of seminar and the provider (e.g., EKDDA, university, private sector educational organization)	filled in by the respondents
3. Was the attendance at the training program(s) mandatory?	1-2 (1=yes, 2=no)
4. Specify the adequacy of the training program(s) with reference to the:	
i. Training's duration	1 - 5 (1=strongly disagree, 5=strongly agree)
ii. Subject's comprehension	1 - 5 (1=strongly disagree, 5=strongly agree)
iii. Practical implementation exercises	1 - 5 (1=strongly disagree, 5=strongly agree)
iv. Manuals for the practical implementation	1 - 5 (1=strongly disagree, 5=strongly agree)

Source: Compiled by the authors

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The challenging task of staff training**

Table A2. Interviewees' profiles

Government subsector	Geographic region	Participant code	Age	Education	Gender	Job title	Years of experience in financial units
Health Insurance Funds	Central Macedonia	A1	59	Bachelor's degree	Female	Head of department	20
	Attica	A2	50	Master's degree	Male	Head of department	25
	Central Greece	A3	42	Bachelor's degree	Male	Head of department	16
Legal Entities of Public Law	Central Greece	B1	59	Master's degree	Female	Head of directorate	36
	Peloponnese	B2	66	Bachelor's degree	Female	Head of directorate	41
	Attica	B3	59	Bachelor's degree	Male	Head of department	34
Local Governments	Eastern Macedonia and Thrace	C1	45	Bachelor's degree	Female	Head of department	22
	Attica	C2	59	Bachelor's degree	Male	Head of directorate	34
	Central Macedonia	C3	45	Bachelor's degree	Female	Head of department	24
Ministries and Independent Authorities	Attica	D1	45	Master's degree	Male	Head of department	22
	Western Greece	D2	49	Master's degree	Female	Head of department	20
	Thessaly	D3	51	Master's degree	Female	Head of directorate	27
Public Hospitals	Attica	E1	58	Bachelor's degree	Female	Head of department	34
	Central Macedonia	E2	51	Bachelor's degree	Female	Head of department	27
	South Aegean	E3	45	Bachelor's degree	Female	Head of directorate	20

Table A3. Constructs' reliability tests

Construct	Dijkstra-Henseler's rho (ρ_A)	Jöreskog's rho (ρ_c)	Cronbach's alpha(α)
Barriers	0.7951	0.7584	0.7620
Drivers	0.7092	0.7092	0.7092
Gender	1.0000	1.0000	
Readiness	1.0000	1.0000	
Complexity			
Age	1.0000	1.0000	

Table A4. Constructs' convergent validity

Construct	Average variance extracted (AVE)
Barriers	0.5003
Drivers	0.5494
Gender	1.0000
Readiness	1.0000
Complexity	1.0000
Age	1.0000

Table A5. Heterotrait-Monotrait Ratio of Correlations (HTMT)

Construct	Barriers	Drivers	GENDER	Readiness	Complexity	AGE
Barriers						
Drivers	0.2104					
Gender	0.0671	0.0689				
Readiness	0.3333	0.7058	0.1378			
Complexity	0.0520	0.1585	0.1496	0.1852		
Age	0.1655	0.0349	0.0032	0.1631	0.1094	

Table A6. Heterotrait-Monotrait Ratio of Correlations (HTMT2)

Construct	Barriers	Drivers	Gender	Readiness	Complexity	Age
Barriers						
Drivers	N/A					
Gender	N/A	N/A				
Readiness	N/A	0.7058	N/A			
Complexity	N/A	0.1382	N/A	0.1852		
Age	N/A	N/A	0.0032	0.1631	0.1094	

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Table A7. Fornell-Larcker Criterion

Construct	Barriers	Drivers	Gender	Readiness	Complexity	Age
Barriers	0.5003					
Drivers	0.0490	0.5494				
Gender	0.0018	0.0048	1.0000			
Readiness	0.1145	0.4982	0.0190	1.0000		
Complexity	0.0036	0.0252	0.0224	0.0343	1.0000	
Age	0.0239	0.0012	0.0000	0.0266	0.0120	1.0000

Squared correlations; AVE in the diagonal.

Table A8. Fornell-Larcker Criterion

Indicator	Barriers	Drivers	Gender	Readiness	Complexity	Age
PD54				1.0000		
Complexity					1.0000	
Low employee skills		1.6109				
Lack of staff training		1.6941				
Adequate current accounting system		1.5264				
Lack of IT system		1.5842				
Professional qualification			1.4324			
Seminars			1.4324			
Gender			1.0000			
Age						1.0000

Variance inflation factors (VIF)

Notes:

1. According to PD 54/2018, the accounting policies used for the preparation of financial statements should be based on internationally accepted accounting standards, and especially IPSAS.