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Master in Business Administration (MBA)

Postgraduate Dissertation

The EU co-funded public contracts in Greece

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Patras, Greece, June 2021

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To my family, husband and children, for their support and patience

Dreams, knowledge and progress should not meet any barriers

Aknowledgments

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Abstract

Public procurement plays a key role in the implementation of projects funded by the European Structural Investment Funds (ESIF). Because they use the public purse and at the same time, they are essential for the proper functioning of the Single Market, all EU interventions are monitored and evaluated via appropriate management and control systems, in order to prevent, detect and correct any irregularities and verify that the funds are spent effectively, efficiently and rightfully. An irregularity in Structural Funds terms includes breaches of EU or national law, which have the effect of prejudicing the budget of the Union, as well as any administrative or financial mismanagement during the implementation of the funded operation. Although Member States make efforts to protect the European Funds, there are still many cases of irregular activities prejudicial to the EU budget. An important consequence of irregularities is that they may lead to a significant loss of annual funds for a country and burden the national budget. Therefore, understanding the type of irregularities found in EU funded public contracts can be helpful for their prevention and elimination.

The present dissertation aims to find out which are some of the most common irregularities/ deficiencies detected in the EU co-funded public contracts in Greece. In order to answer this, data from the audits results of the Greek Audit Authority on co-funded programmes (EDEL) during the National Strategic Reference Framework (known in Greece as ESPA) 2014-2020 were collected and analyzed through a quantitative research. Moreover, the research tried to analyze EDEL's audits findings and the main characteristics of the audited operations, in order to obtain useful information about the conditions under which the detected irregularities/ deficiencies take place.

Keywords

European Funds, ESIF, ESPA 2014-2020, Audit Authority, public contracts, public procurement, irregularities, deficiencies, errors

Οι συγχρηματοδοτούμενες από την ΕΕ δημόσιες συμβάσεις στην Ελλάδα

Λαμπρινή Μότσια

Περίληψη

Οι δημόσιες συμβάσεις διαδραματίζουν μεταξύ άλλων, σημαντικό ρόλο στην υλοποίηση έργων που χρηματοδοτούνται από τα Ευρωπαϊκά Διαρθρωτικά και Επενδυτικά Ταμεία (ΕΔΕΤ). Επειδή χρησιμοποιούν δημόσιο χρήμα και ταυτόχρονα, είναι απαραίτητα για την ορθή λειτουργία της Ενιαίας Αγοράς, όλες οι παρεμβάσεις της ΕΕ παρακολουθούνται και αξιολογούνται μέσω κατάλληλων συστημάτων διαχείρισης και ελέγχου, προκειμένου να προλαμβάνονται, να εντοπίζονται και να διορθώνονται τυχόν παρατυπίες και να διασφαλίζεται ότι τα ευρωπαϊκά κεφάλαια δαπανώνται αποτελεσματικά, αποδοτικά και σωστά. Σε όρους διαρθρωτικών ταμείων, παρατυπία θεωρείται οποιαδήποτε παραβίαση της ευρωπαϊκής ή εθνικής νομοθεσίας, που έχει ως αποτέλεσμα να θίγεται ο προϋπολογισμός της Ένωσης, καθώς και κάθε διοικητική ή οικονομική κακοδιαχείριση κατά τη διάρκεια εκτέλεσης της χρηματοδοτούμενης πράξης. Μολονότι τα κράτη μέλη καταβάλλουν προσπάθειες για την προστασία των ευρωπαϊκών κεφαλαίων, εξακολουθούν να υπάρχουν πολλές περιπτώσεις παράτυπων δραστηριοτήτων που θίγουν τον προϋπολογισμό της ΕΕ. Μια σημαντική συνέπεια των παρατυπιών είναι ότι ενδέχεται να οδηγήσουν σε αξιοσημείωτη απώλεια ετήσιων πόρων προς μια χώρα και να επιβαρύνουν έτσι τον εθνικό προϋπολογισμό της. Επομένως, η κατανόηση του τύπου των παρατυπιών που εντοπίζονται στις δημόσιες συμβάσεις που χρηματοδοτούνται από την ΕΕ μπορεί να είναι χρήσιμη για την αποφυγή και την εξάλειψή τους.

Η παρούσα εργασία στοχεύει να καταγράψει τις συνηθέστερες παρατυπίες / ελλείψεις που εντοπίζονται στις συγχρηματοδοτούμενες από την ΕΕ δημόσιες συμβάσεις στην Ελλάδα. Για το σκοπό αυτό, συλλέχθηκαν και αναλύθηκαν μέσω μιας ποσοτικής έρευνας, δεδομένα από τα αποτελέσματα των ελέγχων συγχρηματοδοτούμενων προγραμμάτων της Ελληνικής

Αρχής Ελέγχου (ΕΔΕΛ) κατά τη διάρκεια του Εθνικού Στρατηγικού Πλαισίου Αναφοράς (ΕΣΠΑ) 2014-2020. Κατά την έρευνα αναλύθηκαν επίσης, περαιτέρω τα ευρήματα των ελέγχων της ΕΔΕΛ και τα κύρια χαρακτηριστικά των ελεγχόμενων πράξεων, προκειμένου να ληφθούν χρήσιμες πληροφορίες για τις συνθήκες υπό τις οποίες λαμβάνουν χώρα οι παρατηρούμενες παρατυπίες / ελλείψεις.

Λέξεις – Κλειδιά

Ευρωπαϊκή χρηματοδότηση, ΕΔΕΤ, ΕΣΠΑ 2014-2020, Αρχή Ελέγχου, δημόσιες συμβάσεις, δημόσιες προμήθειες, παρατυπίες, ελλείψεις, σφάλματα

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List of Abbreviations & Acronyms

CF	Cohesion Fund
EC	European Commission
EDEL	Financial Audit Committee in Greece
ERDF	European Regional Development Fund
ESF	European Social Fund
ESIF	European Structural and Investment Funds
EU	European Union
GDP	Gross Domestic Product
HSPPA	Hellenic Single Public Procurement Authority (known in Greece as EAADHSY)
MA	Managing Authority
OECD	Organization for Economic Co-operation and Development
OJ	Official Journal
OLAF	Office Européen de Lutte Antifraude / European Anti-Fraud Office
OP	Operational Program
SIGMA	Support for Improvement in Governance and Management (a joint initiative of OECD and EU)
SPSS	Statistical Package for the Social Sciences

1 Introduction

1.1 Importance of the Dissertation

Governments all over the world spend vast amounts for public procurement. Public procurement is the acquisition, by means of public contract conducted by governments or in general, entities governed by public law, of works, goods or services needed for their operation or for public purpose (European Commission, 2020).

In a relevant study of the EC (European Commission, 2019), it is estimated that during the period 2014-2017, the mean of total general government expenditures on works, goods and services (excluding utilities and some concessions) in the EU Member States amount to 13,5% of Union's GDP. Public procurement represents a significant part of the Greek economy and a large percentage of the national budget, too. The relevant amount for Greece based on the above mentioned study, is estimated to €19.7 billion or 11.1% of GDP.

Governments implement their purchases using the public purse. Therefore, they should always aim to achieve the best value for money and, at the same time, they should foster social justice and protection of the environment (Martinić and Kozina, 2016).

Moreover, public procurement plays a key role in the implementation of projects funded by the European Structural and Investment Funds (ESIF). These funds are used for regional development and economic and social cohesion in the EU in order to improve competitiveness and growth (Campeanu, 2014). It is estimated that around 48% of ESIF are spent through public procurement (European Commission, 2018).

Under the system of shared management¹ of the Structural Funds, the EU Member States are principally responsible for setting up management and control systems to prevent, detect and correct irregularities in the use of EU funds (European Commission, 2009). An irregularity in Structural Funds terms includes breaches of EU or national law (including procurement law and principles), which have the effect of prejudicing the budget of the Union², but also, any administrative or financial mismanagement during the implementation

¹ A method of spending the EU budget in which, in contrast to direct management, the Commission delegates to the Member State while retaining ultimate responsibility (European Court of Auditors, 2020).

² Regulation (EU) No 1303/2013

of the funded operation, such as insufficient documentation, failure of requirements in publicity or ineligible expenditure declared (Campeanu, 2014).

Irregularities increase the risk of insufficient and unsatisfactory implementation of funded operations and at the same time, they raise issues of breaches of essential EU principles for the functioning of the Single Market, the free movement of goods and services, the competition, the effective and efficient use of EU budget and the promotion of citizens' trust in the EU mechanisms. Therefore, all EU interventions are monitored and evaluated in order to verify that EU funds are spent effectively, efficiently and rightfully (European Parliament, 2019).

Despite the positive benefits of the ESIF, according to an EC working document containing statistical evaluation of irregularities reported between 2015 and 2019 (European Commission, 2020b), the number of irregularities detected remains very high. Thus, the topic of irregularities remains high on agenda for national authorities and EC stresses the Member States to continue their efforts in order to minimize the rate of irregularities.

Detected irregularities and case studies of past projects can be used in order to improve our knowledge for preventive measures and policy making. Tabish and Jha (2010) refer to Arrowsmith and Hartley (2000) who state that despite the scale and complexity of government purchases, the field of public procurement has remained a relatively under-researched area amongst various scientific areas. Very few systematic studies of public procurement issues and preventive measures for corruption have been conducted. Moreover, as it concerns the irregularities and deficiencies detected in EU funded actions, especially in Greece, there is no available bibliography. Data can mostly be retrieved by the relevant EC reports, issued every one or more years. In addition, the available reports are mainly generic and draw information by all Member States. They don't focus, except few of them, in cases found in each Member State. They include information about all funded actions and operations, from various funds and they don't focus particularly on public contracts.

1.2 Purpose of the Dissertation

Following the above and taking into account that Greece budget from ESIF for 2014-2020 is €21.4 billion³, aim of this thesis is to present the regime of the EU co-funded public contracts, identify some of the most common irregularities and deficiencies detected in such contracts in Greece during the audits carried out by the Greek Audit Authority on co-funded programmes (the Financial Audit Committee, known in Greece with the acronym EDEL) in the context of the Partnership Agreement 2014-2020, analyze and discuss the characteristics of the various findings of EDEL's audits, in an effort to recognize possible relationships between certain characteristics and understand the conditions under which the irregularities/ deficiencies occur.

The source of inspiration for writing this thesis was the fact that the annual EU funding amounts provided to each Member State are affected by the percentage of reported irregular expenditure detected in co-financed operations the previous year. In other words, any significant percentage of irregularities may lead to a significant loss of funds for the implementation of projects of public interest and burden the national budget.

Reporting on irregularities is a point of great importance for both EC and the Member States for the protection of EU financial interests in general, too. The EC relies a lot among others, on the Audit Authorities' findings in order to detect fraud situations in the management of EU budget and take appropriate measures. In the first instance, it is the Member States' responsibility to detect, correct and prevent errors. If then, EC detects irregular expenditure co-financed, it can intervene and apply preventive measures and/or financial corrections (ECA, 2017).

According to the European Court of Auditors (2020b), public procurement is a significant source of errors related to the use of EU budget. In Greece in particular, public procurement is recognized as a high-risk area for corruption (PwC, 2016). Therefore, the identification of irregularities related to the public contracts may allow the European and national authorities to identify the most vulnerable areas, the appropriate methods for irregularities detection and the appropriate measures for their prevention and elimination. It can also help

³ <https://cohesiondata.ec.europa.eu/countries/GR>

the Member States, including Greece, to improve the management of co-funded public contracts and their irregularities, their credibility and functionality and consequently, to benefit from receiving more European funds.

It may also raise staff awareness regarding irregular or fraudulent practices, help professionals involved in the EU funds management and control in avoiding or detecting irregularities and assist the competent authorities to improve certain procedures and design rules and policies for preventing them, especially in view of the next Partnership Agreement 2021-2027.

Furthermore, thesis results are possibly going to be useful in creating general awareness for fostering integrity in public procurement. The subject of the research may focus on co-funded public contracts, but the results may also provide useful conclusions for all public contracts in Greece, i.e. those funded exclusively by the national budget.

In addition, recording and reporting of deficiencies in public contracts is an issue of direct interest of European citizens, as funds come from European taxpayers' money. The taxpayers should be ensured that their money is used properly and for the purpose for which it has been decided, for the benefit of society.

1.3 Research Methodology

The research aims to draw results about the most common irregularities and deficiencies in general, observed in EU-funded public contracts in Greece and identify trends via the statistical analysis of the results of the audits carried out by the Audit Authority of Greece (EDEL) on co-funded programmes, during the National Strategic Reference Framework (known in Greece as ESPA) 2014-2020. The collected data include among others, the type of detected findings and information about the audited operation/project. The data have been extracted from the last five Annual Control Reports issued by EDEL as it concerns annual aggregate data about all EDEL's audits per year, fund and finding category and from EDEL's information system as it concerns the analytical information of 382 audits findings detected through 100 audits carried out to 81 operations.

For the statistical analysis, the Microsoft Excel Spreadsheet Software and the Statistical Package for the Social Sciences (SPSS) have been used. The statistical analysis is primarily

based on the descriptive statistics produced for each variable (mainly the frequency tables) or mean values, as well as on the visual interpretation of the relevant graphs produced. On a second step, the relations between selected categorical variables are investigated by using Pearson Chi-Square Independence Test. The output is contingency (crosstab) tables, descriptive statistics tables and grouped bar charts.

1.4 Structure of the Dissertation

The first Chapter is this Introduction. The second Chapter ‘Literature, Regulations and Studies Review’ focuses on the main terms and key issues of the public procurement, based on the academic literature and the regulatory framework governing the EU-funded public contracts. Special emphasis is given to audit mechanisms and irregularities observed in public procurement and execution of co-funded contracts. The third Chapter ‘Research Methodology’ follows and describes the methodological approach of the research, i.e. the methods and procedures applied for the collection, processing and statistical analysis of data. Then, the fourth Chapter ‘Research Results’ includes a comprehensive and detailed presentation of the research results. The last Chapter ‘Conclusions’ contains a summary of the overall research and its main conclusions, examines if the research questions are answered and if the results fit with existing knowledge, while suggestions for possible future research are made.

2 Literature, Regulations and Studies Review

2.1 Public Contracts

2.1.1 Definitions & Basic Principles

Public Contract

According to the Directive 2014/24/EU⁴, public contracts are contracts of pecuniary interest concluded between one or more economic operators and one or more contracting authorities, having as subject the implementation of works, the purchase of products or the supply of services. In this definition, contracting authorities are the state, regional or local authorities, bodies governed by public law, or associations formed by one or more such authorities or bodies (European Parliament, 2020).

Based on Raikos (2019), the term ‘public contracts’ refers to all contracts concluded by the public administration. The Greek Law 4412/2016⁵ on public procurement, under which the above mentioned EU Directive was incorporated in the national legal order, states that contracting authorities are the Hellenic Republic, regional and local authorities and in general, entities governed by public law or associations of one or more such bodies, where ‘entities governed by public law’ are all the organizations that are established for the specific purpose of meeting needs of the general interest, are not of industrial or commercial nature and are mostly financed by the State or other bodies governed by public law or are under their management or supervision.

The meaning of ‘pecuniary interest’ is that an economic operator undertakes the implementation of the contract’s subject for a specific fee to be paid by the contracting authority, which (fee) covers the costs incurred (Raikos, 2019).

The broader concept of public contract covers any contract, which in terms of content serves a public purpose that is part of the general interest and is concluded between a public administration body regardless of its’ legal form. This means that the criterion for

⁴ <http://data.europa.eu/eli/dir/2014/24/oj>

⁵ ‘Public works, supplies and services contracts – Transposition of Directives 2014/24/EU and 2014/25/EU’

characterizing a contract as public is functional or substantive and not formal or organizational⁶ (Raikos, 2019).

According to Bovis (2012), the crucial characteristics of a public contract are not what and how is described in national laws, nor is the legal regime (public or private) that governs its terms and conditions, but i) a pecuniary interest consideration given by a contracting authority and ii) in return of a work, product or service which is of direct economic benefit to the contracting authority.

According to Anshori (2020), the subjective characteristic of a public contract is that one party to the contract is a government and the objective characteristics is that the contracted object relates to activities undertaken for government functions that are done for the public interest.

Depending on their scope of work, public contracts are distinguished into the following types:

- works contracts, having as objective the execution of works, in order for the public authorities to acquire operating or other infrastructure projects for citizens (e.g. roads)
- supply contracts, which aim to purchasing, leasing, rental of products in order to satisfy public authorities' needs for consumables, equipment or other goods (such as computers, hospital equipment etc)
- service contracts, for the provision of services or of intangible goods and activities (such as consultancy, training and cleaning)
- mixed contracts, which have as subject different types of the abovementioned contracts

(Raikos, 2019; Directive 2014/24/EU).

⁶ According to the prevailing opinion in the Greek legal system, however, the contract, in which no contracting party is the public or legal entity governed by public law, does not have the character of a public contract (administrative contract), but is a contract of private law. However, the question of whether a public contract incorporates the features of an administrative contract relates only to the jurisdiction of the administrative courts. Private contracts are governed solely by civil or commercial law (Raikos, 2019).

We should mention that Concessions⁷ and Public-private partnership contracts⁸ are not subject of this dissertation.

Public Procurement

Procurement can be defined as the process of finding and agreeing into terms, and acquiring goods, services or works from an external source, often via a tendering or competitive bidding process (Laffont and Tirole, 1993).

Public procurement, more specifically, can be defined as the process of acquiring works, goods or services needed for public programs and projects (Naushad, 2018), or by which entities purchase these against costs incurred by public funds (Patras and Banacu, 2016).

According to the Directive 2014/24/EU, procurement is the purchase by means of public contract of works, supplies or services by one or more contracting authorities from economic operators chosen by those contracting authorities, independently of their purpose to provide services to citizens.

The main stages of public procurement process are shown in the next figure. It starts with planning, proceeds with tender publication and bidders' invitation, bid evaluation and contract award and ends with contract implementation (OECD, 2007).

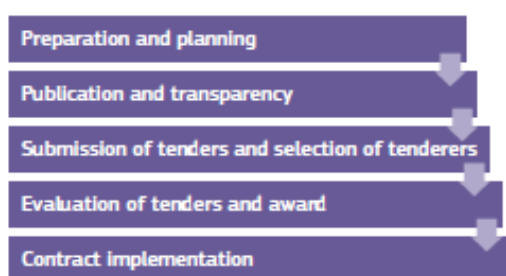


Figure 2.1 Main stages of public procurement process⁹

⁷ Economic operators awarded a concession acquire the exclusive right to exploit the works or services that are the object of the contract, or that right together with payment (European Parliament, 2020).

⁸ They are contracts for the provision of services and the undertaking of construction work of public benefit in collaboration with and co-funded by the private sector (Law 3389/2005 'Partnerships between the public and private sectors')

⁹ European Commission (2018), p.8

Public contracts evolution

The first traces of procurement and public contracts can be seen throughout ancient history. Though there was no designated procurement function, materials management aided in the building of the pyramids by the Egyptians in 3,000 BC (Nolan, 2014). Acropolis of Athens was also object of a public contract, as the well-known Arsenal of Philonos in the port of Zea in Piraeus (347 BC). Another important public project was the drainage of the lake Ptech in Evia (the world's first Build, Operate and Transfer project that was paid with a 10-year agricultural concession to the Contractor. (Raikos, 2019)

Procurement's organizational role was not truly recognized until the 1800s. During the Industrial Revolution, procurement contributed to the railroad industry, specifically in acquiring goods from developed regions. In the mid-1960s the procurement took on managerial role on a wide-scale. Procurement professionals emphasized competitive bidding, with price becoming the determining factor for most contracts. The 1980s saw a significant increase in supplier competition. Supplier management became an important factor in procurement and remains so today. By the late 1990s, the role of procurement had begun its transition into strategic sourcing. Procurement officials looked at supplier as partners and long-term contracts were encouraged. This was the beginning of procurement's modern day evolution. (Nolan, 2014)

Today, the public procurement market is massive. In developing countries, governments spend an estimated \$820 billion a year, about 50% of their budgets, on procuring goods and services. Public procurement is large in high-income countries as well, reaching about 29% of total general government expenditure. (World Bank, 2015).

Given its size, the public procurement can enhance public sector performance and provision of more effective public services, when it is carried out in an efficient and transparent manner. It can also act as a powerful tool for economic growth, job creation and innovation, as it offers opportunities for Small and Medium-sized Enterprises (SMEs), improves competition, encourages private investment and contributes to growth and employment (World Bank, 2015; European Commission, 2018).

Public procurement basic principles

Public contracts are subject to national and international regulations in order to foster competition and maximize value for money for the public sector. This among others, includes adopting some basic principles for enhancing integrity in public procurement.

The public procurement system in most countries is based on the following seven globally accepted principles (Naushad, 2018):

value for money: This means effective, efficient, and economic use of resources, after evaluation of relevant costs and benefits, which not include only price (The World Bank, 2016).

economy: It refers to the need of managing public funds with responsibility, taking into consideration factors such as sustainability, quality, environmental and social impacts (The World Bank, 2016).

integrity: It means that the public authority displays the appropriate behavior and the procedures followed are aligned with the public interest and with broader principles of good governance, assuring reliability and confidence in the public procurement process, avoiding uncertainty and abuse of public resources or other irregular and unethical practices (The World Bank, 2016). We could also connect this to the principle of objectivity referred by Raikos (2019), which means that the public authorities should provide guarantees of impartial judgment in order to create the belief that the administrative decision is sound. According to Raikos (2019), the concept of Conflict of interest¹⁰ is also closely related to this principle.

fit for purpose: It has to do with the determination of the best solution and choice to satisfy defined needs or accomplish defined project outcomes (The World Bank, 2016). We could connect this to the principle of proportionality, a practical manifestation of which is according to Raikos (2019), the prohibition of contracting authorities to require disproportionate and excessive technical, professional or financial skills in the quality selection of candidates.

¹⁰ It is a conflict between the public duty and the private interest of a public official, in which the official's private interest could improperly influence the performance of official duties and responsibilities (World Bank, 2015).

efficiency: It means that the procurement process should be carried out timely and effectively, taking into account the relevant risks and benefits (The World Bank, 2016).

transparency: It refers to the openness of procurement process and specifically to the formal publicity procedures in order to enable competition, the clarity of the followed rules, the availability of information and the access of all interested parties to the relevant documentation (Moukiou, 2018; Raikos, 2019). According to Raikos (2019), this principle is connected with the principle of mandatory reasoning of contracting authorities' decisions, especially those that reject participants' requests or tenders, which should be fully and specifically reasoned.

fairness: It refers to the equal, fair, without discriminations treatment of all bidders during the tenders' preparation and evaluation and during the contract implementation, which means that a new procurement procedure is required for substantial modifications of the provisions of the contract (Raikos, 2019; EU Directive 2014/24).

Raikos (2019) refers also to

- **the principle of legal certainty**, which demands the stability and consistency of rules of law established by the state, excluding sudden and unexpected changes
- **the principle of formality**, which means that the contracting authority, by publishing the terms of a tender, commits itself and is obliged to apply them without exception and similarly, tenderers must fully comply with these terms and submit their tender in accordance with them.

2.1.2 Public Procurement Rules

Public contracts play a significant role in the EU. During the period 2014-2017, the mean of total general government expenditures on works, goods, and services (excluding utilities and some concessions) in the Member States is estimated to generate more than 13% of the Union's GDP (European Commission, 2019).

Effective, transparent and professional public procurement is essential for strengthening the Single Market and stimulating investment in the EU. In the late 1980s, only 2% of public procurement contracts were awarded to non-national economic entities (Raikos, 2019).

Public procurement has been regulated in detail since then, primarily in order to achieve the principles of the Treaty on the Functioning of the European Union¹¹ for the free movement of goods, the freedom of establishment and the freedom to provide services (Piga and Treumer, 2012), and the principles that derive from them, such as proportionality and transparency, efficiency, equal treatment and non-discrimination (European Parliament, 2020). The application of internal market principles promotes the competitiveness of European companies, ensures better allocation of public funds and value for money.

Except the provisions of the Treaty on the Functioning of the European Union, the EU procurement law consists of the Secondary EU law (the Directives) and the Case law from the Court of Justice of the EU and is supplemented by the arrangements of the Agreement on Government Procurement¹² concluded in 1994 under the auspices of the World Trade Organization (Raikos, 2019).

The opening of public procurement within European competition was initially achieved through directives 92/50, 93/36 and 93/37¹³ about the coordination of procedures for the award of public contracts. These directives were replaced by Directive 2004/18/EC on public contracts for works, supplies and services and Directive 2004/17/EC on the water, energy, transport and postal services sectors, while Directive 2009/81/EC set specific rules for defense procurement¹⁴.

In 2014, EU adopted a new public procurement package which includes

- Directive 2014/24/EU¹⁵ (known as the ‘classic directive’) on public procurement

¹¹ <http://data.europa.eu/eli/treaty/tfeu/2012/oj>

¹² It's a plurilateral agreement which regulates the procurement of goods and services by the public authorities of the parties to the agreement, based on the principles of openness, transparency and non-discrimination (https://www.wto.org/english/tratop_e/gproc_e/gp_gpa_e.htm)

¹³ <http://data.europa.eu/eli/dir/1992/50/oj>; <http://data.europa.eu/eli/dir/1993/36/oj>;
<http://data.europa.eu/eli/dir/1993/37/oj>

¹⁴ <http://data.europa.eu/eli/dir/2004/17/oj>; <http://data.europa.eu/eli/dir/2004/18/oj>;
<http://data.europa.eu/eli/dir/2009/81/oj>

¹⁵ <http://data.europa.eu/eli/dir/2014/24/oj>

- Directive 2014/25/EU¹⁶ on procurement by entities operating in the water, energy, transport and postal services sectors (the ‘sector specific directive’) and
- Directive 2014/23/EU¹⁷ on the award of concession contracts.

This thesis will concentrate more on the General Directive 2014/24/EU than on the Utilities Directive 2014/25/EU due to the general nature of the first one and since for the purpose of this paper the differences between the General and the Utilities Directive are not important.

The EU Directives establish public procurement rules throughout the EU to any public purchases whose monetary value exceeds certain thresholds¹⁸. Tenders of lower value have to comply with national rules, but also have to respect general principles of EU law. Paragraph 1 of the Recital to the 2014/24 Directive states that the award of public contracts has to comply with the principles of the Treaty on the Functioning of the European Union as well as with other principles such as equal treatment, non-discrimination, transparency, in order to ensure that those principles are given practical effect and public procurement is opened up to competition.

The provisions of EU Directives have been transposed into Greek legislation with Law 4412/2016. Moreover, during the last decade, the Greek government has undertaken several initiatives and structural reforms on public procurement. In 2011, the Government set up the Hellenic Single Public Procurement Authority (known in Greece as EAADHSY-EAAΔΗΣΥ)¹⁹, the body to review the legality of all contracts signed by public institutions. The legislative reform included among others,

- codifying and simplifying Greek public procurement rules;
- enhancing transparency by establishing the Central Electronic Registry of Public Contract (KHMDs), through which all transactions regarding public tenders, public contracts and payments over a value of €1.000 must be registered and processed;
- introducing single publication points for procurement notices;

¹⁶ <http://data.europa.eu/eli/dir/2014/25/oj>

¹⁷ <http://data.europa.eu/eli/dir/2014/23/oj>

¹⁸ These thresholds can be found at https://ec.europa.eu/growth/single-market/public-procurement/rules-implementation/thresholds_en

¹⁹ <https://www.eaadhsy.gr/index.php/en/>

- using central purchasing and reducing the number of contracting authorities;
- reducing of required information;
- introducing electronic submission of bid documents and e-procurement and
- enhancing corruption prevention mechanisms

(OECD, 2014; European Commission, 2014).

2.2 EU-funds

Public procurement is also essential in the EU for delivering the benefits of the Cohesion Policy to the European citizens and businesses (European Commission, 2018). Cohesion Policy is the EU's strategy that aims to strengthen economic and social cohesion within the EU and reduce gaps in development and social disparities between regions. The policy focuses also on key areas for EU competitiveness' promotion (Ginka, 2016; Bauer 2019).

During the current funding period 2014-2020, Cohesion Policy is delivered through 5 EU-funds known as ESIF (European Structural and Investment Funds):

- European Regional Development Fund (ERDF) – promotes balanced development in the different regions of the EU, covers all Member States and focuses on several key priority areas, such as innovation and research, Small and Medium-sized Enterprises (SMEs) support and environment;
- European Social Fund (ESF) - supports employment related projects and invests in Europe's human capital;
- Cohesion Fund (CF) – funds transport and environment projects in countries where the Gross National Income per inhabitant is less than 90% of the EU average²⁰ (European Court of Auditors, 2020);
- European Agricultural Fund for Rural Development (EAFRD) – focuses on resolving challenges that EU's rural areas face;

²⁰ In 2014-2020, these are Bulgaria, Croatia, Cyprus, Czechia, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia and Slovenia

- European Maritime and Fisheries fund (EMFF) – supports sustainable fishing practices and economies’ diversification as well as life quality improvement along European coasts.

The ESIF provides over €450 billion into the EU real economy during the 2014-2020 funding period, half of which is invested through public procurement (European Commission, 2018b).

2.2.1 ESIF Regulations

ESIF are jointly managed by the EC and the EU Member States. Each Member State prepares a Partnership Agreement, in collaboration with the Commission, setting out how the funds will be used. Partnership Agreements lead to a series of investment programmes (for operational or rural development)²¹ channeling the funding to different regions and projects (European Commission, 2020b).

Programmes are based on the co-funding principle, which means that in each programme, various organizations from the public and private sector such as national or regional administrations, universities, enterprises, chambers of commerce can apply for EU-funding by developing projects that contribute to the objectives of the respective programme. Co-funding with ESIF varies between 50-85%. The remaining part has to be covered by own (public or private) funds of the project partner or other subsidies granted to it by national, regional or local bodies (Bauer, 2019).

Greece benefits from ESIF funding of €21,4 billion over the period 2014-2020 and the national country budget for 2014-2020 has been set to €4,9 billion²².

²¹ Art.2, Regulation EU No 1303/2013

²² <https://cohesiondata.ec.europa.eu/countries/GR>

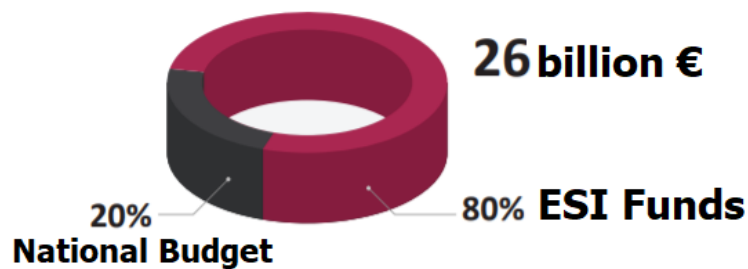


Figure 2.2 Greece funding by ESIF²³

The following figure presents the planned financing over the period 2014-2020 by fund.

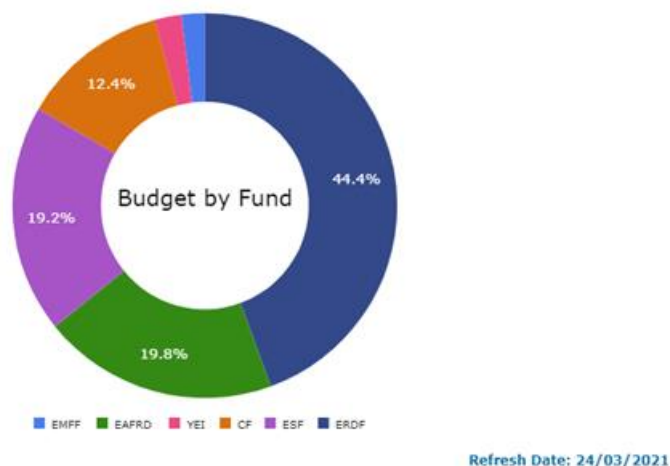


Figure 2.3 Greece Budget by ESI Fund²⁴

The Partnership Agreement 2014-2020 in Greece is implemented through 20 national programmes and seeks to tackle the structural weaknesses in Greece that contributed to the economic crisis, as well as other economic and social problems caused by it.

According to the shared management principle, the management of funds is made jointly by the EU and authorities in the EU countries. EU sets the rules and the Member States develop

²³ https://www.espa.gr/elibrary/PA_2014-2020_Fact_sheet_10052016.pdf, retrieved on 24.03.2021

²⁴ <https://cohesiondata.ec.europa.eu/countries/GR>

and manage the programmes and pay out EU-funds to the beneficiaries²⁵. A number of EU-regulations and delegated and implementing acts of the EC lay down the regulatory framework for the ESIF programmes (Bauer, 2019). All the relevant regulations, secondary legislation and guidance notes on management and control are available in Inforegio website²⁶ and databases²⁷.

EU-funded operations²⁸ run several months or years. Usually, each half year or year, they call off EU-funding by providing proof that activities have been implemented and respective expenditure has been made. These costs are subject to a financial control which has to be set up in each Member State according to the EU Common Provisions Regulation No 1303/2013 (known as CPR)²⁹ and the (EU, Euratom) No 2018/1046 Financial Regulation (known as FR)³⁰. The 1st level of control or Ex-ante is carried out before submitting expenditure to the Commission, by the Managing Authority³¹ or Intermediate Body³², who verifies that project's expenditure is paid and complies with the applicable law. A 2nd level of control (Ex-post) is performed after the Commission has made the payment or accepted the expenditure, usually on a sample basis, by an Audit Authority³³, who audits the proper functioning of the program's Management and Control System³⁴ (System Audit) as well as

²⁵ A natural or legal body receiving grant/loan from the EU budget and implementing an operation (European Court of Auditors, 2020)

²⁶ https://ec.europa.eu/regional_policy/en/information/legislation/regulations/ and http://ec.europa.eu/regional_policy/en/information/legislation/guidance/

²⁷ <https://webgate.ec.europa.eu/esiflegislation/display/ESIFLEG/ESIF+Legislation+Home>

²⁸ Operation is a project, contract, action or group of projects

²⁹ <http://data.europa.eu/eli/reg/2013/1303/oj>.

³⁰ <http://data.europa.eu/eli/reg/2018/1046/oj>. It is the basic text setting out the principles and procedures for the establishment and implementation of the EU budget and the control of EU finances.

³¹ The Managing Authority bears the overall responsibility for managing the Operational Programs in accordance with the principle of sound financial management (EU Common Provisions Regulation No 1303/2013).

³² Intermediate Bodies are public or private bodies acting under the responsibility of a Managing Authority, or carry out duties on behalf of such an authority (or more seldom of Certifying Authority) (EU Common Provisions Regulation No 1303/2013).

³³ An independent national entity responsible for auditing the systems and operations of an EU spending programme (European Court of Auditors, 2020)

³⁴ The Management and Control System is a set of interdependent administrative authorities, which have a specific organizational structure and develop individual activities with the objective purpose of sound financial management of resources (economy, efficiency, effectiveness) and include:

the operations' declared expenditure (Operations Audit). The Certifying Authority, which is responsible for drawing up and submitting payment applications to the EC, certifies the conformity of expenditure with payment requests and applicable EU and national rules.

The audit bodies must be independent and must carry out their function and deliver an opinion in accordance with internationally accepted audit standards. This opinion must include assurance of the legality and regularity of expenditure and of the functioning of Management and Control System.

Regularity is a very important aspect in the use of EU funds. It refers to the extent to which a transaction or activity complies with the applicable rules and regulations and any contractual obligations, while irregularity is any infringement of EU legislation (or relevant national rules) and contractual requirements (European Court of Auditors, 2020).

In the Common Provisions Regulation (CPR) - Regulation (EU) No 1303/2013, **irregularity** is defined as any breach of Union law, or of national law relating to its application, resulting from an act or omission by an economic operator involved in the implementation of the ESIF, which has, or would have, the effect of prejudicing the budget of the Union by charging an unjustified item of expenditure to the budget of the Union.

If the irregularities are met more than one times in similar types of operations, resulting from a serious deficiency in the effective functioning of Management and Control System, they are called systemic (EU Common Provisions Regulation No 1303/2013).

Irregularities can arise from improper actions by both the beneficiaries and the authorities involved in Management and Control System and include any administrative or financial mismanagement e.g. insufficient documentation of the expenditure declared, delays in the project's progress or non-compliance with publicity requirements (Campeanu, 2014).

-
- all Authorities/Bodies, which undertake the competences of management, certification, control and coordination, in accordance with the EU Common Provisions Regulation No 1303/2013, their organizational structure and individual competences;
 - the operational correlation of Authorities/bodies and the compliance with the principle of separation of functions;
 - the written procedures to be implemented;
 - all the relevant regulatory acts required for the designation of Authorities/Bodies and the implementation of Operational Programs
(<https://www.espa.gr/en/Pages/staticManagementControlSystem.aspx>).

The EU Common Provisions Regulation No 1303/2013 sets out that operations financed by the ESIF shall comply with applicable Union law and the national law. This means that they should be in conformity with the provisions of Community policies, including the award of public contracts (Bauer, 2019). Therefore, EU-funded public contracts are governed both by the provisions concerning the management of the EU budget and more specifically the ESIF and by public procurement rules. The regulatory framework is defined both in EU and national level. Therefore, in the context of their duties, audit bodies involved in ESIF, audit the conformity of all the procedures followed by the contracting authorities until the award of public contracts (tender documents, bid evaluation and contractor selection) with the above provisions, as well the lawful and efficient implementation of these contracts and their amendments, in order to ensure the eligibility of their expenditures and the efficient use of EU budget. The following figure presents the key financial control and auditing functions.

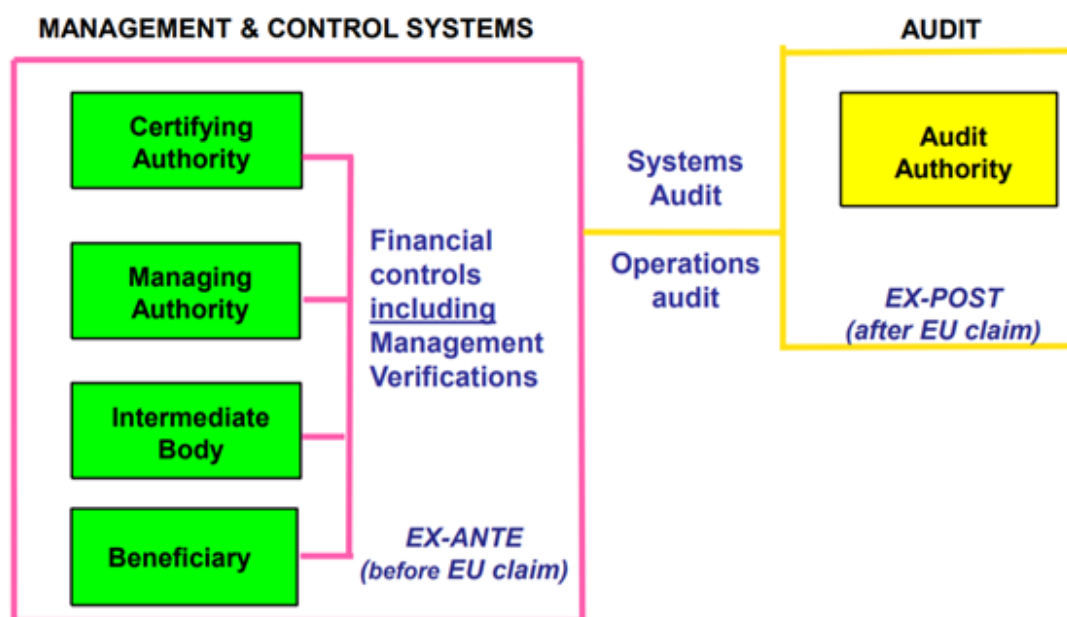


Figure 2.4 Key financial control and auditing functions³⁵

³⁵ Dermot (2014), PowerPoint Presentation, p.8

In terms of management and control, the Partnership Agreement 2014-2020 in Greece is governed by the provisions of Law 4314/2014. This law provides for the basic rules and procedures for the management, control and implementation of the Partnership Agreement 2014-2020 in accordance with the requirements of the EU Common Provisions Regulation No 1303/2013 and national legislation, to ensure the efficient use of the EU and national budget.

The Management and Control System for the Programming Period 2014-2020 is common for all the Operational Programs that are financed by the European Regional Development Fund, European Social Fund and the Cohesion Fund³⁶. The implementation of the Management and Control System is supported by a Monitoring Information System (known in Greece with the acronym OPS-OΠΣ) which records data relating to the planning, management, control and implementation of the National Strategic Reference Framework (known in Greece as ESPA), Operational Programs and operations.

The Financial Audit Committee (known in Greece with the acronym EDEL) has been appointed as the Greek Audit Authority. EDEL is a college body³⁷ under the General Directorate of Co-financed Programs Audits, in the General Secretariat of Fiscal Policy (General Accounting Office) of the Ministry of Finance. Its responsibilities are described in Law 4314/2014 (Art.11)³⁸. EDEL's audits are carried out by audit teams set up with staff

³⁶ <https://www.espa.gr/en/Pages/staticManagementControlSystem.aspx>

³⁷ EDEL consists of the following members: the Head of the General Directorate of Co-financed Programs Audits as Chairman, the Head of the Directorate of Audits Planning and Evaluation, the Heads of Directorates A and B of Co-financed Programs Management Audits, the Head of the Independent Department of Co-financed Programs urgent audits and 2 experts from the public or private sector who have experience in EU law enforcement and control of co-financed programs or public works or state aid (Law 4314/2014).

³⁸ EDEL ensures that audits are carried out in order to verify the effective operation of the Management and Control System; ensures that regular operations audits are carried out on an appropriate sample with aim the verification of declared (to EC) expenditure; carries out special audits following complaints or audit orders, develops an audit strategy which is updated at least annually and submitted to EC; by 15 February each year until 2025 submits to EC: i) an audit opinion which clarifies whether the expenditure for which a refund has been requested by the Commission is lawful and normal, whether the control systems put in place are functioning properly and whether the accounts submitted by the competent state authority are complete and give an honest and accurate picture of the costs and transactions incurred in the previous accounting year; ii) an annual audit report setting out the main findings of the audits carried out during the previous audit period (from 1/7/N-1 to 30/6/N, where N: the year before the audit report submission date, in accordance with the audit strategy, including the findings concerning any deficiencies in the management and control systems, as well as the corrective measures proposed and implemented.

from the General Directorate of Co-financed Programs Audits and the Register of Financial Auditors, according to international and Greek audit standards³⁹. The audit procedures are described in detail in an Audit Manual approved by EDEL. For every system or operation audit, an Audit Results Report is prepared, which includes among others, any deficiencies and irregularities detected with corresponding recommendations and corrective measures. After audit completion, recommendations implementation is monitored by the General Directorate of Co-financed Programs Audits.

EC also performs operations' audits, before or after accepting expenditure and making interim/final payments⁴⁰ and system audits of Member States controls and/or control of the work of the audit bodies after a risk analysis. (European Commission, 2018).

The European Court of Auditors (ECA)⁴¹ is responsible for auditing the accounts of all revenue and expenditure of the Union, examining their legality and regularity, deciding whether the applied financial management has been sound and reporting on cases of irregularity. Its' audits are based on records of anybody managing revenue or expenditure on behalf of the Union and in the Member States the audits are carried out in partnerships with national audit bodies.

The following figures presents the Audit Structure of Operational Programs.

³⁹ International Organization of Supreme Audit Institutions (INTOSAI) Standards (ISSAI), European Implementing Guidelines for the INTOSAI Auditing Standards, International Auditing and Assurance Standards Board (IAASB) of the International Federation of Accountants (IFAC), Greek Auditing Standards etc (EDEL's Audit Manual, 2021)

⁴⁰ EU projects or programmes often involve multiple payments: advance, interim and final. Beneficiaries apply for interim payments once they have reached a milestone specified in the contract or grant agreement. (European Court of Auditors, 2020)

⁴¹ European Court of Auditors is the independent external auditor of the EU since its establishment in October 1977. The European Court of Auditors' aim is to improve the way the Union's finances are managed and contribute to public accountability regarding the raising and spending of the EU budget through assurance and advice. (<https://www.eca.europa.eu/en/Pages/ecadefault.aspx>)

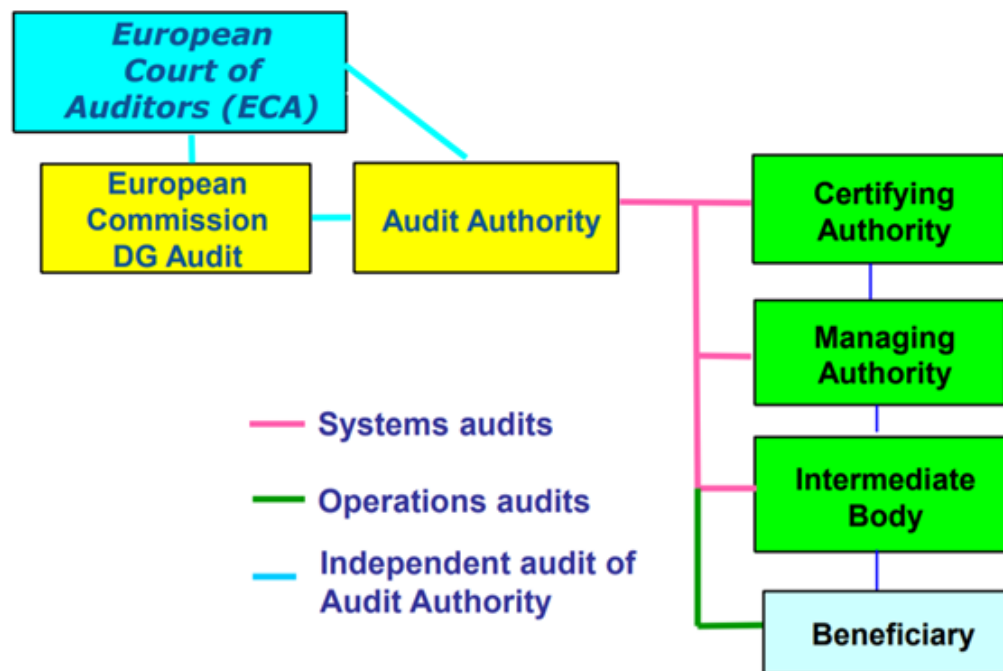


Figure 2.5 Audit Structure of Operational Programs⁴²

For any irregularities detected, there are various measures and recoveries that should be applied (Ginka, 2016). Irregularities can be handled through recommendations for improving a function or correcting an action, financial corrections⁴³ or even cancellation of all or part of the contribution for an operation or an Operational Program.

⁴² Dermot (2014), PowerPoint Presentation, p.30

⁴³ Financial correction is a measure to protect the budget from irregular or fraudulent expenditure by withdrawing or recovering funds to compensate for payments made in error to EU-funded projects or programmes (European Court of Auditors, 2020). An expense is considered as an irregularity if it is accepted by the programme's bodies and the related payment claim has reimbursed to the beneficiary. Then, there is an effect of prejudicing the EU budget, the payment needs to be recovered and financial corrections can be imposed out by the Managing Authority, the Audit Authority or the EC. If the money cannot be obtained from the beneficiary and if this loss was caused by a mistake or negligence of a Member State, then this Member State is obligated to reimburse the amounts lost to the general budget of the EU.

2.2.2 Anti-Fraud Provisions

Additionally to all the above settings in the ESIF management, the EU budget utilization requires the implementation of a series of measures concerning the prevention of fraud⁴⁴.

In particular, the Treaty on the Functioning of the European Union calls the Commission and the Member States to counter fraud and any other illegal activities affecting the financial interests of the Union. The Commission Delegated Regulation (EU) No 480/2014⁴⁵ outlines a new key requirement that need to be assessed during the Programming Period 2014-2020, covering anti-fraud measures to be put in place by Managing Authorities and Intermediate Bodies (OLAF, 2014). The OLAF⁴⁶ Regulation⁴⁷ requires the Member States to designate a service (the Anti-Fraud Coordination Service) to facilitate effective cooperation with OLAF and exchange of information relating to possible cases of fraud, corruption or any other illegal activity affecting the financial interests of the Union. According to the Commission Delegated Regulation (EU) No 2015/1970⁴⁸, the Member States shall report irregularities with error amount⁴⁹ over 10.000€ or which are the subject of a primary administrative or judicial finding, to OLAF via the Irregularity Management System (IMS) on a regular basis. The general purpose of the processing is to provide support in ascertaining the nature of irregular practices and the financial effects of irregularities, including suspected and

⁴⁴ Fraud affecting the Union's financial interests is defined in detail in Art.3 of the Directive (EU) No 2017/1371 on the fight against fraud to the Union's financial interests by means of criminal law (<http://data.europa.eu/eli/dir/2017/1371/oj>).

⁴⁵ http://data.europa.eu/eli/reg_del/2014/480/oj. This Regulation is supplementing the EU Common Provisions Regulation No 1303/2013 laying down common provisions on the ESIF

⁴⁶ The European Anti-Fraud Office is commonly known as OLAF, which is the acronym of its title in French, Office européen de lutte antifraude. OLAF investigates fraud against the EU budget, corruption and serious misconduct within the European institutions, and develops anti-fraud policy for the European Commission. (<https://ec.europa.eu/anti-fraud/>)

⁴⁷ <http://data.europa.eu/eli/reg/2013/883/oj>. Regulation (EU, Euratom) No 883/2013 concerning investigations conducted by the OLAF

⁴⁸ http://data.europa.eu/eli/reg_del/2015/1970/oj. This Regulation is supplementing the EU Common Provisions Regulation No 1303/2013 with specific provisions on the reporting of irregularities concerning the ESIF

⁴⁹ An error is the result of an irregularity, i.e. the amount of money that should not have been paid out from the EU budget (European Court of Auditors, 2020).

established fraud, in recovering sums wrongly paid and in preventing irregularities (OLAF, 2018).

In a generalised and simplified manner, fraud may be characterised as the deliberate act of deception intended for personal gain or to cause a loss to another party (PwC, 2019). The concept of irregularity is much wider than that of fraud (Nyikos and Kondor, 2019). An irregularity may or may not be a fraud. If an irregularity is committed intentionally, then it's fraud (Campeanu, 2014).

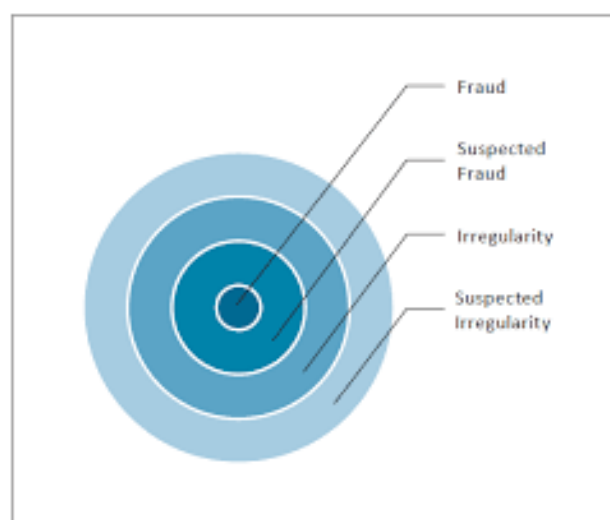


Figure 2.6 Irregularities and Fraud⁵⁰

According to the National Transparency Authority (known in Greece as EAD)⁵¹, fraud in the co-funded projects concerns a series of actions and / or omissions done by the involved administrative bodies which may lead to irregularities or illegal acts which are characterized by deliberate misleading or falsification and harm the interests of the European Union, in the use of European budget resources⁵². An example of irregularity is that no publicity stamp was placed and the relevant expense was not declared, while an example of fraud is the submission of false information / supporting documents to receive aid.

⁵⁰ <http://www.interact-eu.net › download › file › fid>, retrieved on 23 April, 2021

⁵¹ <https://aead.gr/en/>

⁵² <http://kataggelies.gsac.gov.gr/index.php/80-general/123-faqen>

According to OLAF (2014), auditors should consider fraud in a very broad sense, including corruption or intentional infringement of public procurement rules. It should be noted, however, that fraud is a penal law qualification given by a judge. Therefore, the authorities involved in Management and Control System of ESIF cannot characterize an act as fraud, but they can detect facts or highly suspicious circumstances that indicate irregularities or possible fraud (European Commission, 2011). According to the Procedure III_3 of the Greek Management and Control System manual, EDEL is the competent national body for reporting irregularities and suspected fraud to EU.

2.3 Common errors and irregularities in EU-funded Public Contracts

Given the aforementioned, it could be concluded that EU co-funded public contracts are governed by the EU public procurement law and the national law related to its implementation, as well as by the regulations of ESIF management and the Anti-Fraud provisions set by the EC for sound financial and efficient management of the EU budget, as shown in the following figure and irregularities may come from any violation of them which could affect the Union budget.

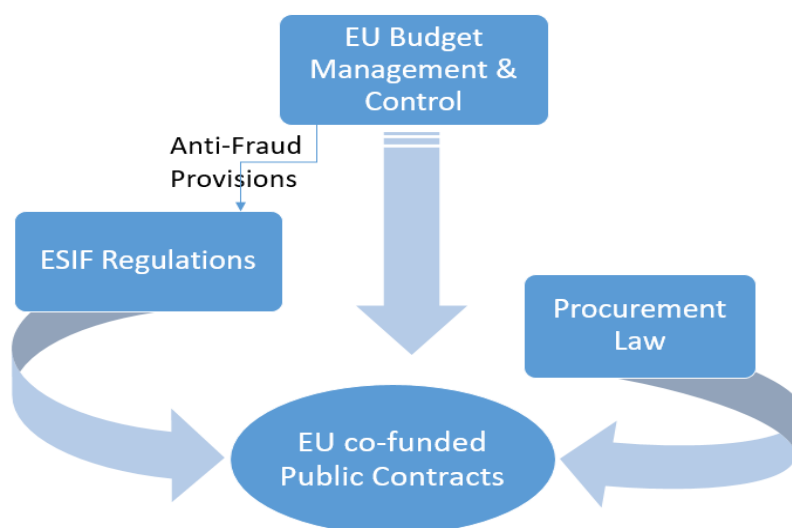


Figure 2.7 The regulatory framework of EU co-funded Public Contracts⁵³

⁵³ Designed by the author of this dissertation using Microsoft Power Point Presentation

Although Member States make efforts to protect the European Funds which are spent for projects of general interest, there are still many cases of irregular activities prejudicial to the EU budget (Campeanu, 2014).

The following tables are indicative of the number of irregularities⁵⁴ and the related financial amounts that have been reported to EC for Cohesion and Fisheries Policies, between 2015 and 2019 by Programming Period, according to an EC working document (European Commission, 2020b) containing statistical evaluation of irregularities.

⁵⁴ Based on the analysis of the notifications provided by national authorities of cases of irregularities and suspected or established fraud, within the framework of their obligations under European legislation.

Table CP2: Number of irregularities reported between 2015 and 2019 by programming period - Cohesion and Fisheries Policies

FUND / PROGRAMMING PERIOD	REPORTING YEAR					TOTAL PERIOD
	2015	2016	2017	2018	2019	
	N	N	N	N	N	
Programming Period 2014-20	2	117	455	1,164	1,512	3,250
CF	0	2	38	122	146	308
ERDF	1	16	205	709	927	1,858
ESF	1	97	209	311	396	1,014
EMFF	0	2	3	22	43	70
Programming Period 2007-13	10,054	8,462	5,014	1,092	475	25,097
CF	464	437	410	87	43	1,441
ERDF	7,962	6,384	3,601	737	353	19,037
ESF	1,438	1,380	817	238	49	3,922
EFF	190	261	186	30	30	697
Programming Period 2000-06	599	61	12	9	12	693
CF	6	2	1	0	0	9
ERDF	566	49	5	8	11	639
ESF	20	4	4	1	0	29
FIFG	1	0	0	0	0	1
GUID	6	6	2	0	1	15
Programming Period 1994-1999	1	1	0	0	0	2
ERDF	1	1	0	0	0	2
TOTAL EU28	10,656	8,641	5,481	2,265	1,999	29,042

Table CP3: Financial amounts related to irregularities reported between 2015 and 2019 by programme period - Cohesion and Fisheries Policies

FUND / PROGRAMMING PERIOD	REPORTING YEAR					TOTAL PERIOD
	2015	2016	2017	2018	2019	
	EUR	EUR	EUR	EUR	EUR	
Programming Period 2014-20	166,544	5,180,421	74,021,774	890,882,695	671,312,521	1,641,563,955
CF	0	671,052	9,434,500	82,228,900	487,880,048	580,214,500
ERDF	15,872	3,152,621	56,949,632	759,470,631	135,157,087	954,745,843
ESF	150,672	1,188,820	7,359,759	47,378,676	44,425,327	100,503,254
EMFF	0	167,928	277,883	1,804,488	3,850,059	6,100,358
Programming Period 2007-13	1,800,471,417	1,923,407,572	1,520,323,303	507,897,892	154,114,668	5,906,214,852
CF	287,705,157	389,701,060	276,843,531	31,809,378	56,360,613	1,042,419,739
ERDF	1,367,246,742	1,366,313,768	1,123,475,222	415,875,874	86,978,589	4,359,890,195
ESF	124,339,890	138,730,887	93,952,232	57,725,628	5,012,974	419,761,611
EFF	21,179,628	28,661,857	26,052,318	2,487,012	5,762,492	84,143,307
Programming Period 2000-06	136,379,226	12,438,335	4,038,015	3,816,070	15,828,702	172,500,348
CF	1,332,039	3,412,302	1,915,597	0	0	6,659,938
ERDF	85,109,540	5,252,772	827,746	3,789,430	15,443,614	110,423,102
ESF	48,474,206	137,061	1,228,806	26,640	0	49,866,713
FIFG	857,372	0	0	0	0	857,372
GUID	606,069	3,636,200	65,866	0	385,088	4,693,223
Programming Period 1994-1999	474,024	6,430	0	0	0	480,454
ERDF	474,024	6,430	0	0	0	480,454
TOTAL EU28	1,937,491,211	1,941,032,758	1,598,383,092	1,402,596,657	841,255,891	7,720,759,609

Figure 2.8 Number and Financial amounts of irregularities for Cohesion and Fisheries Policies per Programming Period (2015-2019)⁵⁵

As expected, irregularities reported in 2019 concern mostly the last Programming Period, as it is in advanced stage of implementation. On the contrary, the number of irregularities for Programming Period 2007-2013 are decreasing since 2015, when this Programming Period closed.

The next figure shows the number of fraudulent irregularities reported between 2015 and 2019 by fund for Cohesion and Fisheries Policies. The European Regional Development

⁵⁵ European Commission (2020b)

Fund (ERDF) is the fund with the highest number of fraudulent cases (and the highest related irregular financial amount).

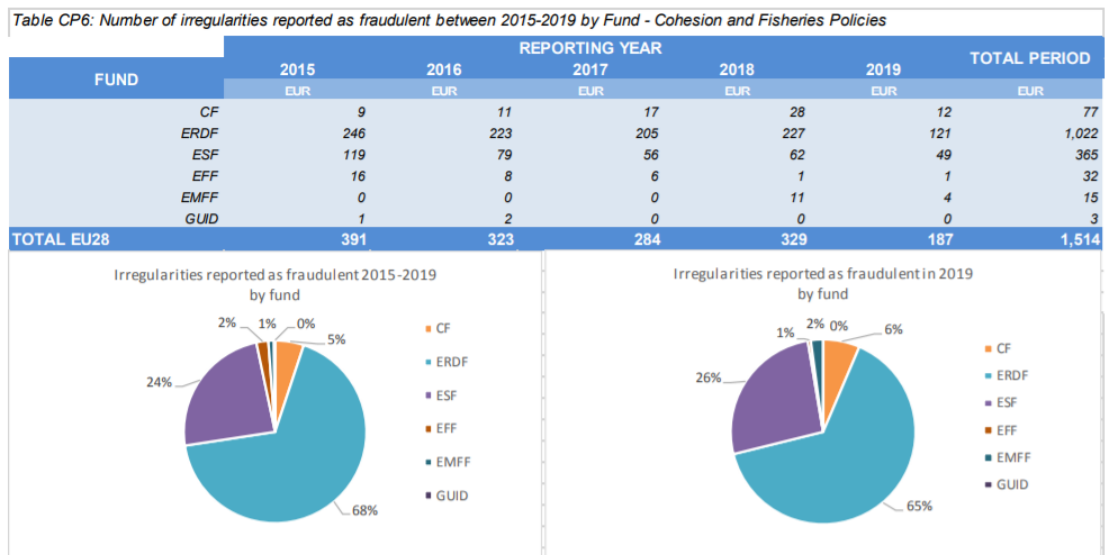


Figure 2.9 Number of fraudulent irregularities (2015-2019) by fund for Cohesion and Fisheries Policies⁵⁶

The following tables provide an overview of the types of irregularities reported as fraudulent and not reported as fraudulent by the Member States during the Programming Periods 2007-2013 and 2014-2020.

⁵⁶ European Commission (2020b)

Table CP14: PP 2014-20 - Categories of irregularity/Modus operandi related to irregularities reported as fraudulent - Comparison with PP 2007-2013 (Cohesion policy - EU28)

Categories of irregularities	Programming period			
	2014-2020		2007-2013	
	Total	Amounts involved	Total	Amounts involved
	N	EUR	N	EUR
Incorrect, missing, false or falsified supporting documents	143	45,149,657	133	30,463,601
Infringement of public procurement rules	56	300,883,324	40	111,173,708
Infringement of contract provisions/rules	49	602,702,502	122	163,800,626
Ethics and integrity	24	9,892,506	10	205,032,827
Violations/breaches by the operator	14	4,569,438	12	6,754,761
Product, species and/or land	13	4,469,658		
Infringements concerning the request	16	4,224,135	15	6,460,675
Incorrect, absent, falsified accounts	15	3,147,114	25	17,479,793
Eligibility / Legitimacy of expenditure/measure	20	8,393,470	116	22,787,686
Bankruptcy	2	327,059	4	320,652
Multiple financing	1	19,600	7	321,142
Other	35	19,525,748	34	17,698,746
blank	9	16,443,524	3	668,787
Irregularities reported and related financial amounts	324	998,017,024	326	441,862,873

Table CP15: PP 2014-20 - Categories of irregularity/Modus operandi related to irregularities not reported as fraudulent - Comparison with PP 2007-2013 (Cohesion policy - EU28)

Categories of irregularities	Programming period			
	2014-2020		2007-2013	
	Total	Amounts involved	Total	Amounts involved
	N	EUR	N	EUR
Eligibility / Legitimacy of expenditure/measure	601	13,227,372	2,565	222,233,844
Infringement of public procurement rules	881	419,325,448	2,448	1,059,075,015
Infringement of contract provisions/rules	535	114,823,157	1,105	526,605,098
Incorrect, missing, false or falsified supporting documents	298	28,732,459	770	459,337,423
Incorrect, absent, falsified accounts	124	15,597,865	181	12,167,933
Infringements concerning the request	39	4,145,923	44	14,541,535
Product, species and/or land	39	4,713,794	4	1,974,602
Violations/breaches by the operator	51	9,334,888	98	85,426,563
Bankruptcy	11	715,451	14	2,999,143
Multiple financing	18	1,026,469	120	13,242,412
Movement	8	189,899	2	673,001
Ethics and integrity	10	1,463,423	4	431,789
State aid	4	64,684		
Other	282	35,725,023	425	302,296,331
blank	167	16,303,974	159	9,246,831
Irregularities reported and related financial amounts	2,856	637,446,573	6,354	1,579,070,955

Figure 2.10 Types of irregularities (2015-2019) for Cohesion and Fisheries Policies⁵⁷

According to the above data, the EC document reports among other, the following useful conclusions:

- The number of detections related to eligibility and contract implementation declined between the two Programming Periods.

⁵⁷ European Commission (2020b)

- As it concerns the irregularities reported as fraudulent, the number of detections related to false documents, infringement of public procurement rules and conflict of interest increased.
- The number of irregularities not reported as fraudulent, generally decreased.

Changes in legal framework and implementation context from Programming Period 2007-2013 to Programming Period 2014-2020, including anti-fraud systems, may have affected the type of irregularities detected. For example, in the new Programming Period, the Managing Authorities are required to put in place anti-fraud measures. Moreover, annual accounts were introduced, which might have contributed to strengthening Member States' internal control.

Various analyses and audits done reveal that almost half of all errors detected in ESIF programmes and projects are attributable to violations of public procurement rules (Bauer, 2019).

The next graph shows an overview of the main types of error found by the European Court of Auditors (2020) in expenditure concerning 'Cohesion' i.e. mainly implemented through the European Regional Development Fund, Cohesion Fund and European Social Fund during 2019. Ineligible projects and infringements of internal market rules (most related to public procurement, e.g. non-compliance with publication and transparency requirements or discriminatory technical specifications) were the main categories and then, ineligible expenditure and absence of essential supporting documents.

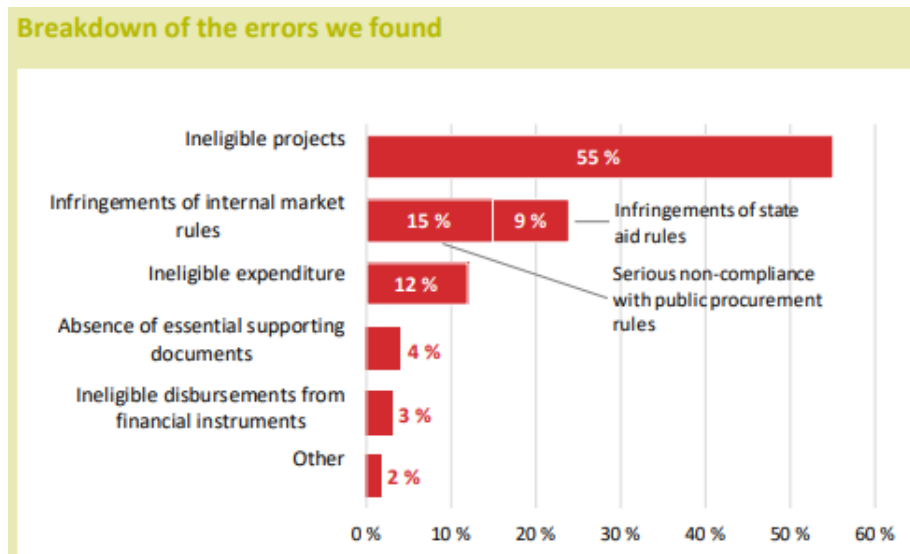


Figure 2.11 Errors types in ‘Cohesion’⁵⁸

The European Court of Auditors (2020b) concludes among other, that despite many measures taken, public procurement remains a significant source of errors related to the use of EU budget. These errors may occur before initiating a formal procurement procedure (pre-tendering or planning phase), during the procurement/tendering phase or during contract execution (post award phase). Some of the most common infringement of public procurement rules (principles) reported in bibliography, are listed in the following tables per stage of the procedure.

⁵⁸ European Court of Auditors (2020b), p.139, Box 5.2

Errors concerning planning, preparing and launching the procedure
Misapplication of rules related to the estimation of procurement value
Incorrect choice of procurement procedure
Incorrect description of the object of the procurement
Conditions for participation that do not comply with the principles of equal treatment, proportionality and genuine competition
Incorrect application of tender evaluation (award) criteria
Errors committed in the conduct of the procedure
Non-observance of the time limits stipulated in the procurement rules
Incorrect evaluation of the qualifications of economic operators, resulting in their disqualification
Incorrect evaluation of tenders, resulting in the rejection of a compliant tender or the failure to reject a non-compliant tender
Modification of award criteria in the course of the procurement process
Cancellation of the procedure without a valid reason
Other errors occurring in the course of the procedure (Incorrect application of communication rules, Failure to publish an addendum to the Contract Notice)
Errors committed after selection of the best offer or conclusion of a procurement contract
Failure to respect the standstill period
Failure to inform participants in the procedure of its results
Failure to publish a Contract Award Notice
Publication of incomplete information in the Contract Award Notice or publication after the required time limit
Conclusion of a contract that is inconsistent with the terms provided in the winning offer
Modification of a contract during its execution, contrary to the rules allowing such a modification
Award of additional services or works without the application of competitive and transparent procedures

Table 2.1 Common errors in public procurement based on bibliography⁵⁹

Balogh et al. (2015) identified the contract award stage as one of the risky phases, due to the multiplicity and interpretability of the legislative framework, the involvement of many interested parties, the lack of expertise and the submitted objections, which delay the award process (Patras and Banacu, 2016). On the other side, Piga and Treumer (2012) argue that contract management is the most vulnerable to the lack of integrity because most regulations refer to the pre-contract award phase, the interaction during contract execution is mostly between two economic parties (the contracting authority and the contractor) without the

⁵⁹ SIGMA, 2016

continuous supervision of third interested parties, if there is only a central public purchasing body, the interested authorities obtain a more passive role.

According to Šostar and Marukić (2017), one of the major public procurement issues is the violation of the principle of equal treatment of all bidders and discriminatory approach, e.g. by creating artificial conditions in bidding documents that favour specific bidders.

Tabish and Jha (2010) have identified 61 common irregularities in public procurement based on technical vigilance audit reports, case studies and interviews of experts, categorized them under five major categories: Transparency, Professional standards, Fairness, Contract monitoring and regulation, and Procedure related irregularities and concluded that ‘transparency related irregularities’ are the most frequent, while ‘procedure related irregularities’ are the least common.

Fairgrieve and Lichère (2011) report the following as common cases of breaches of EU public procurement law:

- Breaches of the rules of advertising
- Breaches of the rules on qualification and/or technical specifications leading either to non-participation in the procedure or to the annulment of the notice or part thereof
- Unlawful exclusion from the bidding phase in two-stage procedures
- Unlawful exclusion of tenderers and tenders
- Mistakes in assessing and ranking tenders.

According to a research study⁶⁰ of PwC and Ecorys (2013) on behalf of EC, the following conclusions raised among others:

- direct public losses encountered in corrupt/grey cases are typically a result of cost overruns, delays of implementation and/or loss of effectiveness (including inferior quality and questionable usefulness)
- corruption tends to be higher in smaller projects than in larger projects, however overall amounts lost are obviously higher in large projects

⁶⁰ containing a thorough analysis of 96 corrupt/grey cases and 96 clean cases in public procurement in 5 sectors and 8 Member States

- the highest direct public losses are encountered in training projects, followed by projects in urban/utility construction, road & rail, water and waste and Research & Development.

The most frequently detected types of public procurement irregularities are described in the Annex⁶¹ of the Commission decision C (2019) 3452⁶² and herein the Appendix A, category 1. According to that decision, irregularities in the area of public procurement are analyzed with the objective of protecting the financial interests of EU and the compliance with EU law (in particular, the principles of transparency, non-discrimination, equal treatment, proportionality and legal certainty) including national rules and contractual terms.

As it concerns the EU budget mismanagement in general, Campeanu (2014) states that the European literature considers the following as the most common cases:

- Conflict of interest
- False documentation (including legal documents) or expenditure's declaration
- Missing documentation
- Funds misuse for different scope than the initially approved
- Not allowed subcontracting of works
- Failure to fulfill contract obligations.

According to a study on the implementation of anti-fraud provisions on ESIF across EU (PwC, 2019), the main fraud risk categories identified are:

- Conflict of interest
- Avoidance or manipulation of procurement procedure or contract (False declarations by applicants, Split purchases, Extension of existing contracts to avoid retendering, Leaking bid data, Manipulation of bids, Favor of certain bidders)
- Double funding
- Collusive bidding
- Manipulation of project costs (Defective pricing, double claims costs, duplicate invoices)

⁶¹ <https://ec.europa.eu/transparency/regdoc/rep/3/2019/EN/C-2019-3452-F1-EN-ANNEX-1-PART-1.PDF>

⁶² laying down the guidelines for determining financial corrections to be made to expenditure financed by the Union for non-compliance with the applicable rules on public procurement

- Lack of skills (Incomplete / inadequate management verification process that does not give adequate assurance against fraud).

The following figure presents the most common cases of irregular or fraudulent activity identified in projects funded by ESIF, per stage of EU co-funded projects, according to OECD (2019b).



Figure 2.12 Common fraud and corruption risks per ESIF projects' stage⁶³

⁶³ OECD, 2019, p.9

The table below presents the most common errors detected in previous years by the Commission, during audits of ESIF (European Commission, 2018).

Most common errors	Most common errors
Choice of the procedure	Technical specifications and criteria
Absence of tendering or inappropriate procedure	Insufficient definition of the subject matter of the contract
Cases not justifying the use of the negotiated procedure without prior publication of a contract notice	Restrictive technical specifications breaching equal treatment, non-discrimination and transparency requirements
Unlawful splitting of contracts	Unlawful, disproportionate and/or discriminatory selection and/or award criteria
Underestimated contract value	Mixing-up of selection and award criteria
Publication	Selection, evaluation, award
Non-compliance with publication requirements	Lack of transparency and/or equal treatment during evaluation
Non-compliance with time limits and/or extended time limits for receipt of tenders or requests to participate	Changing of selection/award criteria after opening of tenders, resulting in incorrect acceptance of tenderers
Insufficient time for potential tenderers/candidates to obtain tender documentation	Changing a tender during evaluation
Failure to publish the selection and/or award criteria in the contract notice or in the specifications	Negotiation during the award procedure
	Arithmetic errors when adding up scores and ranking tenders
Most common errors	Use of average pricing
Contract implementation	Insufficient rejection of abnormally low tenders
Award of additional works/services/supplies contracts without competition when none of the exceptional circumstances stated in Directive 2014/24/EU have been demonstrated	Conflict of interest
Change in the scope and/or value of the contract	Inappropriate contract terms

Figure 2.13 Common errors detected during audits of ESIF⁶⁴

⁶⁴ European Commission (2018)

The following tables shows the number of irregularities and the related financial amounts, reported by Greece to EC for Cohesion and Fisheries Policies until 2019 (European Commission, 2020b).

3. Cohesion and Fisheries Policy						
Period / Fund	Irregularities reported as fraudulent		Irregularities not reported as		FDR	IDR
	N	EUR	N	EUR	%	%
Programming Period 2007-13 - reporting year 2019						
Programming Period 2007-13 - cumulative	67	95,033,126	2,080	757,189,858	0.47	3.72
CF	2	16,475,964	178	142,354,445	0.45	3.85
ERDF	54	78,246,023	1,513	545,090,522	0.64	4.49
ESF	11	311,138	369	65,167,054	0.01	1.49
EFF	0	0	20	4,577,837		2.79
Programming Period 2014-20 - reporting year 2019	0	0	13	3,385,165		
CF	0	0	1	2,060,244		
ERDF	0	0	6	873,970		
ESF	0	0	6	450,951		
Programming Period 2014-20 - cumulative	5	13,477,514	52	15,483,776	0.20	0.23
CF	3	6,117,703	6	3,866,097	0.54	0.34
ERDF	2	7,359,811	17	3,357,555	0.21	0.10
ESF	0	0	29	8,260,124		0.40

Figure 2.14 Number and Financial amounts of irregularities for Cohesion and Fisheries – Greece⁶⁵

According to a report from PwC (2016) examining the compliance and quality of public procurement involving ESIF across the EU, the most common irregularities and issues identified in the procurement processes affecting the use of national and EU funds by the Greek audit authorities, some of the most persistent, recurring irregularities are:

- artificially splitting contracts to remain below tender thresholds
- unauthorized direct award of additional work or extension of contract to an existing contractor in violation of contract deadlines or cumulative award limits
- discrepancies between published notifications and actual tendering documents
- unjustified invocation of urgency in order to bypass tendering requirements and
- unauthorized extension of contracts.

⁶⁵ European Commission, 2020b

According to the Public Procurement Monitoring Report in Greece for 2017 (HSSPA, 2018), the cases of incorrect application or lack of legal certainty detected in public procurement are listed in the following table and mainly appear due to lack of expertise, insufficient knowledge of the legal framework and procurement procedures, insufficient preparation time and lack of human resources, lack of funds, urgency reasons, confusion as it concerns the concept of contracting authority, insufficient planning and design.

Incorrect application or lack of legal certainty
A. Planning and preparation phase
Incorrect choice of procurement procedure or/and usage of electronic techniques
Subdividing the value of procurement and direct awards
Conflict of interest not declared
B. Procurement phase
Insufficient or imprecise description of the procurement subject
Lack of publication of contract's basic terms
Technical specifications that favour certain bidders
Failure to inform the market either through preliminary negotiations or through preliminary notices
Use of selection criteria, mainly of financial and technical capacity, that don't ensure the principles of proportionality and equal treatment
Incorrect completion of EU publication forms
Unusually low tenders

Table 2.2 Incorrect applications or lack of legal certainty in Greek public contracts⁶⁶

⁶⁶ HSSPA, 2018

3 Research Methodology

As already stated in the introduction, aim of this thesis is to present the framework for the implementation of the EU co-funded public contracts in Greece and answer the following research questions:

- which are some of the most common irregularities/ deficiencies detected in the EU co-funded public contracts in Greece during the National Strategic Reference Framework (known in Greece as ESPA) 2014-2020
- which are the characteristics of the audits' findings, including the characteristics of the audited operations/projects, that could provide useful information about the conditions under which the irregularities/ deficiencies occur.

For the accomplishment of this aim, a quantitative research has been conducted. The research consists of the analysis of data and results derived from the audits of the Greek Audit Authority on co-funded programmes (EDEL), during the National Strategic Reference Framework (known in Greece as ESPA) 2014-2020.

3.1 Data collection

At first, data was decided to be collected from the General Directorate of Co-financed Programs Audits, which is the body that supports EDEL to its auditing activities a) by carrying out the required by the EU regulations, audits of systems and operations and b) by monitoring then, their findings with regard to deficiencies found in the Management and Control System and the implementation of the proposed actions.

As this dissertation is interested in irregularities/deficiencies occurring in public contracts, it focuses on the findings of operations audits. The audits of operations are carried out on an appropriate sample of operations on the basis of the declared⁶⁷ expenditure during an accounting year from 01/07/N till 30/06/N+1 (EU Common Provisions Regulation No 1303/2013). From the population of declared expenditure, separate samples of operations are obtained based on the fund types (e.g. by European Regional Development Fund /

⁶⁷ included in payment applications submitted to the EC

Cohesion Fund or by European Social Fund/Youth Employment Initiative). All the relevant data is stored in a specialized information system (EDEL's information system). The main findings of the audits for an accounting year are included in an Annual Control Report submitted by the Greek Audit Authority to the EC by 15/02/N+2 (European Commission, 2015).

For the needs of this dissertation, the main findings and conclusions drawn from EDEL's operations audits carried out during the Programming Period 2014-2020 were received (in text and spreadsheets format) through five (5) Annual Control Reports submitted to EC from 2017 to 2021. These Annual Control Reports refer to the five (5) accounting years, starting from the accounting year 01/07/2015-30/06/2016 (the relevant Annual Control Report was submitted on February 2017) until the accounting year 01/07/2019-30/06/2020 (the relevant Annual Control Report was submitted on February 2021).

Analytical data for all audits, their findings and recommendations/ corrective actions proposed by EDEL were received through EDEL's information system (in spreadsheets format). The kind of data collected are shown in the following table⁶⁸.

EDEL's Strategy	Audit Location
Audit period	EDEL's Meeting No for Audit Results Finalization
Questionnaire Code	EDEL's Meeting Date for Audit Results Finalization
Questionnaire	Final Audit Report Sent to Beneficiary Protocol No
Audit Number	Final Audit Report Sent to Beneficiary Date
Fund	Questionnaire Objective
Operational Programme Code	Questionnaire Theme
Operational Programme	Questionnaire Question No
Managing Authority	Finding Category
Axis Code	Finding Sub-Category
Axis	Finding
Beneficiary Code	Finding Importance
Beneficiary	Recommendation
Operation Code	Recommendation Category
Operation	Recommendation Receiver
Sub-project Code	Sub-project's non eligible expenditure for the
Sub-project	Other non eligible expenditure
Audit team Coordinator	Financial correction Amount
Audit team members	Amount to be recovered
Audit Start date	Recommendation implementation Deadline
Audit Finish date	Recommendation Status

Table 3.1 Kind of data available from EDEL's information system

⁶⁸ Important note: Because the collected data contain among other, confidential information (eg beneficiaries names, amounts to be recovered etc), they are available for display to anyone needed for the supervision of this dissertation, but are not attached to this paper in their original form.

The dependent variable in the dataset, i.e. the subject of study, is the ‘Finding’, which is a text description of the irregularity/ error/ misstatement⁶⁹ or other deficiency detected during an audit, based on specific evidence. During one operation audit, more than one findings may be detected.

In order to focus on the public contracts audits, only some of the findings from the whole dataset were selected for further analysis. These selected findings refer to operations which

- are funded from European Regional Development Fund (ERDF) or Cohesion Fund
- were audited with the use of questionnaires related to ‘Operation Audit- Public Contract 2014-2020’ or ‘Operation Audit ERDF – Non State Aid’ and
- are not expropriations, purchases of land, archaeological researches or direct labour operations.

The data were then supplemented with information from the Monitoring Information System OPS, as it concerns the following characteristics of the audited operations/ projects/ contracts:

- the sub-project type,
- the legal framework,
- the applicable procedure and
- the contract award type.

The data that were finally selected from the whole set of available data, as independent variables for the needs of the present quantitative research, are included in the following table⁷⁰. All the variables are categorical (qualitative).

⁶⁹ An error/ misstatement is a quantifiable overstatement of the expenditure declared to EC due to an irregularity.

⁷⁰ The variable names are also given in Greek, as all the data collected (with the exception of the finding categories) were in Greek and in this format were then processed, although all results herein are presented in English

	NAME	NAME IN GREEK
1	Finding significance	Σημαντικότητα ευρήματος
2	Finding category	Κατηγορία ευρήματος
3	Finding sub-category	Υπο-κατηγορία ευρήματος
4	Questionnaire Objective	Στόχος
5	Questionnaire Theme	Θέμα
6	Audit period	Ελεγκτική Περίοδος
7	Fund	Ταμείο
8	OP Code	Κωδικός Ε.Π.
9	MA	Φορέας Διαχείρισης
10	Audit Number	Αριθμός Ελέγχου
11	Operation Code (MIS)	Κωδικός Πράξης
12	Sub-project Code	Κωδικός Υποέργου
13	Beneficiary Code	Κωδικός Δικαιούχου
14	Sub-project Type	Είδος υποέργου
15	Legal framework	Θεσμικό πλαίσιο
16	Applicable procedure	Εφαρμοζόμενη διαδικασία
17	Contract award type	Είδος ανάθεσης

Table 3.2 Independent variables selected for the research

3.2 Data Processing

The data were first captured in their qualitative (descriptive) form. Then in order to facilitate the data processing, the data have been coded. During this process, the values of the qualitative variables have been converted into codes (numbers) and were built into a relational database of excel file type. In the relational database each line is a subject, in this case a finding, and each column is a field, i.e. one of the characteristics of the subject which in this case are the qualitative variables.

Given the aforementioned, the dataset prepared for further analysis consisted of 382 records-rows (audits' findings) and 18 columns (the finding description column and the 17

independent variables). Below there is a description of the variables, as well as data about their coding. Appendix B includes a part of the relational database after the data coding.

Finding significance

A finding is considered significant if it leads to a financial correction amount greater than the 2% of the total expenditure declared and audited. If a finding is significant, it takes the value 1, otherwise the value 0.

Finding Significance	Values
Non significant	0
Significant	1

Finding category & Finding sub-category

According to EC guidelines, the typology of project findings used by Audit Authorities is included in Appendix A. These two elements essentially give the type of irregularity that has been identified.

Questionnaire Objective & Questionnaire Theme

Operation audits are carried out on the basis of appropriate Questionnaires for each Operational Program/Fund. The questions examine the compliance of the Beneficiary/ Implementation Body with its specific obligations for each Theme, while many Themes together constitute an Objective.

Questionnaire Objective	Στόχος	Values
The necessary conditions for the accession and funding of the operation by the OP are met	Πληρούνται οι απαραίτητες προϋποθέσεις για την ένταξη και χρηματοδότηση της πράξης από το Επιχειρησιακό Πρόγραμμα	1
The operation/ subproject complies with national and EU rules	Η πράξη/υποέργο συμμορφώνεται με τους εθνικούς και κοινοτικούς κανόνες	2
The operation/ sub-project is implemented in accordance with the provisions of the accession decision	Η πράξη/υποέργο υλοποιείται σύμφωνα τα προβλεπόμενα στην απόφαση ένταξης	3

Questionnaire Theme	Θέμα	Values
Compliance with the procedure for the accession and funding of the operation by the OP	Τήρηση διαδικασίας ένταξης και χρηματοδότησης της πράξης από το Επιχειρησιακό Πρόγραμμα	1.1
Compliance with the procedure for the modification of the accession decision	Τήρηση διαδικασίας τροποποίησης απόφασης ένταξης	1.2
Compliance with the tender documents approval procedure	Τήρηση διαδικασίας έγκρισης διακήρυξης	2.1
Compliance with the contract assignment approval procedure	Τήρηση διαδικασίας έγκρισης ανάληψης νομικής δέσμευσης	2.2
Compliance with the pre-approval procedure for contract modification	Τήρηση διαδικασίας προέγκρισης τροποποίησης νομικής δέσμευσης	2.3
Compliance with national and EU rules regarding the public contract notice	Τήρηση εθνικών και κοινοτικών κανόνων για διακήρυξη δημόσιας σύμβασης	2.4
Compliance with national and EU rules regarding public contract / Technical Assistance contract assignment	Τήρηση εθνικών και κοινοτικών κανόνων ανάληψης νομικής δέσμευσης δημόσιας σύμβασης/ σύμβασης Τεχνικής Βοήθειας/ απόφασης υλοποίησης έργου με ίδια μέσα	2.6
Compliance with national and EU rules regarding public contract modification	Τήρηση εθνικών και κοινοτικών κανόνων τροποποίησης νομικής δέσμευσης δημόσιας σύμβασης	2.9
Compliance with obligations regarding the physical implementation of the public contract	Τήρηση υποχρεώσεων ως προς την υλοποίηση του φυσικού αντικείμενου δημόσιας σύμβασης	3.1
Compliance with obligations regarding indicators	Τήρηση υποχρεώσεων σε ότι αφορά δείκτες	3.6
Compliance with the Beneficiary's obligations regarding the funding of the operation	Τήρηση υποχρεώσεων Δικαιούχου σε ότι αφορά τη χρηματοδότηση της πράξης	3.7
Compliance with publicity obligations	Τήρηση υποχρεώσεων σε θέματα δημοσιότητας	3.8
Compliance with the Beneficiary's obligations regarding audits by national or EU bodies	Τήρηση υποχρεώσεων Δικαιούχου σε θέματα ελέγχων-επαληθεύσεων από εθνικά ή κοινοτικά όργανα	3.9
Fulfillment of Beneficiary's obligations at the operation completion	Τήρηση υποχρεώσεων Δικαιούχου κατά την ολοκλήρωση της πράξης	3.10
Keeping data and supporting documents	Τήρηση στοιχείων και δικαιολογητικών	3.12

Audit period

For each accounting period 01/07/N-1 - 30/06/N (where N: the year of interest), there is an audit period 01/07/N-1 - 31/12/N.

Audit period	Values
1/7/2015-31/12/2016	1
1/7/2016-31/12/2017	2
1/7/2017-31/12/2018	3
1/7/2018-31/12/2019	4
1/7/2019-31/12/2020	5

Fund

If the audited operation is funded by the European Regional Development Fund (ERDF), the variable takes the value 1, otherwise it takes the value 2.

Fund	Values
ERDF (ΕΤΠΑ)	1
CF (ΤΣ)	2

Operational Program (OP) Code

The Operational Programs of the Programming Period 2014-2020 under consideration for this dissertation, are the following.

OP Code	Κωδικός Ε.Π.	Values
OP Competitiveness, Entrepreneurship and Innovation	Ε.Π. Ανταγωνιστικότητα, Επιχειρηματικότητα και Καινοτομία 2014-2020	1
OP Transport Infrastructure, Environment and Sustainable Development	Ε.Π. Υποδομές Μεταφορών, Περιβάλλον και Αειφόρος Ανάπτυξη 2014-2020	2
OP Human Resources Development, Education and Lifelong Learning	Ε.Π. Ανάπτυξη Ανθρώπινου Δυναμικού, Εκπαίδευση και Δια Βίου Μάθηση	3
OP Public Sector Reform	Ε.Π. Μεταρρύθμιση Δημόσιου Τομέα 2014-2020	4
ROP Eastern Macedonia and Thrace	Ε.Π. Ανατολική Μακεδονία-Θράκη 2014-2020	5
ROP Central Macedonia	Ε.Π. Κεντρική Μακεδονία 2014-2020	6
ROP Thessaly	Ε.Π. Θεσσαλία 2014-2020	7
ROP Epirus	Ε.Π. Ηπείρου 2014-2020	8
ROP Western Greece	Ε.Π. Δυτική Ελλάδα 2014-2020	9
ROP Western Macedonia	Ε.Π. Δυτική Μακεδονία 2014-2020	10
ROP Sterea Ellada	Ε.Π. Στερεά Ελλάδα 2014-2020	11
ROP Peloponnese	Ε.Π. Πελοπόννησος 2014-2020	12
ROP Ionian Islands	Ε.Π. Ιόνια Νησιά 2014-2020	13
ROP Northern Aegean	Ε.Π. Βόρειο Αιγαίο	14
ROP Crete	Ε.Π. Κρήτη 2014-2020	15
ROP Attica	Ε.Π. Αττική 2014-2020	16
ROP Southern Aegean	Ε.Π. Νότιο Αιγαίο 2014-2020	17

Managing Authority (MA)

The following Managing Authorities are included in the dataset and have received the following values.

MA	Φορέας Διαχείρισης/ΔΑ	Values
MA of OP Transport Infrastructure, Environment and Sustainable Development	ΕΥΔ Ε.Π. ΥΠΟΔΟΜΕΣ ΜΕΤΑΦΟΡΩΝ, ΠΕΡΙΒΑΛΛΟΝ & ΑΕΙΦΟΡΟΣ ΑΝΑΠΤΥΞΗ	1
MA of OP Competitiveness, Entrepreneurship and Innovation	ΕΥΔ Ε.Π. ΑΝΤΑΓΩΝΙΣΤΙΚΟΤΗΤΑ, ΕΠΙΧΕΙΡΗΜΑΤΙΚΟΤΗΤΑ & ΚΑΙΝΟΤΟΜΙΑ	2
MA of OP Transport Infrastructure, Environment and Sustainable Development/ Transport Infrastructure Section	ΕΥΔ Ε.Π. ΥΜΕΠΕΡΑΑ/ΤΟΜΕΑΣ ΥΠΟΔΟΜΩΝ ΜΕΤΑΦΟΡΩΝ	3
MA of OP Public Sector Reform	ΕΥΔ Ε.Π. ΜΕΤΑΡΡΥΘΜΙΣΗ ΔΗΜΟΣΙΟΥ ΤΟΜΕΑ	4
MA of ROP Eastern Macedonia and Thrace	ΕΥΔ Ε.Π. ΠΕΡΙΦΕΡΕΙΑΣ ΑΝΑΤΟΛΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ & ΘΡΑΚΗΣ	5
MA of ROP Attica	ΕΥΔ Ε.Π. ΠΕΡΙΦΕΡΕΙΑΣ ΑΤΤΙΚΗΣ	6
MA of ROP Western Greece	ΕΥΔ Ε.Π. ΠΕΡΙΦΕΡΕΙΑΣ ΔΥΤΙΚΗΣ ΕΛΛΑΔΑΣ	7
MA of ROP Western Macedonia	ΕΥΔ Ε.Π. ΠΕΡΙΦΕΡΕΙΑΣ ΔΥΤΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ	8
MA of ROP Epirus	ΕΥΔ Ε.Π. ΠΕΡΙΦΕΡΕΙΑΣ ΗΠΕΙΡΟΥ	9
MA of ROP Thessaly	ΕΥΔ Ε.Π. ΠΕΡΙΦΕΡΕΙΑΣ ΘΕΣΣΑΛΙΑΣ	10
MA of ROP Ionian Islands	ΕΥΔ Ε.Π. ΠΕΡΙΦΕΡΕΙΑΣ ΙΟΝΙΩΝ ΝΗΣΩΝ	11
MA of ROP Central Macedonia	ΕΥΔ Ε.Π. ΠΕΡΙΦΕΡΕΙΑΣ ΚΕΝΤΡΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ	12
MA of ROP Crete	ΕΥΔ Ε.Π. ΠΕΡΙΦΕΡΕΙΑΣ ΚΡΗΤΗΣ	13
MA of ROP Southern Aegean	ΕΥΔ Ε.Π. ΠΕΡΙΦΕΡΕΙΑΣ ΝΟΤΙΟΥ ΑΙΓΑΙΟΥ	14
MA of ROP Peloponnese	ΕΥΔ Ε.Π. ΠΕΡΙΦΕΡΕΙΑΣ ΠΕΛΟΠΟΝΝΗΣΟΥ	15
MA of ROP Sterea Ellada	ΕΥΔ Ε.Π. ΠΕΡΙΦΕΡΕΙΑΣ ΣΤΕΡΕΑΣ ΕΛΛΑΔΑΣ	16

Audit Number

It is the unique number given by EDEL in each of its audits. An audit number may appear in the dataset multiple times because it might have led to more than one findings.

Operation Code (MIS Code)

It is the unique number that each operation receives in the Monitoring Information System OPS. More than one audits may have taken place in an operation, which means that an operation code in the dataset may be related with more than one findings from different audits.

Sub-project Code

Each operation may need more than one projects in order to be implemented. These are called sub-projects and they receive a serial number within the operation. A sub-project may have been audited more than one times, so it can also be related with more than one findings from different audits.

Beneficiary Code

Every operation has a beneficiary. A beneficiary may be in more operations however. We are interested in what kind of findings or other trends appear per beneficiary.

Sub-project Type

It depends not only on the scope of work of the sub-project, but also on the method of its' implementation. It takes the following values.

Sub-project Type	Είδος υποέργου	Values
Technical assistance actions by own resources	ΕΝΕΡΓΕΙΕΣ ΤΕΧΝΙΚΗΣ ΒΟΗΘΕΙΑΣ ΜΕ ΙΔΙΑ ΜΕΣΑ	1
Funding for operation implementation by own resources	ΕΠΙΧΟΡΗΓΗΣΗ ΓΙΑ ΕΚΤΕΛΕΣΗ ΠΡΑΞΗΣ ΜΕ ΙΔΙΑ ΜΕΣΑ ΜΕΣΩ ΑΥΤΩΝ	2
Utilities	ΕΡΓΑΣΙΕΣ Ο.Κ.Ω.	3
Study of technical works	ΜΕΛΕΤΗ ΤΕΧΝΙΚΩΝ ΕΡΓΩΝ	4
Provision of services excluding technical study	ΠΑΡΟΧΗ ΥΠΗΡΕΣΙΩΝ ΕΚΤΟΣ ΤΕΧΝΙΚΗΣ ΜΕΛΕΤΗΣ	5
Supplies	ΠΡΟΜΗΘΕΙΕΣ	6
Technical project/ contract	ΤΕΧΝΙΚΟ ΕΡΓΟ/ ΕΡΓΟΛΑΒΙΑ	7

Legal framework

It is the legal framework that governs the process of contract award.

Legal framework	Values
P.D. 4/2002	1
P.D. 118/2007	2
Law 4412/2016	3
Law 3669/2008	4
Law 3316/2005	5
Other	6
where P.D.: Presidential Decree	

Applicable procedure

It represents the procedure that was applied for the contract tendering and implementation. It depends a lot on the contract budget (if it exceeds or not the EU thresholds⁷¹).

Applicable procedure	Values
Projects implementation by own resources	1
Supplies - Services Contract Tender (PD 59/2007 & 60/2007) above EU thresholds	2
Tender below EU thresholds (L.4412/2016)	3
Tender above EU thresholds (L.4412/2016)	4
Works - Studies Contract Tender (PD 60/2007) - above EU thresholds	5
Works - Studies Contract Tender (PD 59/2007) - above EU thresholds	6
Works - Studies Contract Tender - below EU thresholds	7
Other	8

Contract award type

It describes the procedure followed for the contract award.

Contract award type	Values
Open procedure	1
Direct award (Art.118 L.4412/2016)	2
Decision for implementation by own resources	3
Negotiated procedure after publication	4
Restricted procedure	5
With contract notice publication (Art.24 PD 60/2007)	6
Other	7
blank	8

The data have then been reviewed for logical errors or missing data (Data Cleaning). During this process, the following interventions were made:

- Missing values treatment: Because during the audit period 2015-2016, EDEL's findings weren't yet categorized according to the typology required by the EC (European Commission, 2018c), most of the findings in the dataset for this period had no value in the fields of finding category and sub-category. These fields were completed (by the author of this dissertation) based on experience and logic, after examining the type of the finding or/and its recommendation.

⁷¹ https://ec.europa.eu/growth/single-market/public-procurement/rules-implementation/thresholds_en

- Changes for Integration reasons: For integrity and uniformity reasons and because there were two types of questionnaires⁷² used in the audits of the dataset, the themes of the old questionnaires were matched with the themes of the new one and the field ‘theme’ in a few records (findings)⁷³ was completed again appropriately.

3.3 Data statistical analysis

The data collected from the 5 EDEL’s Annual Control Reports submitted to EC from 2017 to 2021 were analyzed through Microsoft Excel Spreadsheet Software. The results are presented in chapter 4.1.

The statistical analysis of EDEL’s audits analytical data that were formed in a relational database, was implemented by using the Statistical Package for the Social Sciences (SPSS) and Microsoft Excel Spreadsheet Software. The results are presented in chapter 4.2.

This statistical analysis includes the following statistical data, tests, decisions and outputs:

1. The descriptive statistics for each categorical variable include frequency summary tables and relevant bar charts for better visualization of the results.
2. Possible relationships between selected categorical variables are investigated by using Pearson Chi-Square Independence Test. Chi-Square test is used to determine whether there is a statistically significant difference between the expected frequencies and the observed frequencies in one or more categories of a two-way contingency (crosstab) table, in which each cell contains the frequency for each row-and-column combination (Berenson et al, 2019). The output of this analysis is the contingency table, the Chi-Square Test table which contains the Pearson Chi-Square statistic, i.e. the p-value (Asymp. Sig. (2-sided) in the relevant tables), as well as a grouped bar chart, visualizing the contents of the contingency table. The Null Hypothesis (H0) is that there is no difference between the proportions of the selected two groups. If the p-value is less than or equal to the significance level we have set (0.05), we reject the null hypothesis H0

⁷² an old one with the code ‘2’ and a newer one with the code ‘16’

⁷³ from audits carried out with the questionnaire with the code ‘2’

and conclude that there is sufficient evidence that a relationship between the two variables examined each time, does exist (Berenson et al, 2019).⁷⁴

The results of the Pearson Chi-Square Independence Test that were selected to be presented and discussed in this dissertation refer only to the situations where p-value is calculated less than or equal to the selected significance level, which means that a relationship between the examined variables may exist, as analyzed above.

The level of confidence has been set to 95%, therefore the significance level adopted is 0.05. The researchers in the business disciplines of science (and also elsewhere) universally adopt a conventional level of significance such as 0.05 in their statistical research and decision making (Jae-Hoon and In, 2019). Moreover, as the level of significance represents the degree of risk that a researcher is willing to take for making a wrong decision, in our case, a 0.05 level of significance doesn't impose any significant risk to the interpretation of the results of the present research, as it has administrative nature and its' aim is to draw some first conclusions about the type of audits findings and their characteristics. A 99% level of confidence would have probably been very tight for an administrative case as the examined one. In any case, it should be mentioned that extra caution has been given in borderline cases which had a p-value near the 0.05 level⁷⁵.

⁷⁴ It should be mentioned that for the Chi-Square test to give accurate results, each expected frequency must be assumed to be at least 5 (Berenson et al, 2019). However, in several of the cases examined in this research the frequency was less than 5. This means that perhaps a different categorization and grouping of available data should be applied. In this research, however, it was decided to maintain the categorization followed in the information systems of EDEL and OPS and to comment on the results of the statistical analysis, regardless of the identification of categories with frequency counts less than 5.

⁷⁵ As in the case of the Chi-Square test application for the investigation of relation existence between the variables Finding Sub-category and Contract award type, for the findings of Public Procurement Finding Category- par.3.2.2.2- the p-value was 0,056, while in the case of the variables Finding Category and Applicable procedure- par.3.2.2.3- the p-value was 0,055.

4 Research Results

4.1 Results from Annual Control Reports data analysis

The deeper examination and analysis of the data obtained from EDEL's Annual Control Reports reveal the aggregate data presented in the following tables and graphs.

The first table presents the number and type of audits (system or operation) carried out by EDEL per accounting year during the Programming Period 2014-2020, as well the number of audits with error amounts, in total and per fund. As it turns out, EDEL has carried out 326 operations audits during the Programming Period 2014-2020. The percentage of operations audits with error amounts⁷⁶ is 31%, while the corresponding percentage for the audits of operations funded by European Regional Development Fund / Cohesion Fund is smaller, 25%.

⁷⁶ a quantifiable overstatement of the expenditure declared to EC due to an irregularity.

ACR YEAR	ACCOUNTING YEAR	No of SYSTEMS AUDITS	No of OPERATIONS AUDITS	No of OPERATIONS AUDITS WITH ERROR	% OPERATIONS AUDITS WITH ERROR	No of OPERATION AUDITS/FUND & No of OPERATIONS AUDITS WITH ERROR AMOUNTS/FUND					
						ERDF/CF (including FI & STATE AID)			ESF/YEI		
						AUDITS	AUDITS WITH ERROR	%AUDITS WITH ERROR	AUDITS	AUDITS WITH ERROR	%AUDITS WITH ERROR
2016	01/07/2014-30/06/2015										
2017	01/07/2015-30/06/2016	7	42	14	33%	12	3	25%	30	11	37%
2018	01/07/2016-30/06/2017	5	64	20	31%	32	8	25%	32	12	38%
2019	01/07/2017-30/06/2018	6	64	22	34%	30	8	27%	34	14	41%
2020	01/07/2018-30/06/2019	6	78	24	31%	46	13	28%	32	11	34%
2021	01/07/2019-30/06/2020	4	78	20	26%	48	10	21%	30	10	33%
	Total		326	100	31%	168	42	25%	158	58	37%

Table 4.1 EDEL's audits in Programming Period 2014-2020⁷⁷

Where:

ACR: Annual Control Report

FI: Financial Instruments

CF: Cohesion Fund

ERDF: European Regional Development Fund

ESF: European Social Fund

YEI: Youth Employment Initiative

⁷⁷ EDEL's Annual Control Reports for Programming Period 2014-2020. During the accounting year 01/07/2014-30/06/2015 no operations audits were carried out, as no expenditure was declared to EC.

The following graphs give useful information about the type of irregularities found through all the operations audits carried out by EDEL during the last four (4) accounting periods⁷⁸. The next bar chart presents by descending order the finding categories⁷⁹ frequency for the period 2014-2020.

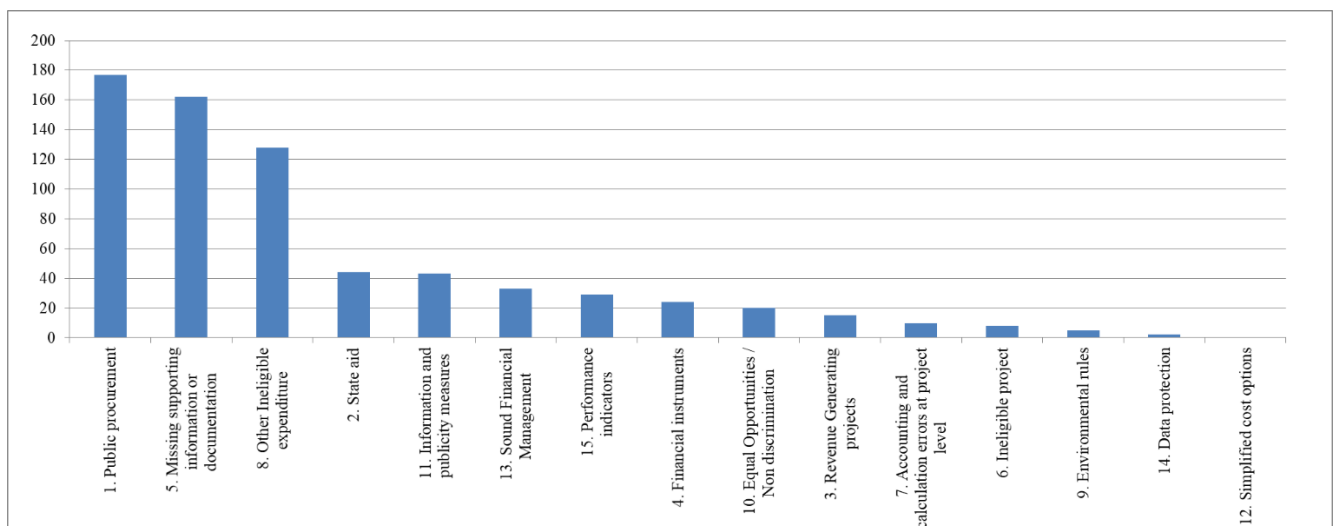


Figure 4.1 Finding categories frequency during Programming Period 2014-2020⁸⁰

It follows that the most frequent irregularities and deficiencies detected concern

1. Public procurement
5. Missing supporting information or documentation and
8. Other ineligible expenditure.

The next most frequent category is ‘2. State aid projects’, which had a lot of findings during the last accounting period (during the previous years didn’t have a lot of expenditure declared).

The next categories in order of the number of audits’ findings detected are:

⁷⁸ These are: 1/7/2016-30/6/2017, 1/7/2017-30/6/2018, 1/7/2018-30/6/2019 and 1/7/2019-30/6/2020. During the first accounting year 01/07/2014-30/06/2015 no operations audits were carried out, as no expenditure was declared to EC, while during the second accounting period 1/7/2015-30/6/2016 the findings weren’t categorized according to the EC typology, so there aren’t relevant data available.

⁷⁹ According to the typology of EC Project Findings, presented in Appendix A.

⁸⁰ EDEL’s Annual Control Reports for Programming Period 2014-2020

11. Information and publicity measures

13. Sound financial management and Performance indicators.

Then it comes the findings about

15. Performance indicators

4. Financial instruments and

10. Equal opportunities/ Non-discrimination.

As it concerns particularly the Public procurement category, the irregularities detected are shown in the following graph. The description of each sub-category is given in Appendix A. Most of the audits' findings have been assigned to the sub-category '1.24 Public Procurement – Others'. Then, it comes the sub-category 1.23 'Modifications of the contract elements set out in the contract notice or tender specifications'.

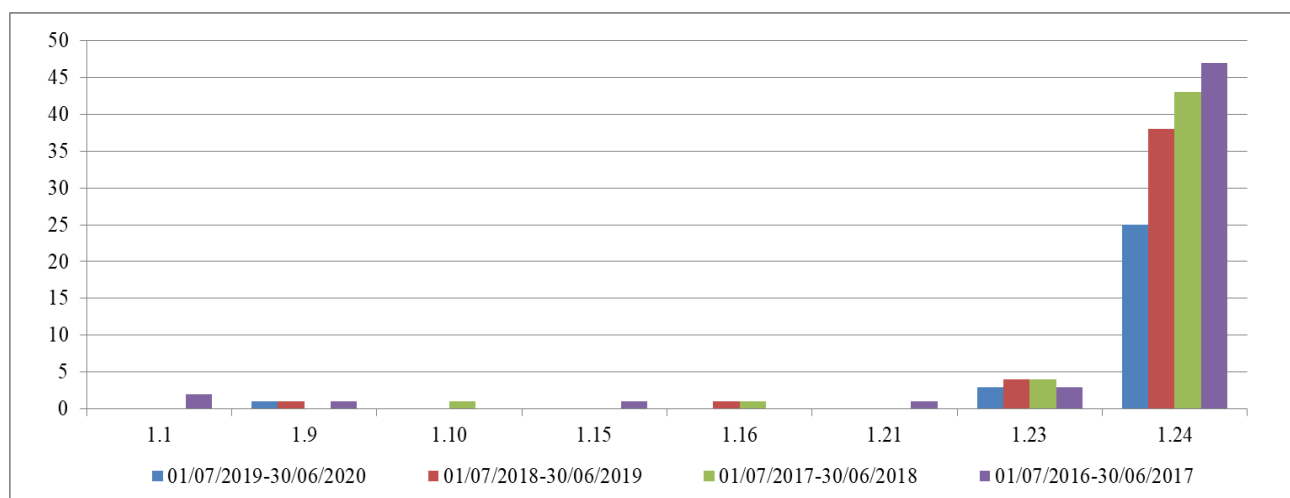


Figure 4.2 Public Procurement category: Number of findings per sub-category and accounting period

It should be noted that the sub-category 1.24, due to its general nature, gathers various findings. After studying the content of EDEL's Annual Control Reports, concerning the audits' findings of this sub-category, it turns out that:

- none of them concern the contract award process,
- most of them differ from each other and are detected in different audits

- some similar findings concern incorrect deductions in favor of third parties (eg. EAADHSY, TSMEDE).

4.2 Results from audits analytical data statistical analysis

The research tries to find out the special characteristics of the findings of EDEL's audits in co-funded public contracts, in order to be able to answer which are the most common irregularities detected as well as if there are relations between the analyzed data that will lead us to useful conclusions.

4.2.1 Descriptive statistics per variable

Following are the most interesting results from the audits analytical data statistical analysis, which was implemented with the use of Excel spreadsheets and SPSS, organized per examined variable. There are some more results presented in Appendix C.

As already said, the analyzed dataset included 382 findings. The findings have been detected through 100 audits carried out to 81 operations funded from European Regional Development Fund or Cohesion Fund, implemented by 54 different beneficiaries and managed by 16 different Managing Authorities.

Finding significance

The next pie chart shows that out of 382 findings in total, there are 341 non-significant and 41 significant findings, with respective percentages 89,3% and 10,7%. Practically, this means that approximately only 1 out of 10 findings leads to error amounts greater than 2% of the audited operation declared expenditure.

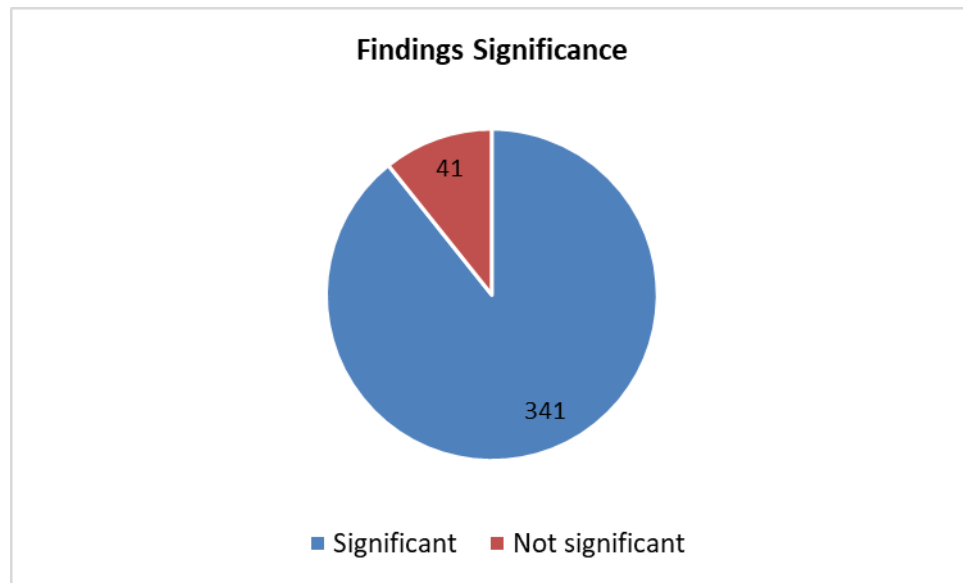


Figure 4.3 Findings Significance

Finding category

Based on the category assigned per recorded finding in the dataset, the following bar chart shows the incidence rate of each category, sorted in descending order. So, it seems that the dominant finding category with 42.4% is category '1. Public procurement'. The finding category that follows next is category '5. Missing supporting information or documentation' with 16%. These results, as it concerns the finding categories with the higher percentage of findings, coincide with the results extracted before from the Annual Control Reports, except that now the third category in findings frequency percentage is category '11. Information and publicity measures', with 10% and right after then the category '8. Other ineligible expenditure'.

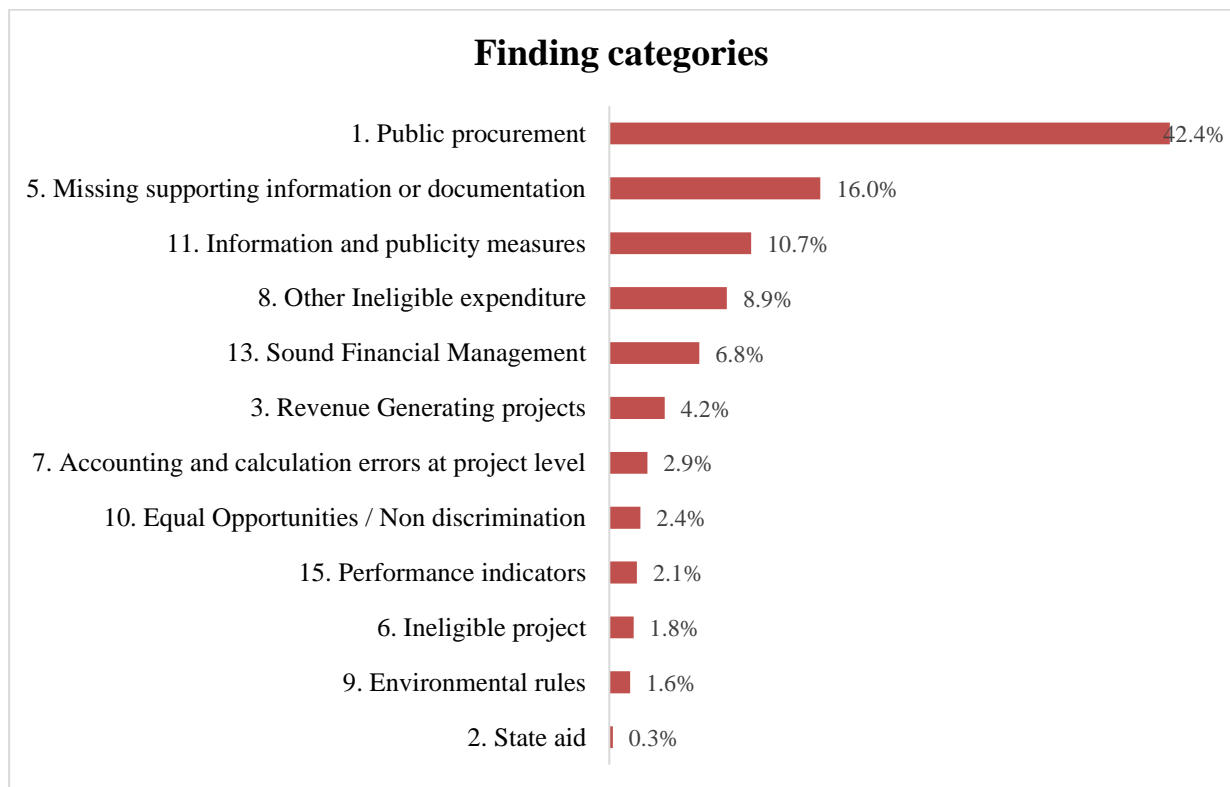


Figure 4.4 Findings percentage per Finding Category

Finding Sub-category

The most frequent finding sub-categories are the sub-category ‘1.24 Others’, with 37% which as stated before gathers a large number of findings due to its general nature and then with 12%, the sub-category ‘5.1 Missing or incorrect supporting information or documentation’.

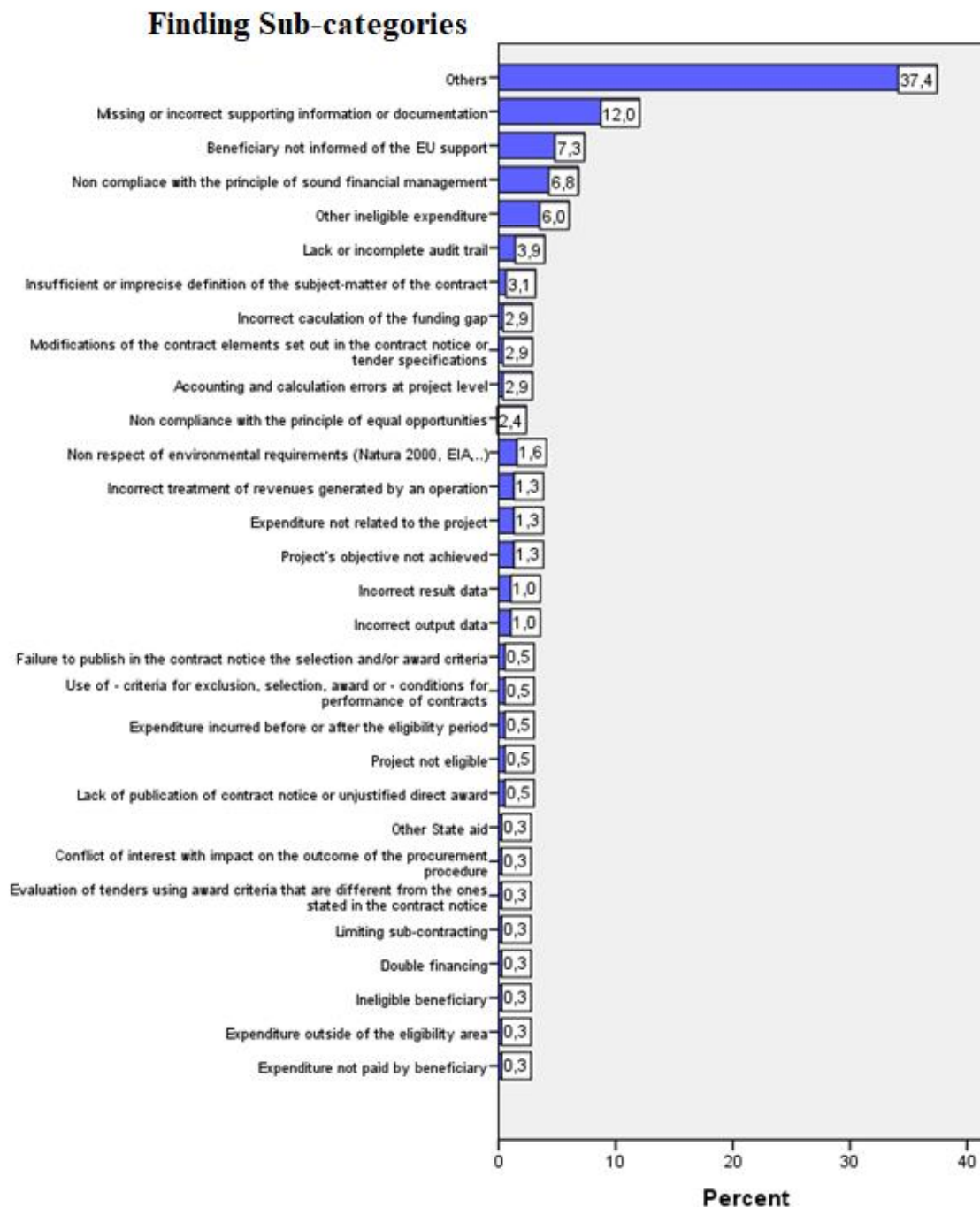


Figure 4.5 Findings percentage per Finding Sub-category

Questionnaire Objective

As shown in the following bar chart, the questionnaire objective no.3 'The operation/ sub-project is implemented in accordance with the provisions of the accession decision' has the

most of detected findings (almost 70%), which means that most of the findings concern the projects implementation.

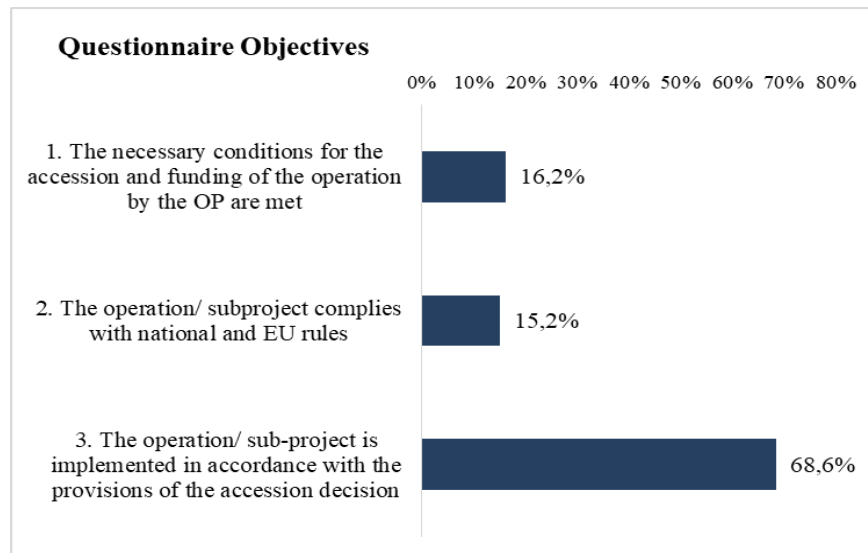


Figure 4.6 Findings percentage per Questionnaire Objective

Questionnaire Theme

Within objective no.3, more than half (53,8%) of the findings are related with the theme 3.1 ‘Compliance with obligations regarding the physical implementation of the public contract’ and then with the theme 3.7 ‘Compliance with the Beneficiary's obligations regarding the funding of the operation’ (24%), as shown in the following bar chart.

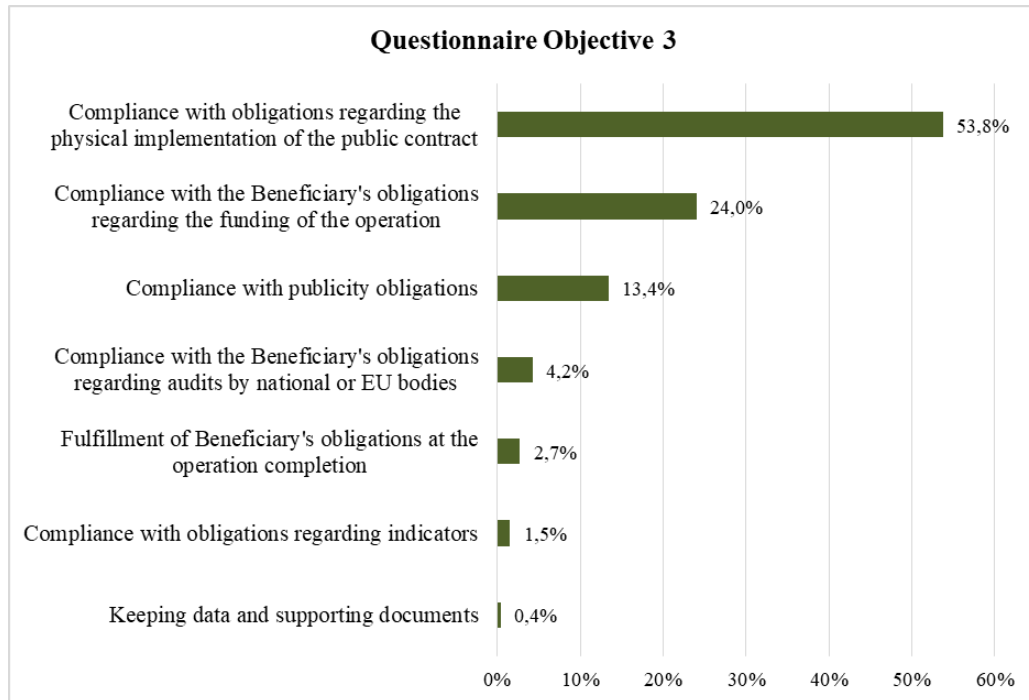


Figure 4.7 Findings percentage per Theme in each Objective

Operation programme

Most of the findings (36,4%) have been detected in operations of the Operational Program Transport Infrastructure, Environment and Sustainable Development. Then, the next in findings percentage are the Operational Program Competitiveness, Entrepreneurship & Innovation and the Regional Operational Program Attica (with 12,3% each of them). In total, 61% of the findings are concentrated in these 3 Operational Programs.

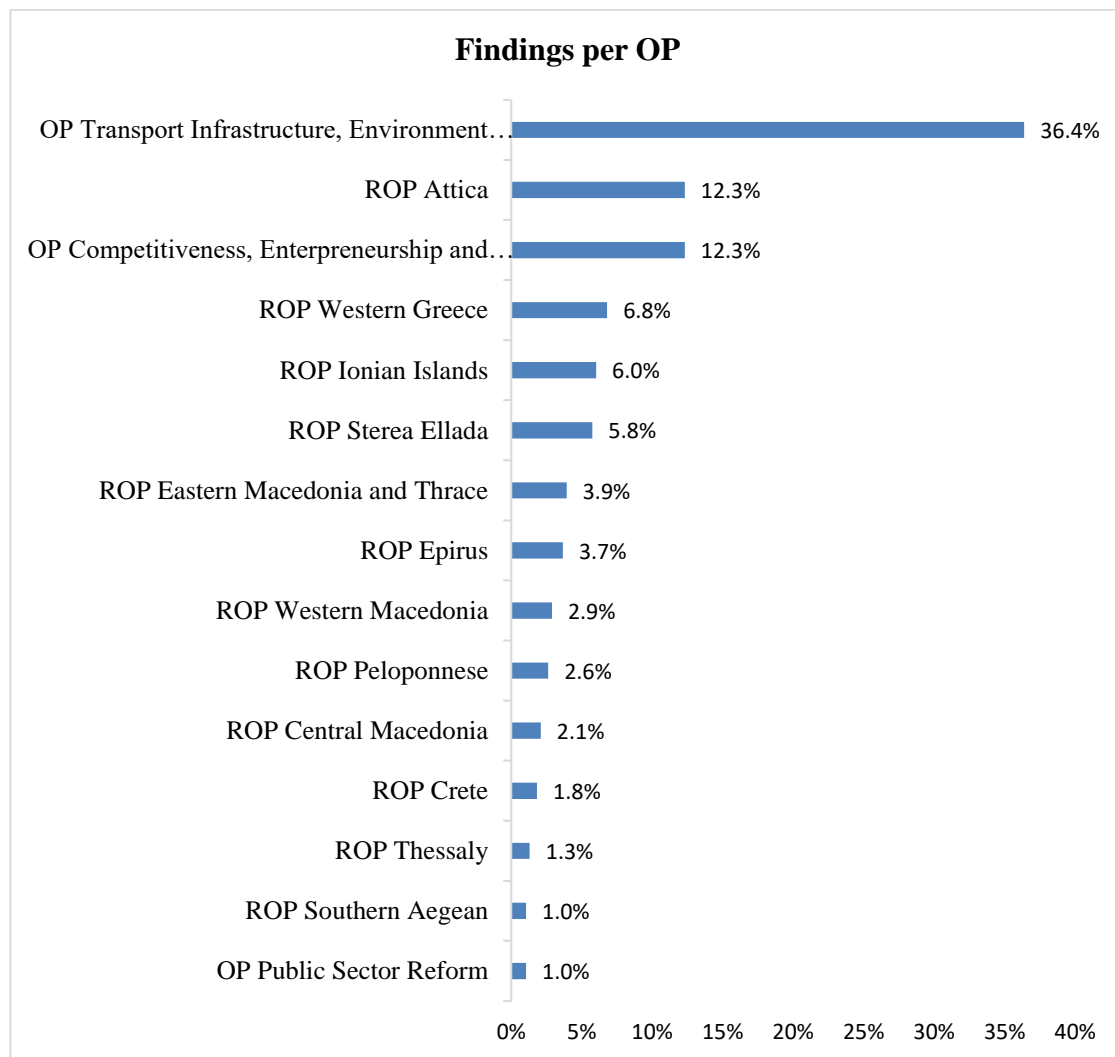


Figure 4.8 Findings percentage per Operational Program

Beneficiary

The next table shows that 12 beneficiaries (out of 54) have been detected with the highest number of findings (200 of 382), mainly through more than one audit in more than one operation/sub-project. One could search further for the special characteristics of those beneficiaries and their operations in order to conclude for the reasons of this situation.

Beneficiary s/n	No of Total findings
1	31
2	21
3	19
4	19
5	17
6	16
7	16
8	15
9	14
10	11
11	11
12	10
Total	200

Table 4.2 Beneficiaries with the highest number of findings

Sub-project Type

As it concerns the sub-project type, the vast majority (80%) of findings have been detected in technical projects/ contracts, as shown in the next pie chart.

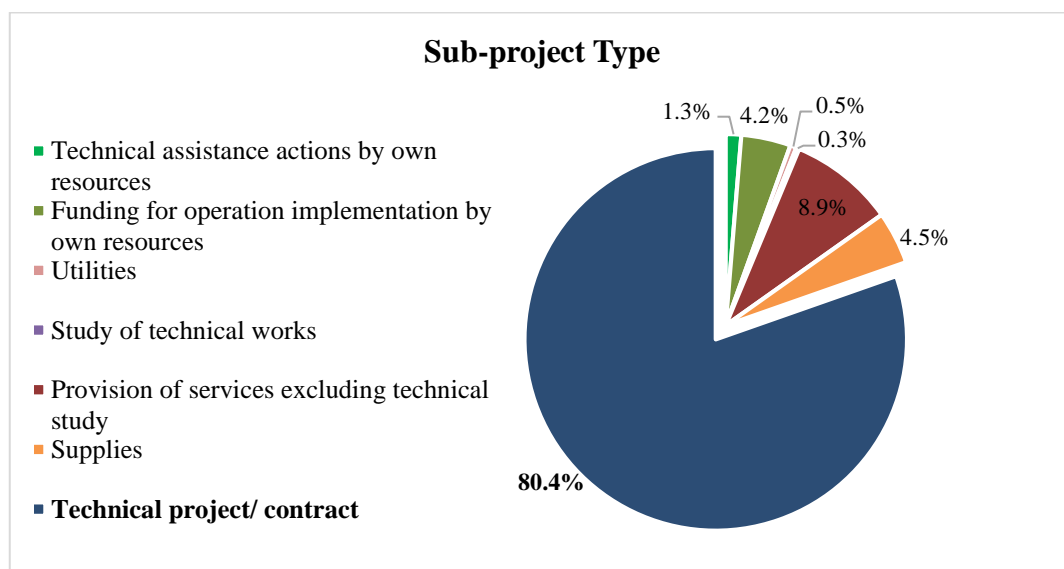


Figure 4.9 Findings percentage per sub-project type

Legal Framework

As the following graph shows, 63% of the findings are identified in projects which are awarded and implemented in accordance with the provisions of Law 3669/2008. Only 10% of the projects are under the provisions of new public procurement Law 4412/2014, as it came into force and was applied in public contracts during the most recent years.

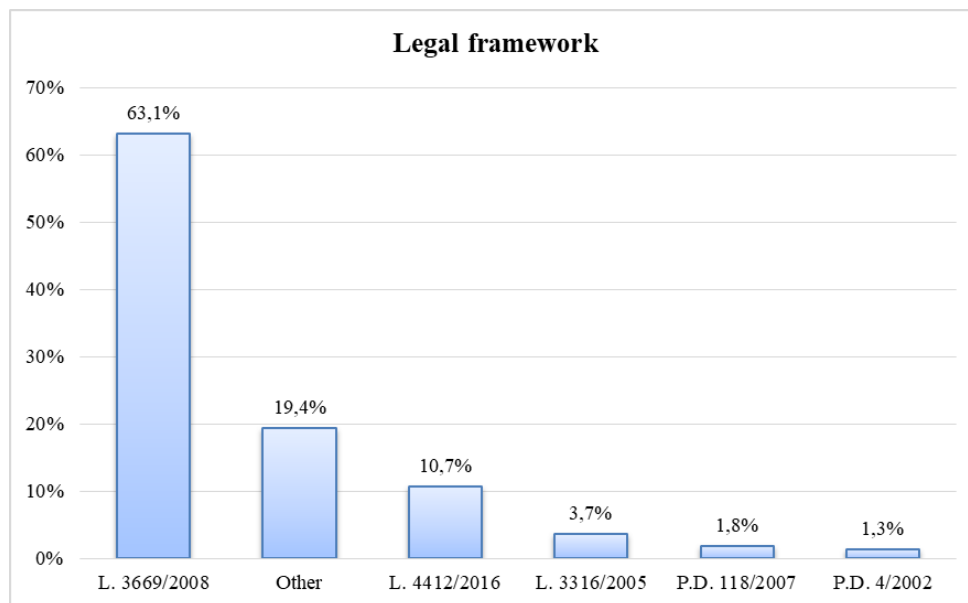


Figure 4.10 Findings percentage per legal framework

Applicable procedure

The percentage of findings per applicable procedure is presented in the following graph. It has to be noted that 65% of the findings concern contracts on which the applicable procedure was tender over EU thresholds (the blue slices in the pie graph)⁸¹.

⁸¹ https://ec.europa.eu/growth/single-market/public-procurement/rules-implementation/thresholds_en

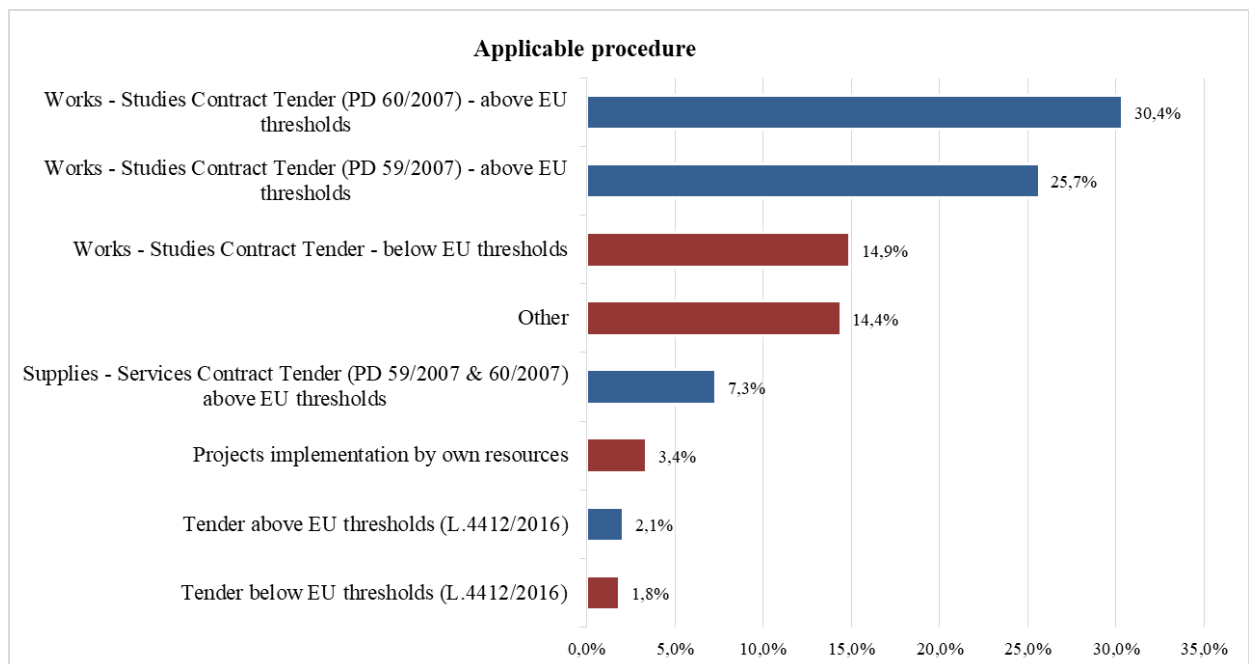


Figure 4.11 Findings percentage per applicable procedure

Contract award type

The following graph shows that the vast majority (almost 80%) of the findings concern contracts that have been awarded with Open Procedure. The 1% of blank records concern subprojects with contract budget less than 60.000 € (excluding VAT)⁸².

⁸² Sub-project Application Form completion instructions in Monitoring Information System OPS

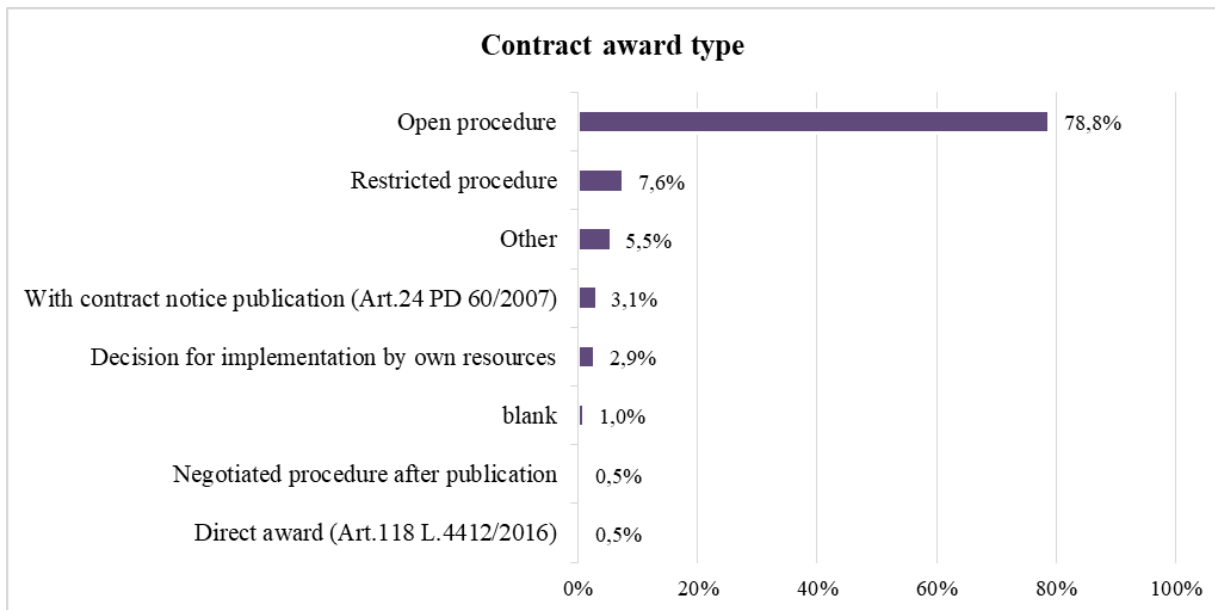


Figure 4.12 Findings percentage per contract award type

4.2.2 Important variables relations

Following there are the results of the investigation of relations

- between the variable ‘Finding Significance’ and some of the other variables included in the statistical analysis (par.4.2.2.1)
- between the variable ‘Finding sub-category’ and some of the rest variables, as it concerns exclusively the findings of the ‘Public Procurement’ finding category (par.4.2.2.2)
- between the variable ‘Finding Category’ and other variables, as it concerns all the findings excluding ‘Public Procurement’ finding category (4.2.2.3).

The investigation has taken place separately for the findings of ‘Public Procurement’ finding category and for the findings assigned to the rest of the findings categories, due to the special interest and significance of ‘Public procurement’ findings.

As already stated, the analysis has been implemented with the use of Pearson Chi-Square Independence Test. It was decided to focus only on the situations where Pearson Chi-Square statistic, i.e. the p-value, was less or equal to the significance level we have set (0.05), which

means that there is sufficient evidence that a relationship between the two variables examined each time, does exist. These situations are summarized in the following table.

Variables Possible relations	Finding Significance	Finding Category	Finding Sub-Category	Objective	Theme	Audit period	OP	MA	Beneficiary	Sub-project type	Applicable procedure	Contract award type
Finding Significance		X	X	X	X	X	X	X	X	X		
Exclusively for 'Public Procurement' Category												
Finding Sub-category				X	X							
Excluding 'Public Procurement' Category												
Finding Category				X	X				X		X	X

Table 4.3 Possible variables relations

All the results are presented below with the use of grouped bar charts. The contingency (crosstab) and Chi-Square Test tables, which this analysis had as an output from the SPSS, can be available any time in a Dropbox link, or by request for reasons of confidentiality.

4.2.2.1 'Finding Significance' variable relations

As shown in the previous table 4.3, the application of Pearson Chi-Square Independence Test showed that the variable 'Finding significance' is possibly related to 9 variables. The 4 most interesting outputs among those possible relations, are discussed below. The rest are presented in Appendix C.

Finding Significance - Finding Category

The next grouped bar chart shows the number of significant findings per finding category, sorted in descending order, and the number of the non-significant findings of each category.

The chart clearly shows that only few finding categories have significant findings, i.e. findings that lead to error amounts greater than 2% of the declared expenditure of the specific audited operation. Most of them are found in Public Procurement.

It should be noted that the category 'Other ineligible expenditure' has the higher percentage of significant findings in relation to the total number of the findings of this category (11 out of 23 findings). So we can tell that a finding of this category has almost 50% probability to be significant.

We can also claim that some finding categories, although they have several findings, they probably never lead to error amounts, as for example the category ‘Information and publicity measures’.

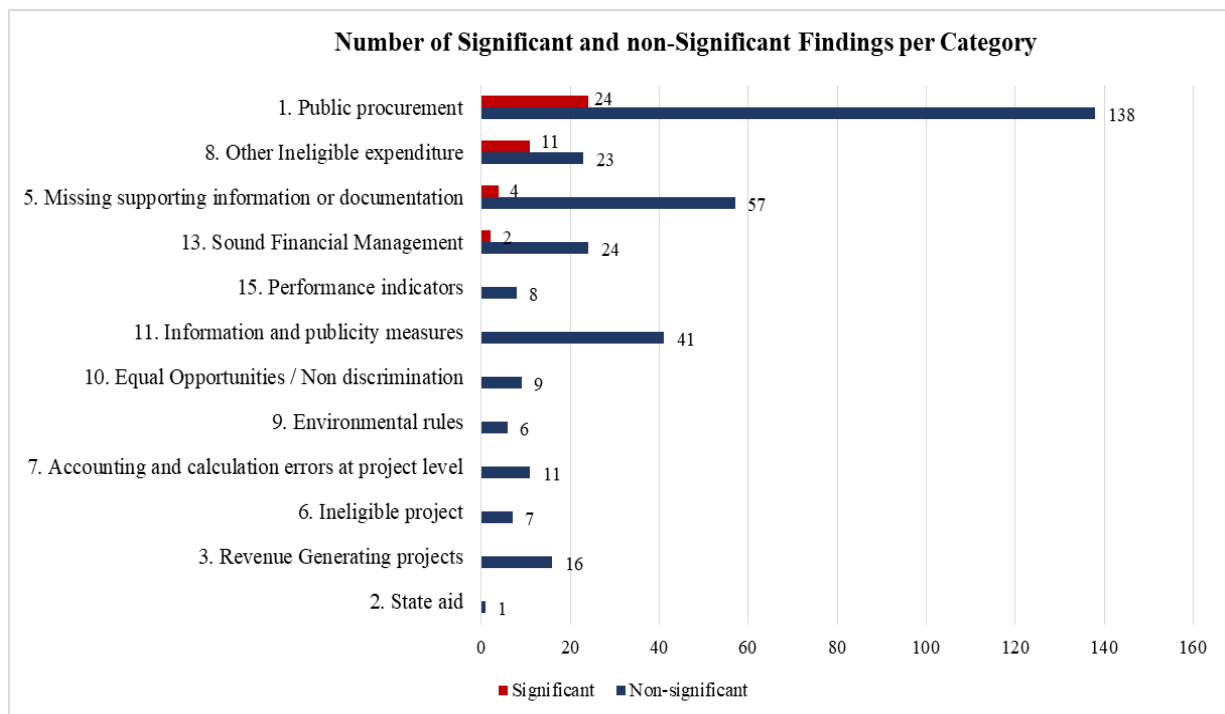


Figure 4.13 Number of Significant and non-Significant Findings per Category

Finding Significance - Objective

The next grouped bar chart shows the number of significant and non-significant findings per objective examined through the audits questionnaires.

It is shown that most of the significant findings concern the objective ‘3. The operation/ sub-project is implemented in accordance with the provisions of the accession decision’. This means that findings that have to do with the implementation of a project are more likely to lead to financial errors.

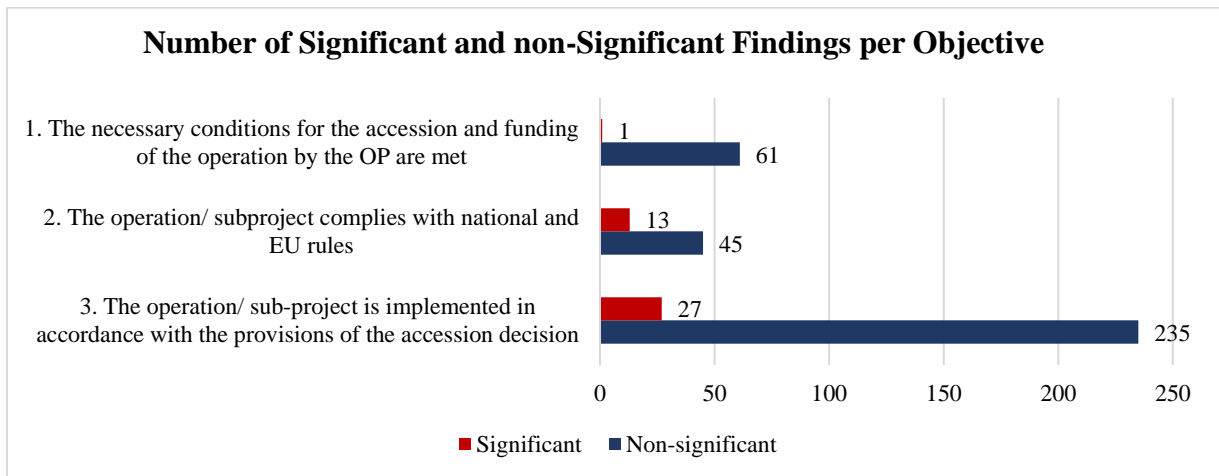


Figure 4.14 Number of Significant and non-Significant Findings per Objective

Finding Significance – Operational Program

The following bar chart presents the number of Significant and non-Significant Findings per Operational Program, in descending order of the percentage of significant findings relative to all the findings of each Operational Program. It turns out that the Operational Programs with the higher percentage of significant findings are:

- Operational Program Public Sector Reform, with 75%
- Regional Operational Program Central Macedonia, with 37,5%
- Regional Operational Program Southern Aegean, with 25% and
- Regional Operational Program Western Macedonia, with 18%,

although all these Operational Programs haven't a large number of findings. This means that several Operational Programs, independently of the small number of findings they have (maybe due to a lack of high expenditure declared or due to a small number of operations managed), can lead to remarkable financial corrections.

The Operational Program with the highest number of significant findings is the Operational Program Transport Infrastructure, Environment, which seems logical since it has a large number of findings, anyway.

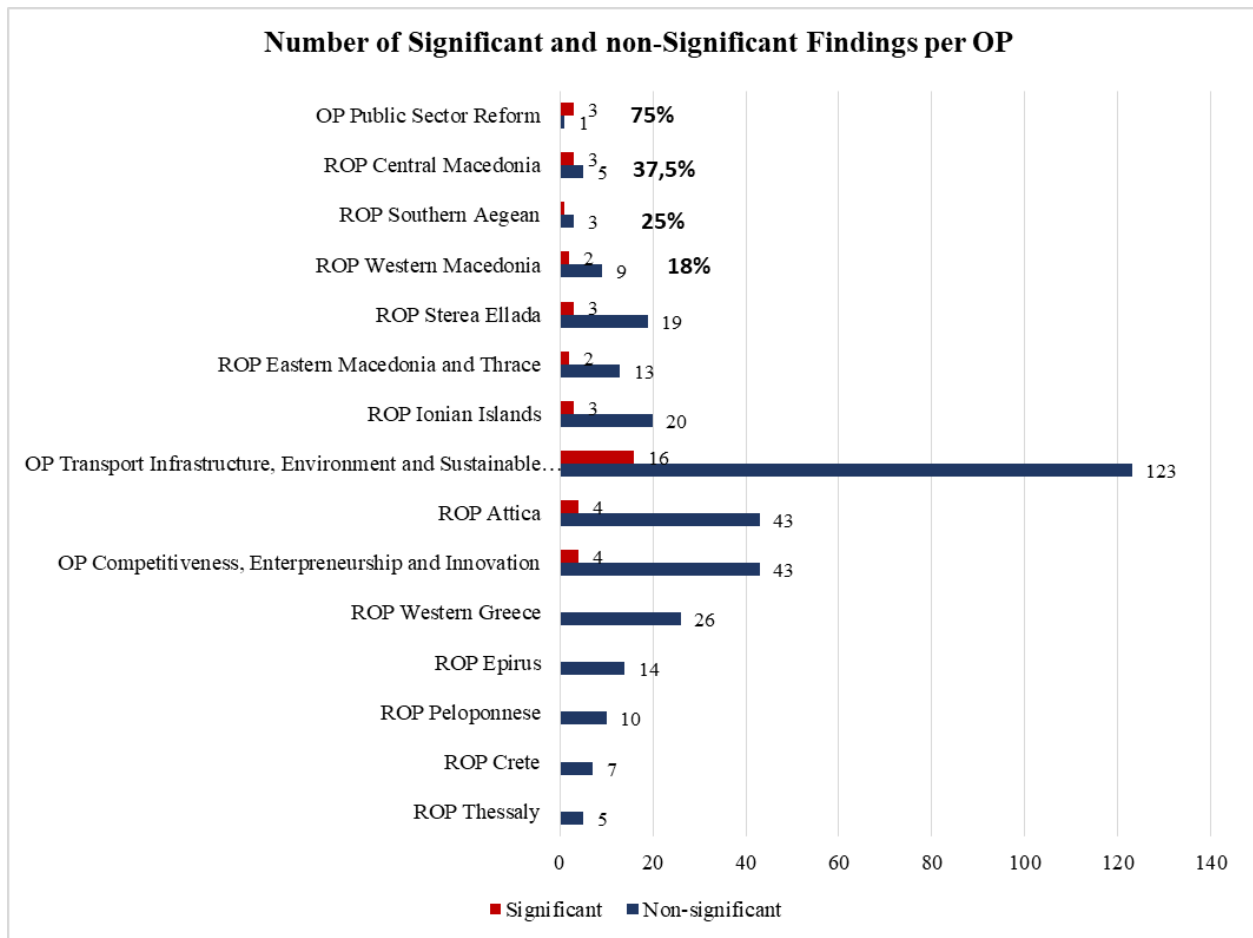


Figure 4.15 Number of Significant and non-Significant Findings per Operational Program

Finding Significance – Beneficiary

The results of the relations investigation in this variables pair showed that 10 beneficiaries out of 54, have high percentage (higher than 20%) of significant findings relative to all of their findings. This could mean that recurring significant findings are identified in specific beneficiaries. This situation could be examined deeper in another research.

s/n	Beneficiary code	No of Non-significant findings	No of significant findings	No of Total findings	% Significant findings relative to total findings
1	1010113	0	2	2	100,0%
2	2040114	1	2	3	66,7%
3	2040123	1	1	2	50,0%
4	2010002	4	3	7	42,9%
5	1011382	7	4	11	36,4%
6	10409	4	2	6	33,3%
7	40130195	2	1	3	33,3%
8	50501035	10	4	14	28,6%
9	2010003	6	2	8	25,0%
10	10115096	6	2	8	25,0%

Table 4.4 Percentage of Significant Findings per Beneficiary

4.2.2.2 ‘Public Procurement’ category findings: ‘Finding Sub-category’ variable relations

This section refers exclusively to the statistical analysis of the findings of the ‘Public procurement’ category and presents the results derived from the investigation of possible relations between the variable ‘Finding Sub-category’ and the variables ‘Objective’ and ‘Theme’.

Finding Sub-category – Objective & Theme

This variables combination reveals the kind of findings that are usually detected in the context of each objective examined during the operations audits. The results are shown in the next bar chart. The finding sub-category ‘1.24 Others’ is by far the category with the most findings in each objective. As it concerns the Objectives no.2 and 3, the sub-category 1.23 which refers to contract modifications, follows.

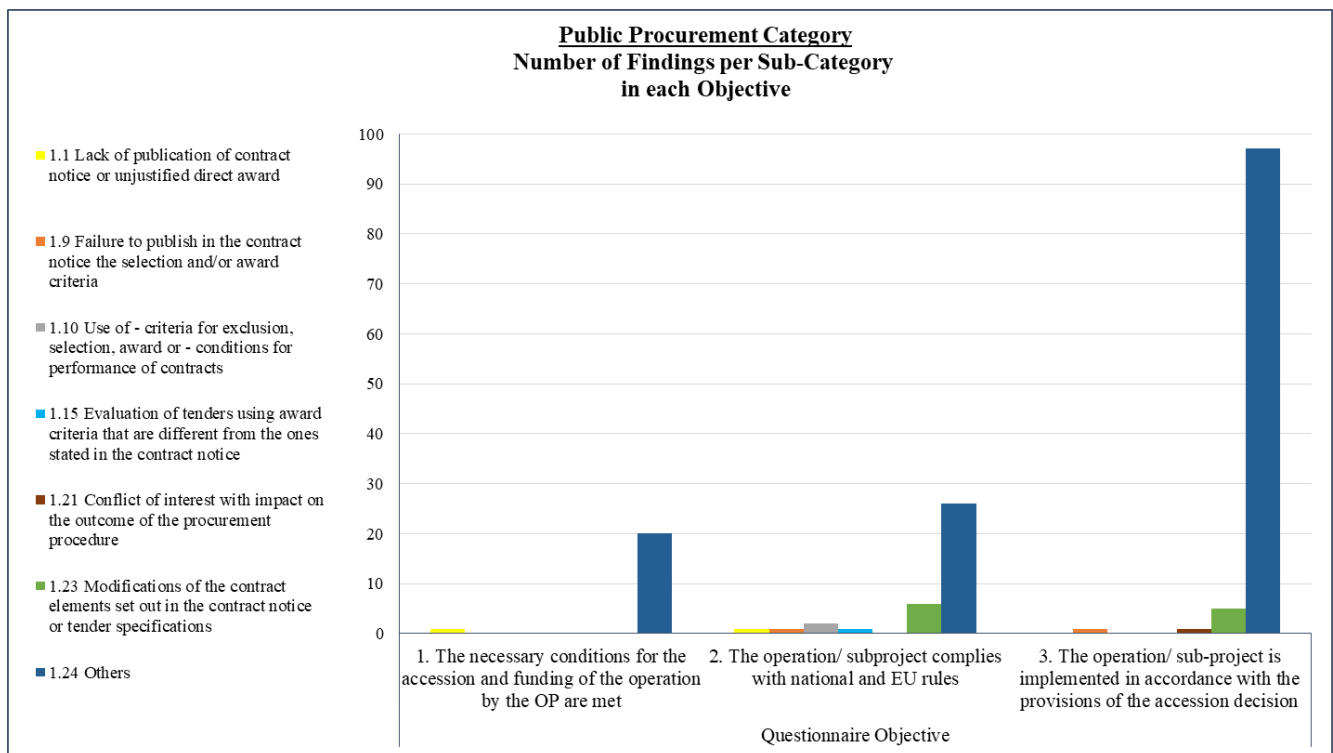


Figure 4.16 Number of Findings per Sub-category in each Objective

Especially in the general sub-category ‘1.24 Others’, it is very useful to understand the type of findings that have been identified. The next bar chart reveals that most of the findings assigned to this sub-category refer to the compliance with obligations regarding the physical implementation of the public contract and the Beneficiary's obligations regarding the funding of the operation.

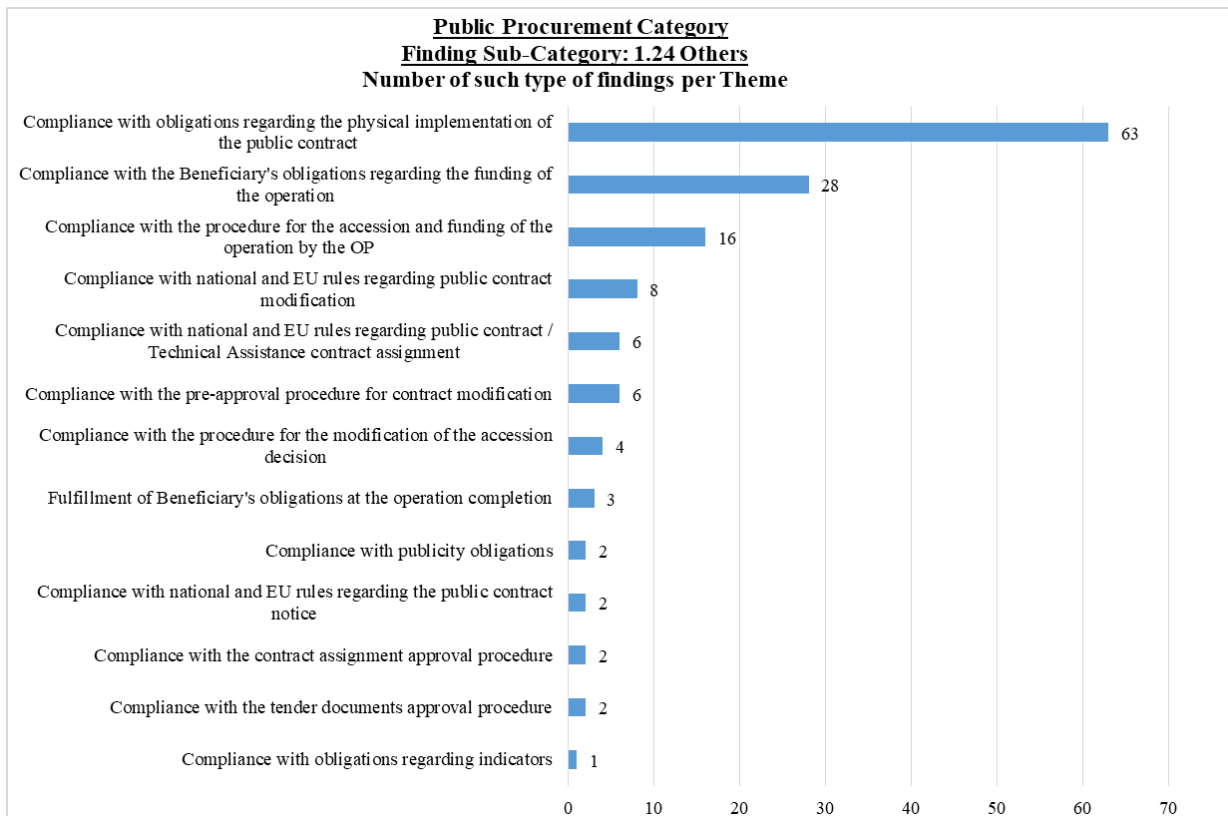


Figure 4.17 Number of Findings per Theme for the findings of Public Procurement category and Sub-category 'Others'

4.2.2.3 'Finding Category' variable relations (excluding Public Procurement)

This section contains the results of the investigation for possible relations - with the use of Pearson Chi-Square Independence Test - between the Finding Category variable (excluding the 'Public Procurement' category, which was examined in the previous paragraph) and other selected variables.

As mentioned in table 4.3 above, the application of Pearson Chi-Square Independence Test showed that the variable 'Finding category' is possibly related to 5 variables. The most interesting outputs are discussed below, while the rest are presented in Appendix C.

Finding Category – Objective & Theme

The following bar charts show the number of findings detected per category in the context of each of the three objectives examined during the operations audits.

The most frequent finding category in Objectives 1 and 3 is by far the ‘5. Missing supporting information or documentation’.

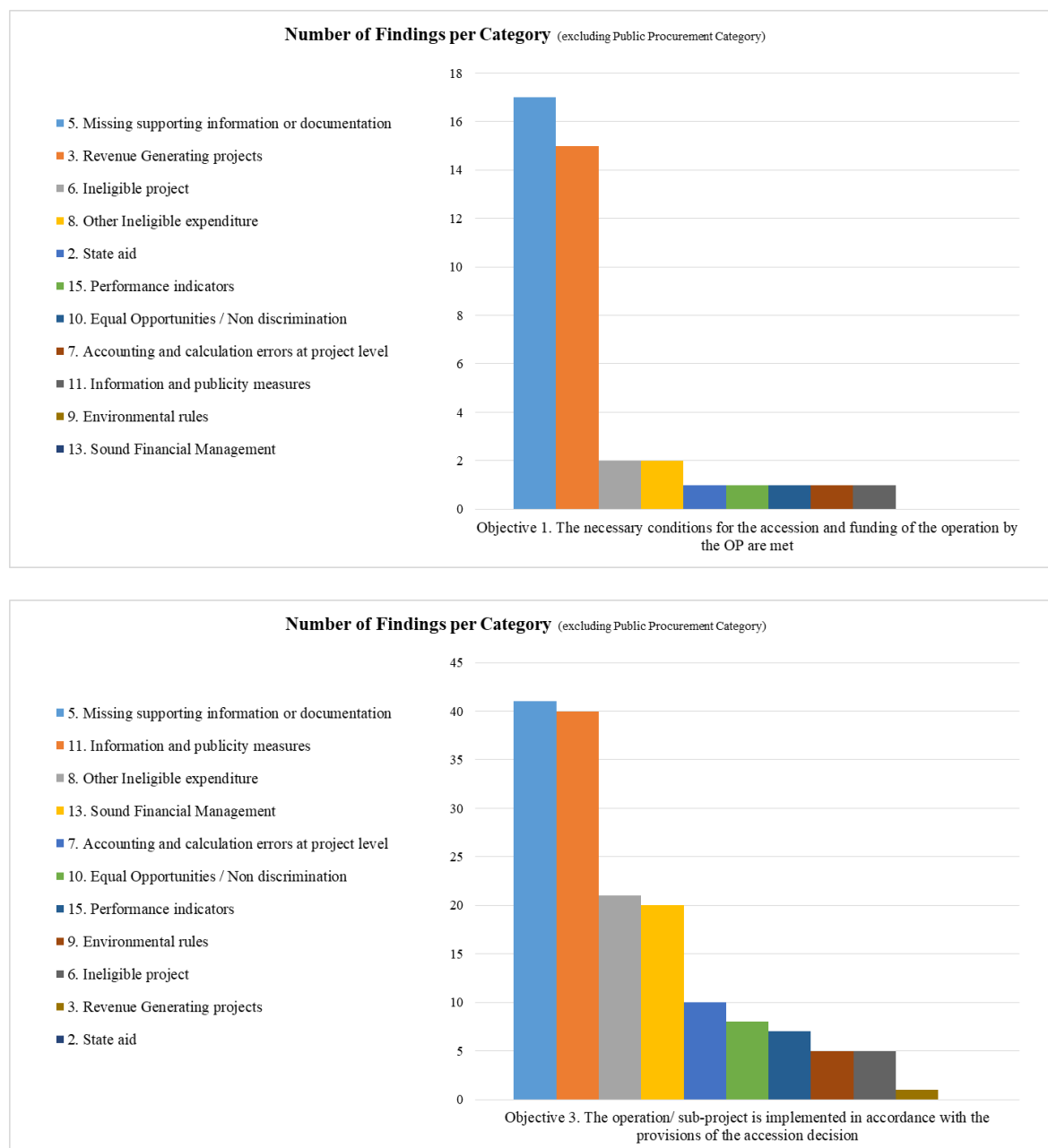


Figure 4.18 Number of Findings per Category in Objective 1 and 3

As shown in the next bar charts, the most frequent finding category in Objective 2 is the ‘8. Other ineligible expenditure’ and the findings are mainly related with contract modification themes.

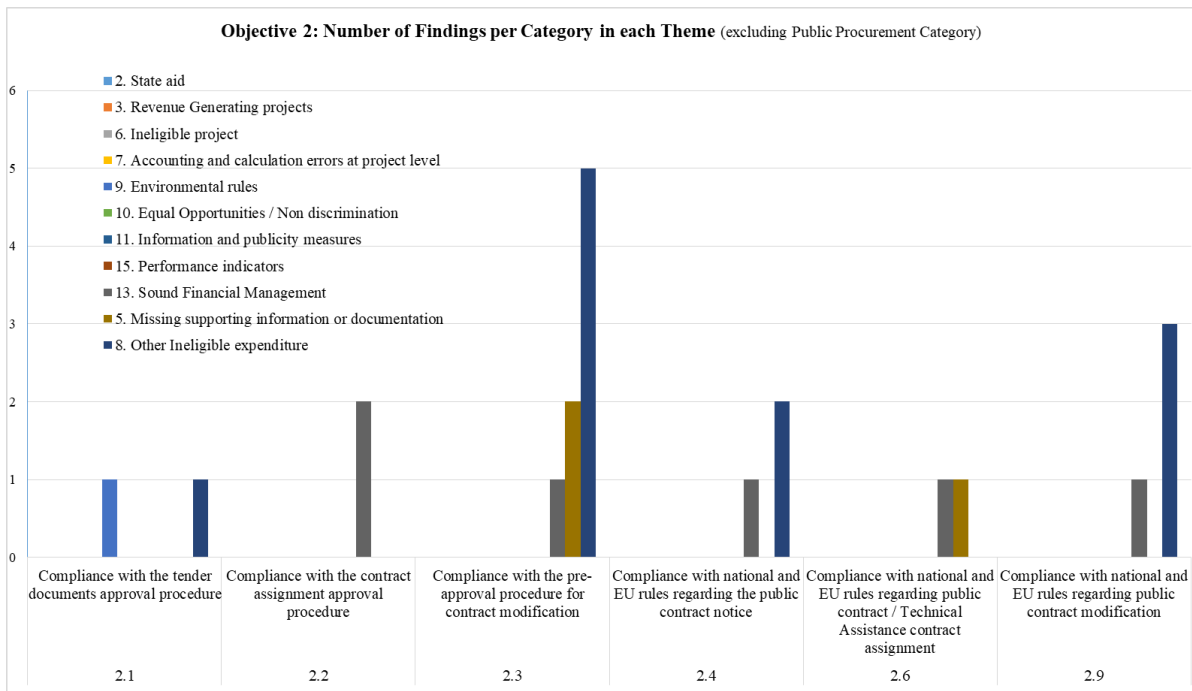
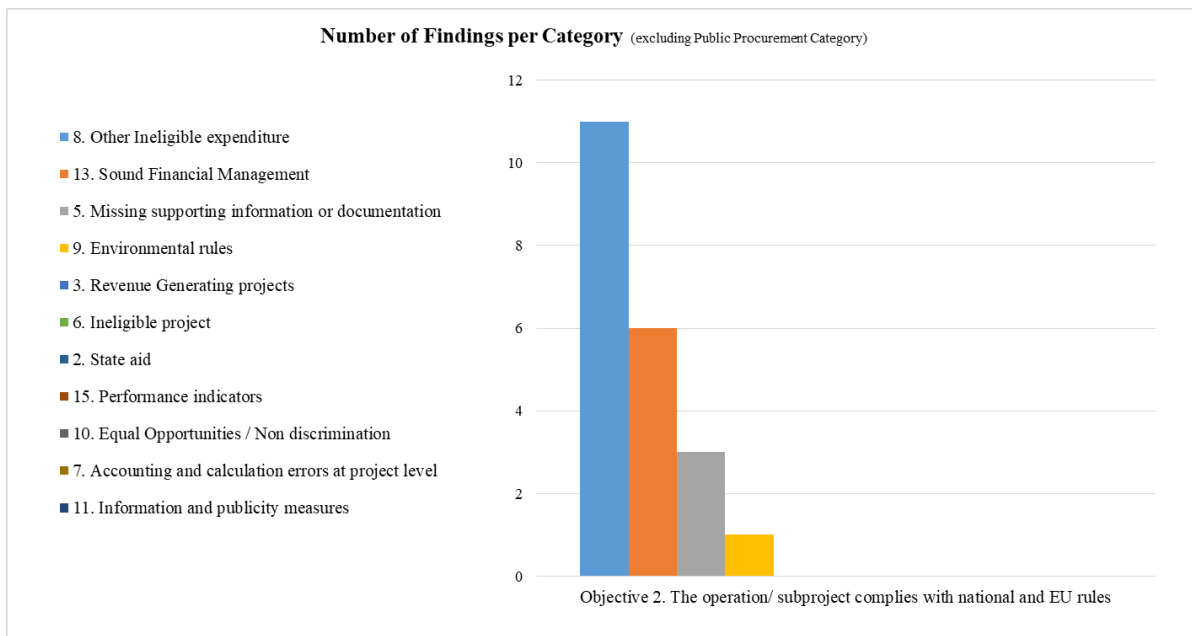


Figure 4.19 Number of Findings per Category & Theme in Objective 2

4.3 Results Discussion

At this point an interpretation of the quantitative research results cited above, is deemed necessary in order to emerge the main points and conclusions.

The aim of the research was primarily to identify the most common irregularities/ deficiencies detected in the EU co-funded public contracts in Greece during the National Strategic Reference Framework (known in Greece as ESPA) 2014-2020 and find out information about the conditions under which the irregularities/ deficiencies occur, by analyzing the characteristics of the findings of EDEL's operation audits.

Firstly, **by examining all the findings from EDEL's operations audits during the Programming Period 2014-2020 (700 findings)**, it turned out that the most frequent irregularities and deficiencies detected, concern aspects of public procurement, missing information and expenditures ineligibility. It also turned out that findings of sound financial management or non-discrimination, are not so popular.

As it concerns particularly the findings of the Public procurement category, the irregularities detected have mostly been assigned to the sub-category 'Others' (86%), which due to its general nature, gathers various findings. After studying the content of EDEL's Annual Control Reports, concerning the audits' findings of this sub-category, it turned out that:

- none of them concern the contract award process, which means that they don't concern serious aspects of competition principles breach in the EU market,
- most of them differ from each other and are detected in different audits, which means that they are not systematic irregularities and
- that some of them concern incorrect deductions in favor of third parties (eg. EADDHSY, TSMEDE), which means that these are manageable deficiencies.

By focusing now on the **research results which are related with co-funded public contracts, 382 findings were detected by EDEL through 100 audits carried out to 81 operations funded from European Regional Development Fund or Cohesion Fund**. By the statistical analysis it was identified that out of all these findings, only a 10% has been characterized as significant, which practically means that approximately only 1 out of 10 findings leads to error amounts greater than 2% of the audited operation declared expenditure. In other words, it seems that the largest percentage of findings does not lead to

significant financial errors and corrections. It also seems that this small percentage of findings that lead to a serious financial correction could be manageable, if we understood where they come from. The statistical analysis showed that the findings which have to do with the implementation of a project are more likely to lead to financial errors and in addition, that findings of the category ‘Other ineligible expenditure’ have almost 50% probability to be significant. This means that special attention should be paid to the implementation phase of the projects and their monitoring procedures, as well as to the kind of expenditures that the beneficiaries declare for funding. Moreover, the highest percentages of significant findings have been detected in Operational Programs with a small number of total findings (the small number maybe due to a lack of high expenditure declared or due to a small number of operations managed). This means that the authorities involved in the regional programs (which are usually the ones with the smallest number of operations) should be strengthened with the application of training activities, monitoring procedures and information systems in order to prevent deficiencies. A more appropriate allocation of human resources could be applied, e.g. via the provision of opportunities for increased mobility and career progress (OECD, 2018), in combination with the development of specific skills and competences to the existing staff.

The research also showed that the most frequent irregularities detected, concern aspects of public procurement, missing information, publicity measures and expenditures ineligibility. Most of the irregularities refer to the projects implementation phase (approximately 70%) and more specifically to the obligations regarding the physical implementation of the public contract and then to the beneficiary’s obligations regarding funding. Another remarkable group of irregularities detected is related with contract modification matters.

Most of the findings (61%) have been detected in operations of the Operational Programs Transport Infrastructure, Environment & Sustainable Development and Competitiveness, Entrepreneurship & Innovation and the Regional Operational Program Attica. This seems logical as these programs have the largest number of operations.

Most of the beneficiaries audited have a small total number of irregularities detected. A remarkable percentage (12 out of 54) however, has more than 10 irregularities found (during more than one audits). This means that attention should be paid to those beneficiaries who

repeatedly display similar behaviors and deficiencies, so that their deficiencies can be prevented or addressed.

The research also showed that the vast majority (80%) of deficiencies have been detected in technical projects/ contracts. Most irregularities were detected in contracts above EU thresholds and awarded with the open procedure, which have the greatest interest in terms of competition and more requirements from regulations for their award. As it concerns their implementation, the legal framework applied to the projects with the most irregularities was law 3669/2008. Only 10% of the projects are under the provisions of the new public procurement law 4412/2014, as it came into force and was applied in public contracts during the most recent years.

As it concerns especially the irregularities of Public Procurement, which is a category in which the EC gives particular attention, the research showed that most of EDEL's audits findings are assigned to the sub-category 'Others', which is a general sub-category. In order to find out more about the nature of the irregularities assigned to this sub-category, we applied a statistical investigation of variables possible relations and we concluded that they are mainly associated with the physical implementation of the public contract and then with the Beneficiary's obligations regarding the funding of the operation. The next most frequent aspect that the irregularities of Public procurement category refer to, is the contract modifications.

With regard to irregularities other than Public procurement category, the research has shown that most of them concern the lack of information or documentation, publicity measures, expenditure ineligibility and sound financial management and are mainly detected during the contracts' implementation phase. As it concerns the expenditure ineligibility, this is mainly related with contract modifications.

The above results show that the initiatives and structural reforms of recent years on public procurement (e.g. e-procurement, the introduction of EADDHSY, KHMDs) have possibly contributed to improving procedures and enhancing transparency in tenders and contracts award. From the type of irregularities identified, it appears that more emphasis may need to be placed in the future on administrative issues, in order for example to address deficiencies of lack of information and documentation. Training and information programs, mainly of the Beneficiaries, at the early stages of the operations funding, about the required

documentation at each phase, could reduce the rates of such deficiencies. The further use of information systems and the application of electronic data submission procedures could also contribute in this direction.

In order for the country not to have the consequences of funding cuts due to the detected from the Audit Authority irregularities, the Managing Authorities which are involved in the first stage control of co-funded contracts and the beneficiaries who are directly responsible for the proper execution of the audited operations, should be strengthened to respond adequately to the ESIF's requirements. Actions of awareness raising, informing and training programs could be taken about the permissible contract modifications and the effective monitoring of projects implementation. Special information and training could be provided about the most common errors detected during contracts execution, good practices to prevent them and methodological handbooks for deficiencies detection and handling, so that important irregularities about contracts modification or physical implementation to be eliminated or be detected at an early stage, before the audits of the Audit Authority.

As it concerns deficiencies of publicity, this is definitely considered an issue that can be addressed with proper training / information and guidance.

5 Conclusions

5.1 Research Summary and Main Results

Public procurement plays a key role in public investment, represents a high percentage of EU GDP and is part of our daily lives. Moreover, a vast amount of ESIF are spent through public procurement. In the Member States, EU co-financed projects must comply with applicable public procurement rules, which ensure transparency and efficiency. Despite the measures taken the last decades, public procurement remains a significant source of errors related to the use of EU budget, while in Greece in particular, public procurement is recognized as a high-risk area for corruption. However, very few systematic studies of public procurement issues and preventive measures for corruption have been conducted.

At the same time, the number of irregularities detected in EU funded projects remains very high. Member States are affected by the percentage of reported irregular expenditure detected in co-financed operations, through financial corrections and funding amounts cuts by the EC. Therefore, the recording of regularly detected irregularities in EU funded public contracts may allow the identification of the most vulnerable areas and the design of the appropriate measures for their prevention and elimination. However, and especially in Greece, there is no available bibliography as it concerns the irregularities and deficiencies detected in EU funded actions or public contracts in particular. Data can mostly be retrieved by the relevant EC reports, which are mainly generic and draw information by all Member States.

Taking into account the above, this thesis intended to present the framework for the implementation of the EU co-funded public contracts in Greece and answer the following research questions:

- which are some of the most common irregularities and deficiencies detected in the EU co-funded public contracts in Greece during the National Strategic Reference Framework (known in Greece as ESPA) 2014-2020
- which are the main characteristics of the findings of the audits carried out in such contracts and which kind of relations exist between the various findings' characteristics, in order to obtain useful information about the conditions under which the irregularities/ deficiencies occur.

For the accomplishment of this aim, a quantitative research has been conducted, based on statistical analysis of data and results derived from the audits of the Greek Audit Authority on co-funded programmes (EDEL), during the National Strategic Reference Framework (known in Greece as ESPA) 2014-2020.

As it concerns the first question, the research showed that the most frequent irregularities and deficiencies detected, concern aspects of public procurement, missing information and expenditures ineligibility. The latter (expenditure ineligibility) is mainly related with contract modifications. Another remarkable group of irregularities detected is related with contract modifications. Most of the irregularities detected concern the execution phase of the operations and more specifically the contract's physical implementation and the fulfillment of the beneficiary's obligations for its funding. Therefore, special attention should be paid to the operations implementation monitoring procedures, as well as to the kind of expenditures that the beneficiaries declare for funding.

On the other hand, not many findings were detected during the contract award process, breaching the competition principles of the EU market, probably due to the structural reforms and measures for transparency on public procurement, taken the recent years.

It has also been observed that only a 10% of irregularities are significant and lead to significant financial errors and corrections. So, it seems that many of the irregularities detected could be manageable with appropriate measures.

Most irregularities and deficiencies have been detected in Technical projects/ contracts above EU thresholds, awarded with open procedures and implemented according to the provisions of law 3669/2008. Not many contracts are under the provisions of the new public procurement law 4412/2014, as it came into force and was applied in public contracts during the most recent years.

Furthermore, most irregularities have been detected in operations of the Operational Programs 'Transport Infrastructure, Environment & Sustainable Development' and 'Competitiveness, Entrepreneurship & Innovation' and the 'Regional Operational Program Attica', as these programs have the largest number of operations. However, the highest percentages of significant findings have been detected in Operational Programs with a smaller number of operations. This could mean that the regional managing authorities

should be strengthened more, with the appropriate staff allocation, training activities, monitoring procedures and information systems in order to prevent deficiencies.

It is worth mentioning that in comparison to the results of the various reports and analysis about the most frequent irregularities in EU funded public contracts, this research shows that no specific and serious irregularities related to the public procurement awarding procedures were identified, such as during the tendering phase: non-compliance with publication and transparency requirements or discriminatory technical specifications or specifically during the bids evaluation phase: conflicts of interest, manipulation of bids or unclear selection/ evaluation criteria, neither situations of split purchases or direct assignments. This may be due to the initiatives and structural reforms of recent years on public procurement have possibly contributed to improving procedures and enhancing transparency in tenders and contracts award.

On the other hand, several deficiencies were detected during contracts execution, having to do with compliance with the contractual obligations for contracts' physical implementation, as well as about contracts' modifications. As already stated, actions of awareness raising, informing and training programs of the Beneficiaries and the Managing Authorities staff could be taken, about the permissible contract modifications and the effective monitoring of projects implementation. Methodological handbooks for the most common irregularities detected on these aspects, their detection and handling could be also provided.

Moreover, a lot of the irregularities detected, were related to ineligible expenditure and absence of essential supporting documents, which are categories that the European Court of Auditors highlights as the main types of error right after the public procurement rules infringements (as shown in Figure 2.11). Incorrect, missing or false supporting documents is after all, the 1st most frequent category of fraudulent irregularities reported by the Member States to EC for Cohesion and Fisheries Policies during the Programming Periods 2007-2013 and 2014-2020 (as shown in Figure 2.10). The further and efficient use of electronic submission procedures and information systems could help reduce such irregularities. Moreover, training and information programs of the Beneficiaries at the early stages of the operations funding, about the required documentation at each phase, could reduce the rates of such deficiencies.

5.2 Limitations and suggestions for further research

The present research had some limitations, which have been described in the previous chapters. The main of them in conjunction with some suggestions for possible future research are discussed below.

First of all, it should be mentioned that some of the available data from EDEL's audits and their findings haven't been published or discussed in this paper, as they could be considered sensitive or confidential (such as beneficiaries names, specific contracts, suspected fraud cases).

Another matter that it should also be mentioned is that during the results interpretation, subjectivity of the researcher is always involved and must be taken into account.

As it concerns the research methodology, the main assumptions made during the statistical analysis were

- a) the selected level of confidence 95%, which could alternate to 90% in a future research and
- b) the decision to present and discuss only the situations where p-value was less or equal to 0.05 (which meant for us that a relationship between the examined variables possibly exists). In another research, the whole set of statistical analysis results could be analyzed and discussed and maybe then more evidence will emerge.

It should also be mentioned that despite the bibliography about Chi-Square test says that in order to get more accurate results, each expected frequency must be assumed to be at least 5 (Berenson et al, 2019), in several cases examined during this research the frequency was less. This means that perhaps a different categorization and grouping of available data should be applied in a future research.

The research focuses on highlighting the most common findings detected by EDEL's audits, independently of the error amount that they might have led to. It would be interesting and useful if in a future research, someone examined the detected irregularities in conjunction with the imposed financial corrections.

Moreover, this dissertation focused on the findings detected through audits of operations funded only by specific funds (European Regional Development Fund or Cohesion Fund).

The research could be extended to cover irregularities from all the audits, regardless of the fund source.

Furthermore, information and data from the results of audits carried out by other bodies except EDEL (Managing Authorities, EU authorities) could be incorporated in a future research, in order to draw even more general conclusions. The Monitoring Information System OPS contains a lot of information about operations and sub-projects that could be taken into account in such a research.

Another interesting aspect to be examined in relation to the present research, is the extension of the investigation in the previous National Strategic Reference Framework (known in Greece as ESPA) 2007-2014, with aim to identify the differences in the type of irregularities detected between the two Programming Periods, the improvements that the changes in the Management and Control System brought about and thus the points that need further improvement in the next period.

Finally, the validation of the present research results with a qualitative research by conducting interviews with executives involved in the management of co-funded public contracts, is estimated that it would also be very useful. A further research could give answer to issues like the irregularities' sources and recommendations for handling them in the future.

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Appendix A: EC Typology of Findings⁸³

<u>Types of findings</u>			
<u>Ref.</u>	<u>Category</u>	<u>Ref.</u>	<u>Sub-Category</u>
1	Public Procurement - Contract notice and tender specifications	1.1	Lack of publication of contract notice or unjustified direct award (i.e. unlawful negotiated procedure without prior publication of a contract notice)
		1.2	Artificial splitting of works/services/supplies contracts.
		1.3	Lack of justification for not subdividing a contract into lots
		1.4	Non-compliance with - time limits for receipt of tenders; or - time limits for receipt of requests to participate; or failure to extend time limits for receipt of tenders where significant changes are made to the procurement documents
		1.5	Insufficient time for potential tenderers/candidates to obtain tender documentation or restrictions to obtain tender documentation
		1.6	Lack of publication of extended time limits for receipt of tenders or failure to extend time limits for receipt of tenders
		1.7	Cases not justifying the use of a competitive procedure with negotiation or a competitive dialogue
		1.8	Non-compliance with the procedure established in the Directive for electronic and aggregated procurement
		1.9	Failure to publish in the contract notice the selection and/or award criteria (and their weighting), or conditions for performance of contracts or technical specifications. Or failure to describe in sufficient detail the award criteria and their weighting. Or failure to communicate/publish clarifications/additional information.
		1.10	Use of - criteria for exclusion, selection, award or - conditions for performance of contracts or - technical specifications that are discriminatory on the basis of unjustified national, regional or local preferences
		1.11	Use of - criteria for exclusion, selection, award or - conditions for performance of contracts or - technical specifications that are not discriminatory in the sense of the previous type of irregularity but still restrict access for economic operators
		1.12	Insufficient or imprecise definition of the subject-matter of the contract

⁸³ Annex 5: Typology of Project Findings (European Commission, 2018c) https://ec.europa.eu/regional_policy/en/information/legislation/guidance/

	Public Procurement - Evaluation of Tenders	1.13	<u>Limiting sub-contracting</u>
		1.14	Selection criteria (or technical specifications) were modified after opening of tenders or were incorrectly applied
		1.15	Evaluation of tenders using award criteria that are different from the ones stated in the contract notice or tender specifications Or evaluation using additional award criteria that were not published
		1.16	Insufficient audit trail for the award of the contract
		1.17	Negotiation during award procedure, including modification of the winning tender during evaluation
		1.18	Irregular prior involvement of candidates/tenderers towards the contracting authority
		1.19	Competitive procedure with negotiation, with substantial modification of the conditions set out in the contract notice or tender specs
		1.20	Unjustified rejection of abnormally low tenders
		1.21	Conflict of interest with impact on the outcome of the procurement procedure
		1.22	Bid-rigging (identified by a competition / anti-cartel office)
	<u>Public Procurement - Contract implementation</u>	1.23	Modifications of the contract elements set out in the contract notice or tender specifications
2	<u>Public Procurement - Others</u>	1.24	<u>Others</u>
	<u>State aid</u>	2.1	Failure to notify State Aid
		2.2	<u>Wrong aid scheme applied</u>
		2.3	Misapplication of the aid scheme
		2.4	<u>Monitoring requirements not fulfilled</u>
		2.5	Reference investment not taken into account in the applicable aid scheme
		2.6	No consideration of revenue in the applicable aid scheme
		2.7	No respect of the incentive effect of the aid
		2.8	<u>Aid intensity not respected</u>
		2.9	<u>De Minimis threshold exceeded</u>
		2.10	Error in the application of the SGEI
		2.11	<u>Other State aid</u>
3	<u>Revenue Generating projects</u>	3.1	Incorrect treatment of revenues generated by an operation
		3.2	Incorrect <u>calculation</u> of the funding gap
4	<u>Financial instruments</u>	4.1	Non-compliance with the implementing modalities for Holding Funds

		4.2	Non-compliance with the rules for selection of Financial Intermediaries
		4.3	Absence of essential elements in the business plan
		4.4	Absence of / inconsistency of investment strategy with programme's objectives
		4.5	Modification of the FEI set-up not in accordance with applicable rules
		4.6	Absence of funding agreement
		4.7	Absence of essential elements in the funding agreement
		4.8	Breach of funding agreement: national co-financing not effectively paid at the level of the FEI
		4.9	Absence of a separate block of finance within a financial institution
		4.10	Investments not eligible
		4.11	Final recipient not eligible
		4.12	Management costs/fees not eligible
		4.13	Incompatible State aid
		4.14	Incorrect use of interests generated from programme contribution
		4.15	Incorrect use of resources returne
		4.16	Other financial instruments
5	Missing supporting information or documentation	5.1	Missing or incorrect supporting information or documentation
		5.2	Lack or incomplete audit trail
6	Ineligible project	6.1	Project not eligible
		6.2	Project's objective not achieved
7	Accounting and calculation errors at project level	7.1	Accounting and calculation errors at project level
8	Other Ineligible expenditure	8.1	Expenditure incurred before or after the eligibility period
		8.2	Expenditure not paid by beneficiary
		8.3	Expenditure not related to the project
		8.4	Expenditure outside of the eligibility area
		8.5	Ineligible VAT or other taxes

		8.6	Non-compliance with rules on purchase of land or real estate
		8.7	Ineligible beneficiary
		8.8	Double financing
		8.9	Other ineligible expenditure
9	Environmental rules	9.1	Non respect of environmental requirements (Natura 2000, EIA ...)
10	Equal Opportunities / Non discrimination	10.1	Non compliance with the principle of equal opportunities
11	Information and publicity measures	11.1	Beneficiary not informed of the EU support
		11.2	Lack of billboard
		11.3	Lack of commemorative plaque
12	Simplified Cost Options	12.1	Wrong methodology (in advance fair, verifiable and equitable)
		12.2	Wrong application of the methodology (off-the-shelf or other)
13	Sound Financial Management	13.1	Non compliace with the principle of sound financial management
14	Data protection	14.1	Non compliance with the rules of data protection
15	Performance indicators	15.1	Incorrect output data
		15.2	Incorrect result data

Appendix B: Sample of the dataset of Quantitative Research

Finding	Finding significance	Finding category	Finding sub-category	Questionnaire Objective	Questionnaire Theme	Audit period	Fund	OP Code	MA	Audit Number	Operation Code (MIS)	Sub-project Code	Beneficiary Code	Sub-project Type	Legal framework	Applicable procedure	Contract award type
Αποκλίσεις από τις προβλεπόμενες διαδικασίες, κατά την έκδοση της διακήρυξης και κατά την ανάθεση της σύμβασης.	0	1	1.1	2	2.2	2	1	1	2	0116173001	5002854	2	10301001	7	6	6	1
Μη συμμόρφωση των τευχών δημοπράτησης με τα πρότυπα τεύχη και ελλιπής τήρηση των κανόνων δημοσιότητας κατά το στάδιο της δημοπράτησης του έργου.	1	1	1.1	1	1.1	2	1	13	11	0116173010	5001571	1	40124121	7	4	7	1
Ανάγκη επικαιροποίησης των πρότυπων Τευχών Δημοπράτησης.	0	1	1.9	2	2.4	5	1	2	1	0119203071	5003800	4	4040501	7	3	6	1
Πλημμελής τήρηση της αρχής της διαφάνειας και της αρχής της ίσης μεταχείρισης κατά την επιλογή του προσωπικού.	1	1	1.9	3	3.1	4	1	1	2	0118193043	5002438	1	10115096	2	6	1	3
Μη επαρκής τεκμηρίωση του Κριτηρίου Αξιολόγησης Α.2 «Ρεαλιστικότητα του π/υ σε σχέση με το φυσικό αντικείμενο»	0	1	1.24	1	1.1	4	2	2	1	0118193023	5033391	1	1011386	7	6	8	7
Μη επαρκής τεκμηρίωση του Κριτηρίου Αξιολόγησης Α.2 «Ρεαλιστικότητα του π/υ σε σχέση με το φυσικό αντικείμενο» για το υποέργο 2.	0	1	1.24	1	1.1	3	2	2	1	0117183006	5001697	1	2010004	5	6	2	6
Μη επαρκής τεκμηρίωση του Κριτηρίου Αξιολόγησης Α.2 «Ρεαλιστικότητα του π/υ σε σχέση με το φυσικό αντικείμενο» για το υποέργο 2.	0	1	1.24	1	1.1	3	2	2	1	0117183006	5001697	1	2010004	5	6	2	6

Appendix C: Variables relations

Continue from 4.2.1:

Audit Period

As shown by the following bar chart, the findings are distributed almost evenly in the last four (4) audit periods, with the 2016-2017 and 2018-2019 periods having some more. Only in the first audit period, the findings were less, which is considered normal as most of the operations were at their beginning and not much expenditure was declared.

Audit Periods

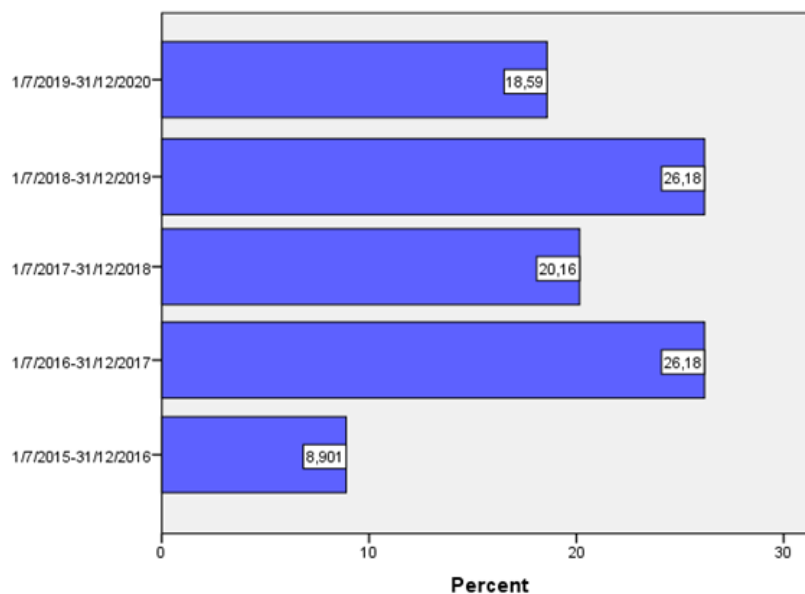


Figure C.1 Findings percentage per Audit Period

Fund

As it shown in the following chart, 76% of the findings (293 out of 382) are detected during audits of operations funded by European Regional Development Fund - ERDF (the rest 23% of involved operations is funded by Cohesion Fund - CF).

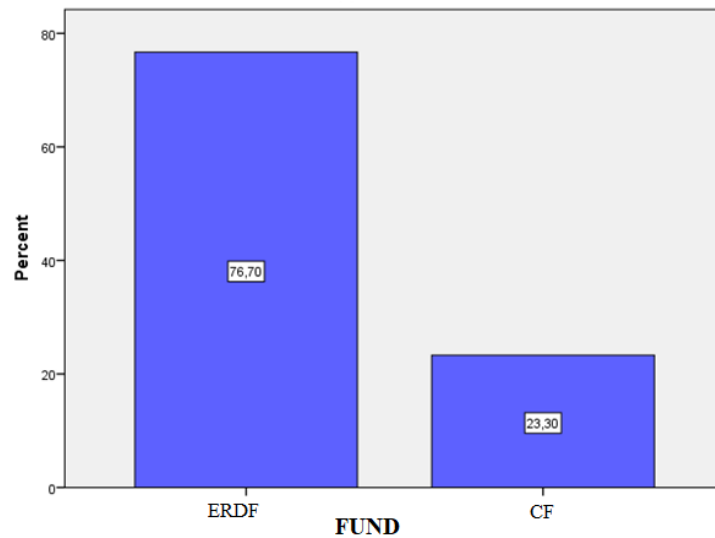


Figure C.2 Findings percentage per Fund

Continue from 4.2.2.1:

Finding Significance - Finding Sub-Category

The next grouped bar chart shows the number of significant findings per finding sub-category, sorted in descending order, and the number of the non-significant findings of each sub-category.

In accordance with the above mentioned results, the sub-categories with the higher number of significant findings are 1.24 Others and 8.9 Other ineligible expenditure.

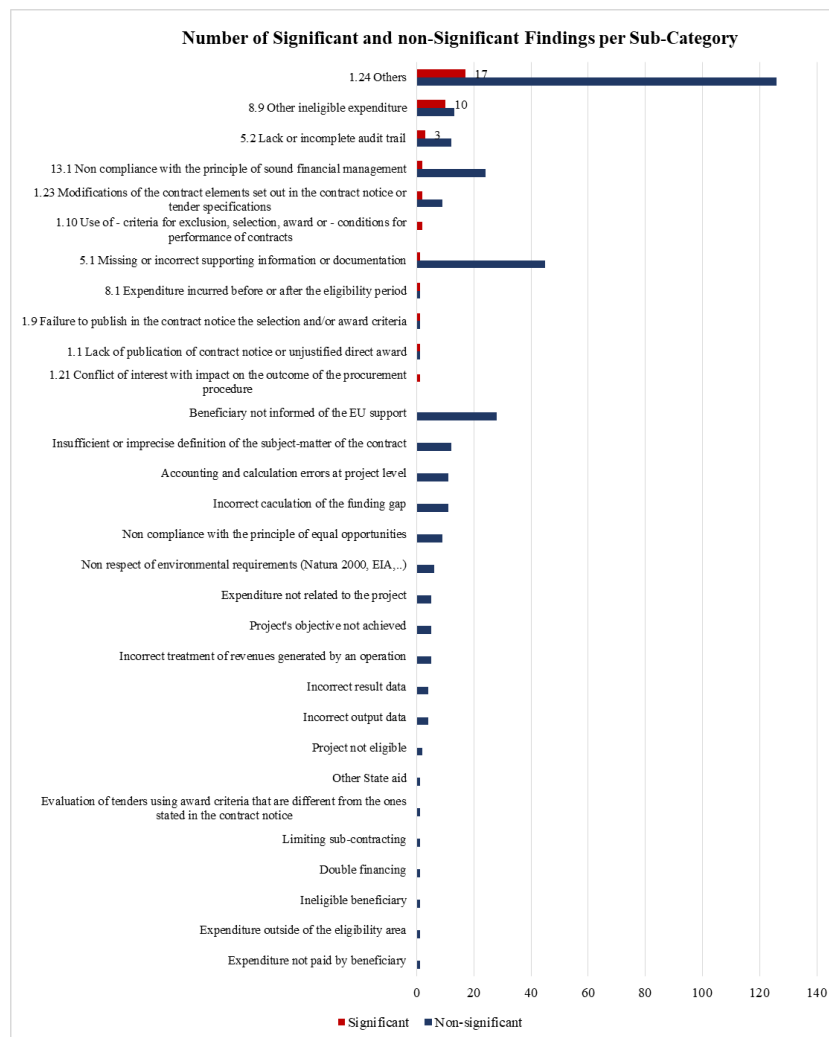


Figure C.3 Number of Significant and non-Significant Findings per Category

Finding Significance - Theme

The next chart shows the number of significant and non-significant findings per theme examined through the audits questionnaires.

It is shown that most of the significant findings concern

From the Objective 3:

- Compliance with obligations regarding the physical implementation of the public contract
- Compliance with the Beneficiary's obligations regarding the funding of the operation

From the Objective 2:

- Compliance with national and EU rules regarding public contract modification
- Compliance with the pre-approval procedure for contract modification
- Compliance with national and EU rules regarding public contract / Technical Assistance contract assignment.

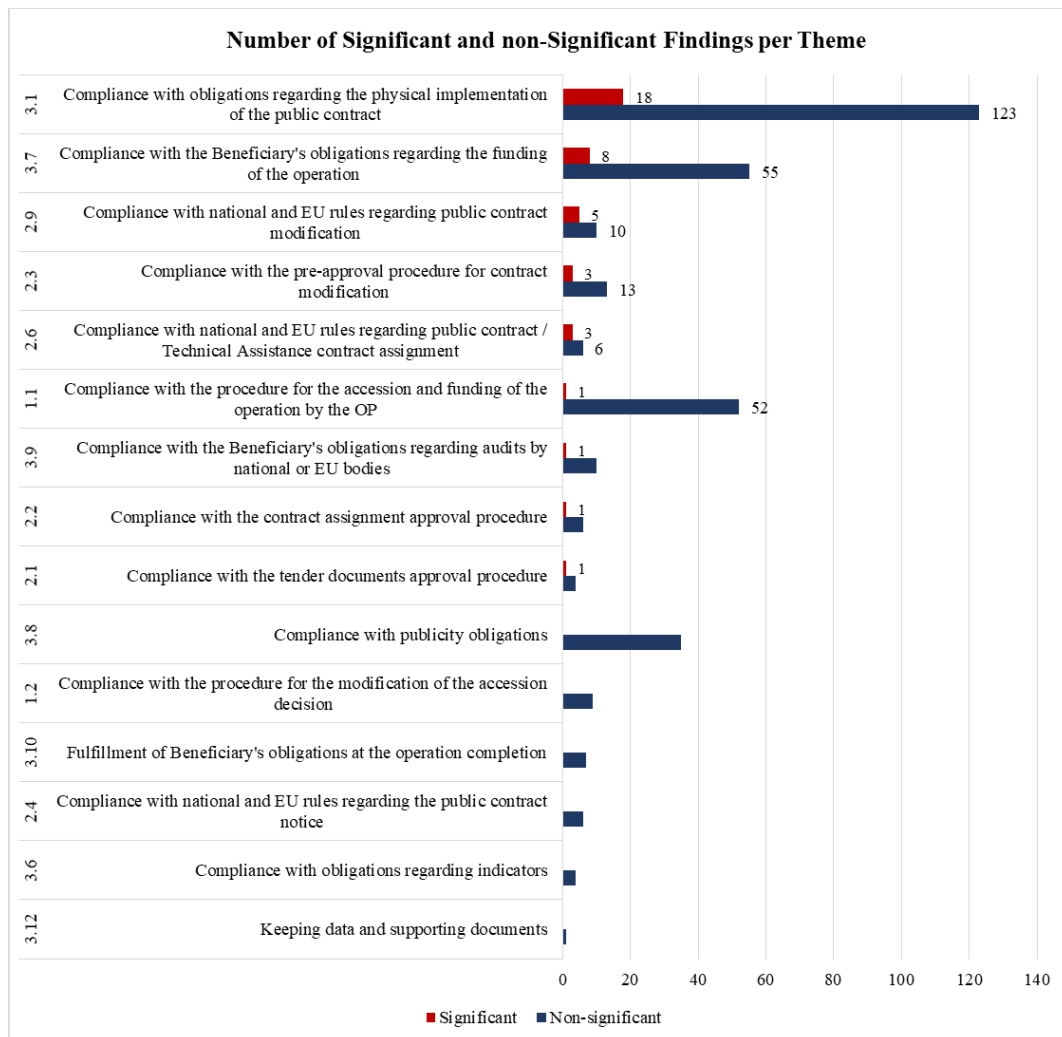


Figure C.4 Number of Significant and non-Significant Findings per Theme

Finding Significance – Audit period

The next bar chart shows that the most significant findings have been detected during the audit periods 1/7/2018-31/12/2019 and 1/7/2017-31/12/2018. It is worth mentioning that during the last audit period, only 2 findings resulted in error amounts higher than the 2% of the audited declared expenditure.

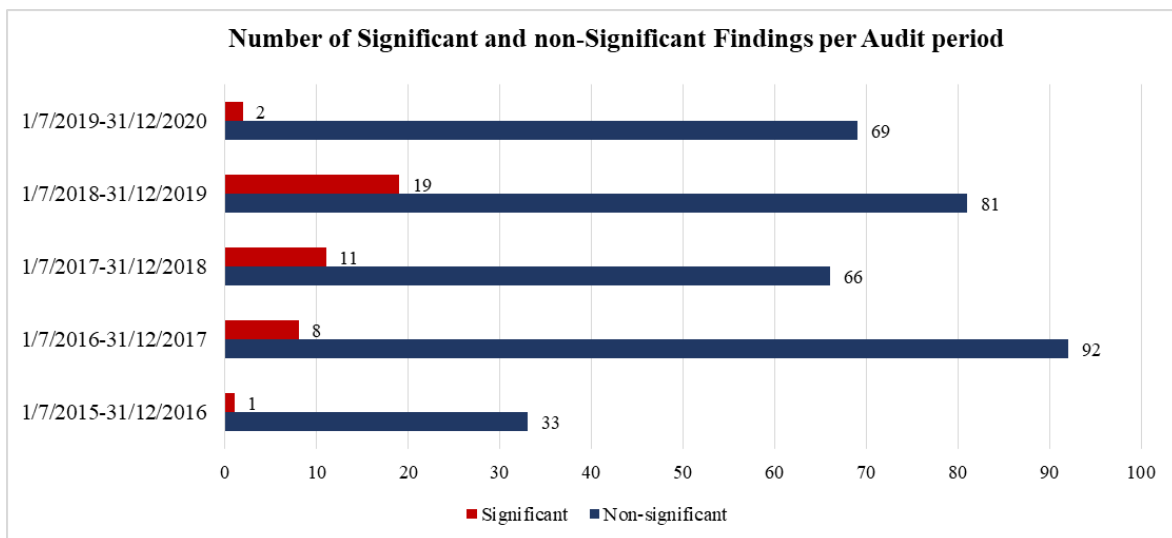


Figure C.5 Number of Significant and non-Significant Findings per Audit period

Finding Significance – Managing Authority (MA)

The following bar chart presents the number of Significant and non-Significant Findings per Managing Authority, in descending order of the percentage of significant findings relative to all the findings of each Managing Authority. The results are similar to the results of the pair Finding Significance- Operational Program, which is logical as almost all the operations of an Operational Program are managed by the homonymous Managing Authority.

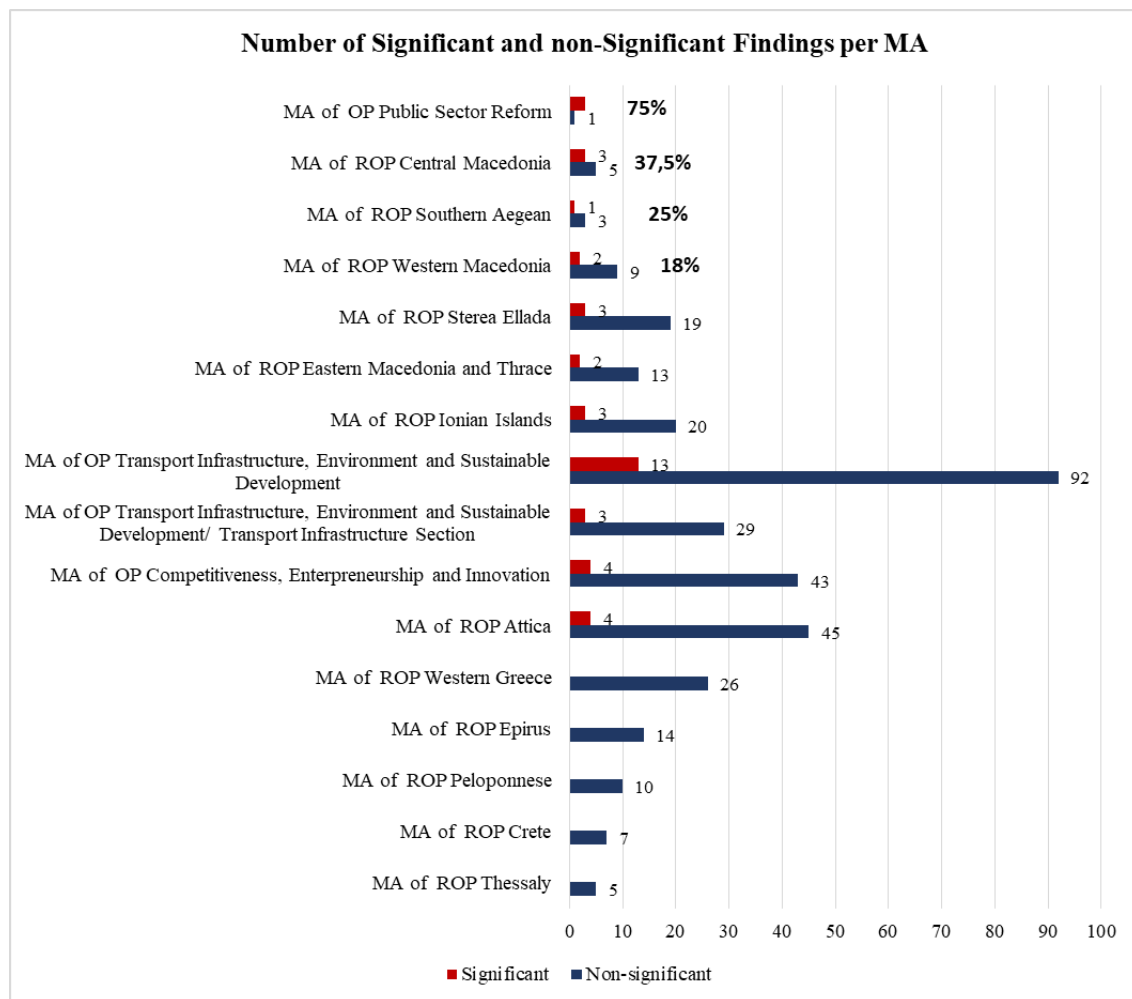


Figure C.6 Number of Significant and non-Significant Findings per Managing Authority

Finding Significance – Sub-project type

The following bar chart presents the number of Significant and non-Significant Findings per sub-project type, in descending order of the percentage of significant findings relative to all the findings of each sub-project type.

It has to be mentioned that the higher percentages of significant findings are identified in sub-projects implemented by own resources, i.e. having the following type:

- Technical assistance actions by own resources and
- Funding for operation implementation by own resources.

The sub-project type with the highest number of significant findings is ‘Technical project/ contract’, which seems logical since it has a large number of findings, anyway.

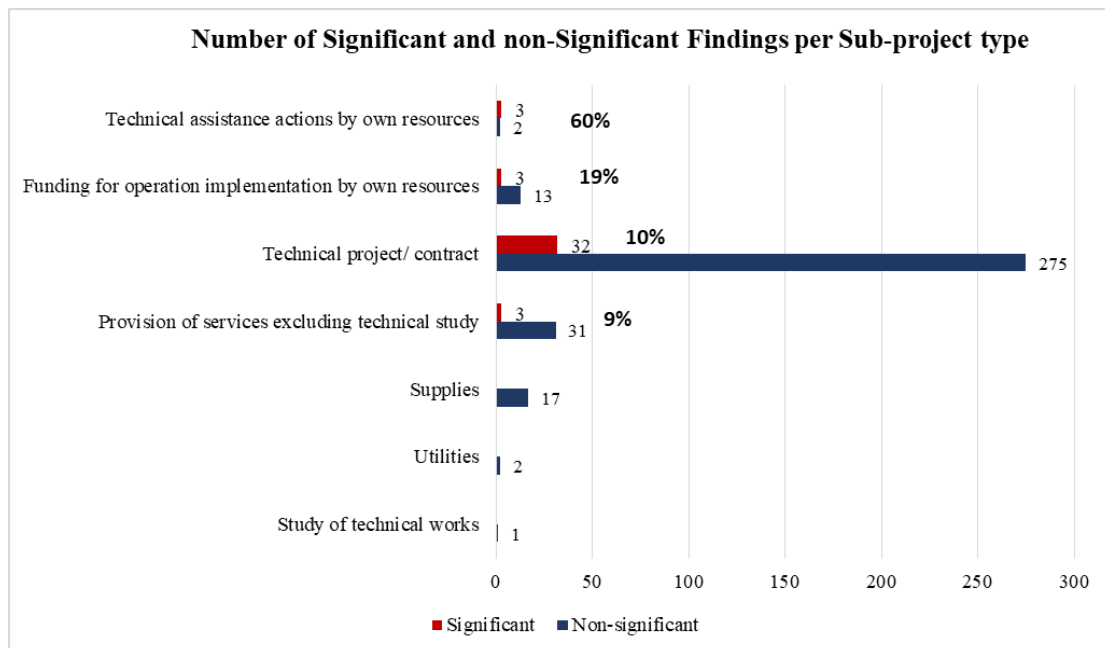


Figure C.7 Number of Significant and non-Significant Findings per sub-project

Continue from 4.2.2.3:

Finding Category – Beneficiary

There are 220 findings detected in 47 beneficiaries. The following chart shows in descending order, the finding categories that are detected in most beneficiaries at least one time. According to that, findings of the following categories are detected in more than half of the beneficiaries:

- 5. Missing supporting information or documentation (in 27 out of 47 beneficiaries) and
- 11. Information and publicity measures (in 26 out of 47 beneficiaries).

Then, the next category which is met in several beneficiaries (at least one time) is the 8. Other Ineligible expenditure.

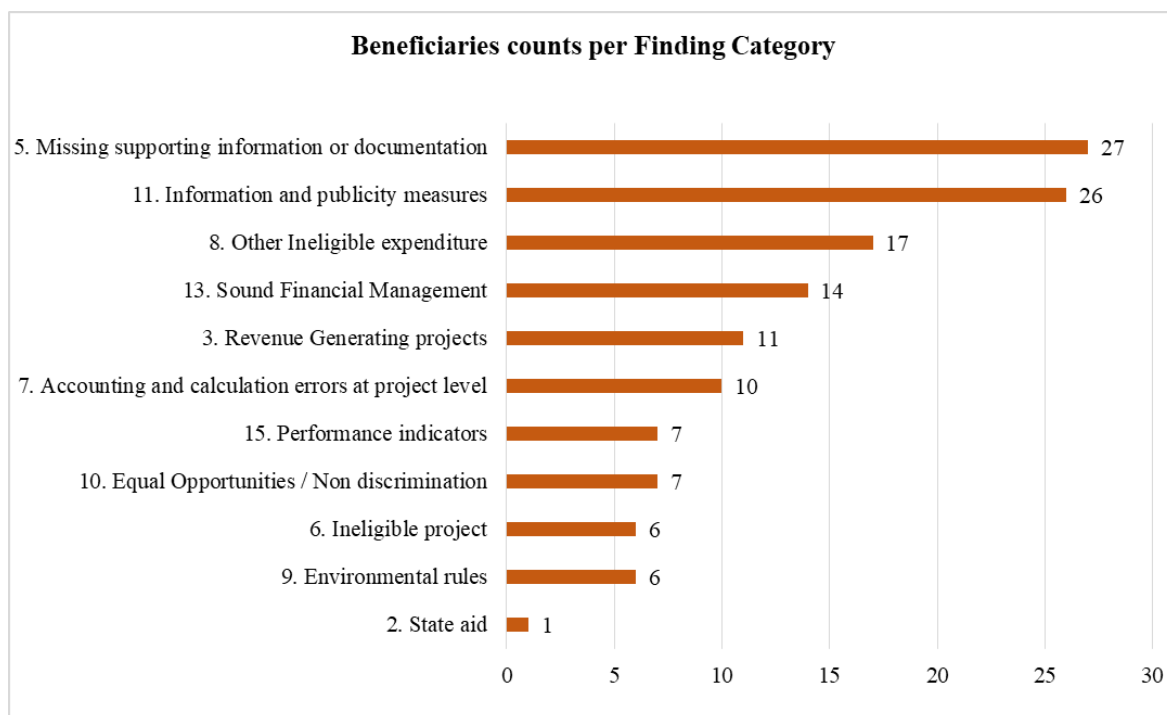


Figure C.8 Number of Findings per Category in each Theme

Five (5) beneficiaries out of 40 have the highest number of findings (more than 10), which is distributed as shown in the next table. It can be noted that all of them have findings of the three top finding categories mentioned above.

Category	Beneficiary s/n	1	2	3	4	5
State aid		0	0	0	0	0
Revenue Generating projects		0	0	0	0	0
Missing supporting information or documentation		3	4	5	6	3
Ineligible project		0	0	1	0	0
Accounting and calculation errors at project level		0	0	0	0	0
Other Ineligible expenditure		5	2	6	1	3
Environmental rules		0	1	0	0	0
Equal Opportunities / Non discrimination		3	1	0	1	0
Information and publicity measures		2	2	4	2	3
Sound Financial Management		0	1	1	3	3
Performance indicators		0	1	0	0	0
Total		13	12	17	13	12

Table C.1 Beneficiaries with the most findings

Finding Category – Applicable procedure

The following bar chart shows in each finding category, the number of findings that concern operations where the applicable procedure was above the EU thresholds or below the EU thresholds or implementation by own resources. The data show that

- The projects implemented by own resources have mostly findings about missing information and not very serious findings from the other categories
- The operations above EU thresholds have findings of all, but not special differences against the operations below EU thresholds, especially taking into account the fact that the first are many more.

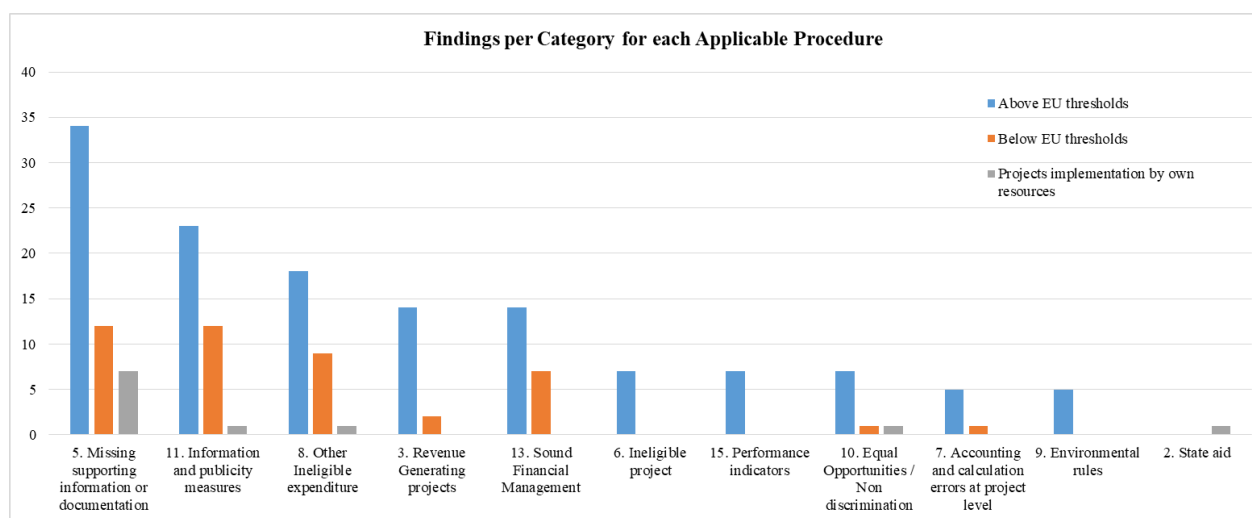


Figure C.9 Number of Findings per Category and Applicable Procedure

Finding Category – Contract award type

The following bar chart shows the number of findings per finding category in each contract award type. It turns out that in the open procedures, almost all of the finding categories are detected, and mostly findings about missing information, other ineligible expenditure, sound financial management and publicity measures.

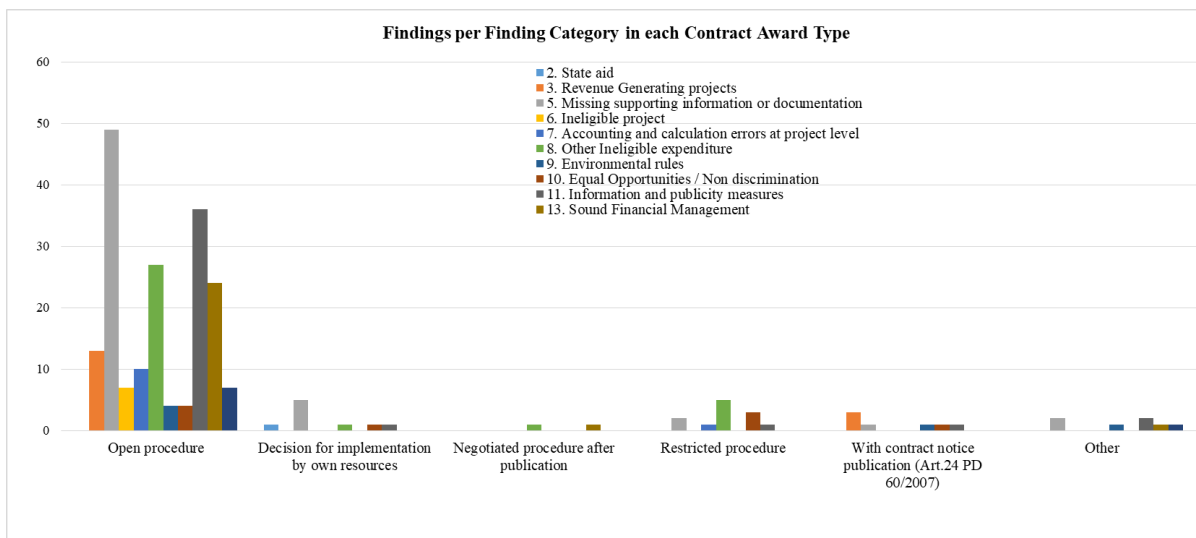


Figure C.10 Findings per Finding Category in each Contract Award Type

Finding Category – Theme

The next bar charts show that most of the findings of the objective 3 are related to the themes:

- 3.1 Compliance with obligations regarding the physical implementation of the public contract and
- 3.7 Compliance with the Beneficiary's obligations regarding the funding of the operation.

Most of the findings are related to the finding category '5. Missing supporting information or documentation'.

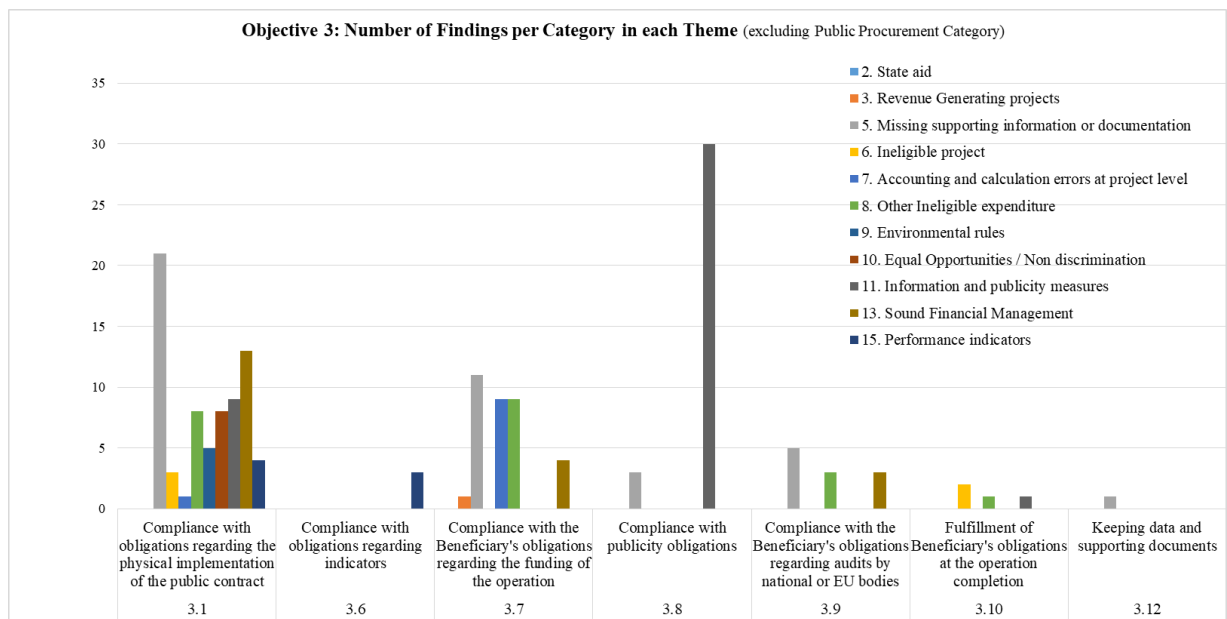


Figure C.11 Number of Findings per Category in each Theme of Objective 3

Author's Statement:

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