

*Research paper*

## **Research in accounting: the case of Portuguese polytechnic higher education**

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### **Abstract**

**Purpose** - This study aims to analyse the academic research in accounting, conducted in Portugal in recent years. The main goal is to identify past trends and future research opportunities. The focus is on Portuguese polytechnic higher education because is where are most accounting graduations and post-graduations.

**Design/methodology/approach** - Based on bibliometric techniques, the study was carried out through the collection of information on master's dissertations and applied research projects. The data was collected in the repositories of public polytechnic higher education institutions in Portugal that offer master's degrees, in accounting and management.

**Findings** - Applied research projects are few compared with dissertations. The major research approach is qualitative and most of the studies used document or content analysis. Most of the studies used the traditional research methods, in detriment of the innovative ones, as experimental studies. Financial accounting is the main area of investigation for the private and non-profit sector, but cost and management accounting is the main area for the public sector.

**Originality/value** - The relevance of this research is to outline a general profile of scientific research on accounting, providing historical and statistical data for the strengthening of the studies in this field of knowledge.

**Keywords:** research, accounting, polytechnic higher education, bibliometric analysis

### **1. Introduction**

For economic development, knowledge represents an important factor of success. Drucker (2003) refers that knowledge was rapidly transforming into a single factor of production, making less important both capital and labour. In fact, without knowledge we cannot respond to current economic and social demands. According to Bontis

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(2011), the pressure to keep up with innovations and discoveries is a direct reflection of how fast knowledge is changing. Thus, there is a constant search for knowledge, which is why we are currently talking about the 'knowledge society'. This knowledge can be achieved in a variety of ways, especially through advanced training, either through master or doctoral courses. In this field, higher education institutions (HEIs) play an important role in transmitting knowledge and developing it.

According to Puukka and Marmolejo (2008, cited by Lucas et al., 2017), since the HEIs are one of the main sources of knowledge, science, and innovation, they are required to contribute to economic development. As such, if the mission of higher education was initially directed to education and training, and also to research, with the growing economic value of science, currently it has also the mission of collaborating and developing services to respond to broader needs of society (Lucas et al., 2017).

Currently, in Portugal, there is a wide range of knowledge supply through a binary system (Urbano, 2011) of qualified higher education, which includes the university system and the polytechnic system, the latter of a more practical nature. This study is centred on research in polytechnic higher education. We understand that the importance of these HEIs comes from their own mission of overcoming both social and regional asymmetries, revealing concern for growth and social development (Ferreira, 2014). According to Urbano (2011), polytechnic education has allowed the adequacy of the materials and methodologies to different social and professional groups, with a more practical intention. In fact, polytechnic higher education plays an important role in the economic and social progress of the regions where it is placed, in particular through the provision of knowledge and competences, which enable the strengthening of the capacity for intervention of human capital in society, also responding to the new demands in terms of the labour market.

Currently, the higher education network in Portugal is very dispersed, having at least one institution in each district headquarters, highlighting a wider range of formative offerings in the regions of Porto and Lisbon. Among the formative offerings, we highlight courses directed to the accounting practice and investigation, the aim of analysis in this work.

Accounting has played an important role in the contemporary organizations, meeting its primary objective of providing information for decision-making. However, in a constantly changing environment, nationally and internationally, accounting has been the subject of constant changes and updates in view of current informational needs. Such amendments also result from a process of harmonisation of accounting carried out by the European Union and which Portugal must accompany. Thus, research in accounting has become fundamental as an instrument for updating and obtaining new knowledge essential to management.

As Silva (2002) says, the awakening of scientific research in accounting is occurring at an increasingly speed. This research should be understood as a creative and systematic activity carried out to increase scientific knowledge to produce new ideas and applications.

In view of the above, the primary objective of this work is to carry out a bibliometric study to identify existing scientific research and future research opportunities, in this area of knowledge. We intend to identify the general area of investigation; sector where the study was conducted; the year in which the investigation was carried out; geographical location of the institution; most commonly used methodological

approaches (research and data collection methods), among other aspects. We consider that this paper will be essential, both for academic and business.

The relevance of this research is to outline a general profile of scientific research on accounting, providing historical and statistical data for the strengthening of studies in this field of knowledge. We believe that this is a useful study for the academic community, specifically to detect research gaps in certain areas.

In view of these objectives, this work is structured as follows: initially we present a background of the importance of accounting for organizations and a review of bibliometric studies carried out on this thematic; subsequently, we present the methodology that guide the research and the main results obtained; finally, on conclusion, we highlight the final considerations, study limitations and suggestions for future research.

## **2. Background**

In an increasingly competitive market, based on a constantly changing environment, the existence of information for decision-making has become a source of competitive advantage for organizations.

According to Rosa (2004), having information, using it clearly and incorporated in the organization's management process, is the basis for making decisions in the contemporary context.

The constant change on organizations, accompanied by the demands and complexity of the market, implies the making of strategic decisions and the demand for more financial information oriented towards decision-making. However, as Teixeira (2009) points out, information is a decision-making support, and, at the same time, the environment of that decision, which makes it a resource and an instrument of change. Within an organisation, and for the decision-making process, managers need various types of information, including accounting information.

According to Teixeira (2009, p. 21, quoting Caiado, 1999), an "information system should: Support the accomplishment of the goals of the organization; Be able to meet the needs of the various levels of management of the organization; Provide consistent information for the entire organization; Be able to survive organizational and management changes; Be deployed by subsystems within a total information architecture."

Thus, accounting emerges, within organizations, as the source of information for decision-making. It is usually said that accounting is a system of information for management. According to Teixeira (2009), the accounting information system is "the" information system. It is a system because it is a set of related parts (Guimarães and Évora, 2004); and, it is an information system to the extent that starts from the data, quantifying it and registering it, providing financial, economic and patrimonial information, through its outputs (the financial statements).

Also, technologies play an important role in the development of information systems, while also ensuring greater their effectiveness. In addition to an information system for management, many authors consider accounting as a science with their own techniques and methods. Also, Gonçalves da Silva (1969, cited by Monteiro, 2013, p. 23) thus considers accounting, noting that accounting, in a broad sense, is seen as the science of the descriptive-quantitative processes used in the analysis, registration, interpretation and control of management facts.

The very strategic management of organizations is based on the possibility of analyzing their past and present situation so that they can define future objectives. For this, accounting plays an important role in providing this historical information (retrospective analysis) and in developing a future perspective of the entity (prospective analysis), allowing to make inferences about future tendencies (Rosa, 2004). But the information provided by the science of accounting is not only considered for internal decision-making, but also for decisions outside the organization itself, providing to international institutions and all stakeholders, macro and microeconomics data, so that they can form their opinions and make decisions (Gonçalves, Santos, Rodrigo, and Fernandes, 2015). As such, accounting currently plays an important role in the decision-making process of organizations, indispensable to its current and future functioning, as well as its continuity.

The scientific basis of accounting is in the possibility of predicting the effects generated by the property's phenomena, obtained from its analysis, comparison, and interpretation (Franco, 1997).

As Fonseca (2009) points out, in the field of accounting as a science, what matters is the knowledge of what is recorded, the type of phenomenon that is recorded, its meaning and the use of it.

As stated by Coliath (2014), the existence of accounting dates to the beginning of civilization, but the scientific period of accounting began in the 15th century, with the emergence of the work of Luca Pacioli, which introduces the digraphic method within the accounting. The creation of this method was the response provided by accounting to the problems of that time faced by management. However, Oltramari (2015) calls this period pre-scientific, considering that the scientific period began with the structuring of accounting doctrines in the first half of the 19th century.

Sometimes accounting is mistaken for an exact science, based on a patrimonial equation, but mathematics is only used in accounting to quantify values. Accounting is considered a social science because it studies the behaviour of values that are part of the patrimony, in the face of human actions (Megale, 1990; Rosa, 2004; Coliath, 2014).

In the point of view of Tesche et al. (2009), accounting is a social science and its object is the assets (and its variations) of any organization, both qualitatively and quantitatively. Coliath (2014) adds that, as a social science, the social relations and practices of accounting are necessary as an instrument of accountability for interpretation, use and application in society.

Being the accounting integrated in the social sciences, and since these investigate the facts that exist in the real world, it is important to define a method that allows access to this reality, in addition to the mere observation obtained by common sense (Farias and Farias, 2014). Accounting plays an important role here, as, using its own methods, it allows to measure the reality that goes beyond mere observation. Thus, according to Coliath (2014), when classified as a social science, accounting serves as a measuring instrument (quantitative aspect) and of mediation (qualitative aspect) of human and social relations, directly affected by the provision of accounts in the various sectors of society. This same author adds that accounting is considered an indispensable tool for economic control and an area of useful knowledge for the development of society.

The research in accounting initially was based on concepts, doctrines and models, developed by great thinkers of accounting, which substantiated the thought of those who elaborated the norms/regulations, but which did not explain the accounting phenomena.

The initial view of the accounting investigation was associated with the mere measurement of profit (Farias and Farias, 2014).

However, since the 1970's years the objective of accounting has widened beyond the mere measurement of the profit of companies. Research focused on a vision based on the decision-making of financial information users, developing empirical methods, which led, from the decade of 1980's, to the development of positive research in accounting (Farias and Farias, 2014), whose objective was already directed in explaining accounting practices.

Vendramin and Araújo (2016) considers that the evolution of the research is evident, using positive accounting, which mainly covers the areas of financial accounting and capital markets. Currently, accounting research is diverse, and encompasses several accounting branches and several scientific theories in accounting.

Santiago et al. (2006) carried out a study, with Portuguese data, to challenge the assumption that much of the research tended to assume that the new push on research on management was both universal and irreversible. They conclude that "while elements of the new managerialism are clearly evident in the perceptions and attitudes of academics in charge of the basic academic units (departments/schools and faculties) in the country's universities and polytechnics, academic management remains faced with a complex, contradictory and conflicting set of demands and expectations which is likely to take a considerable time to resolve" (Santiago et al., 2006, p. 215).

The research in accounting, made in higher education system, is also a reflection of the public that attends such system (students and young researchers that are still in post-degree programmes). Sá et al. (2011) investigate how students choose the higher education institution, establishing the link between subsystem choice and home leaving decision. The results indicated that choice is influenced by gender, socio-economic background, and accessibility. When it comes to the leaving home decision, the higher the income group and the higher the parents' literacy, the more likely students stayed at home. Students with strong preferences over leisure activities tended to leave home to attend higher education. Teixeira et al. (2012) consider that an expansion of higher education systems has been linked with increasing diversification. That diversification is explained for a more diverse student population and multiple regional, social, and economic requirements.

To display the state of the art on bibliometric studies, in accounting research, Table 1 presents a summary of some bibliometric studies developed by different authors in the area. We highlight the purpose and conclusions of that studies.

**Table 1. Bibliometric studies.**

<b>Author(s)</b>	<b>Purpose</b>	<b>Conclusions</b>
Chung, Pak and Cox (1992)	It examines whether there is any regularity in the publication pattern among accounting investigators.	The empirical results show that there is a strong bibliometric regularity in the accounting literature. Seven postgraduate programs are responsible for more than one third of the most prolific authors, indicating a strong institutional domain in the production of accounting literature.
Cardoso, Neto, Riccio and Sakata (2005)	It analyses the distribution, methodology, evolution and thematic of scientific publications in accounting, as well as the production of its authors, between 1990 to 2003, in Brazil.	From the total of 2,037 articles published in this period, 60 were identified as accounting, and São Paulo was the state with the highest number of articles published. They found that the number of authors with a single publication is higher than that indicated by the literature.

Author(s)	Purpose	Conclusions
Ensslin and Silva (2008)	It analyses the articles published in the annals of the University of São Paulo's (USP) conferences of controllership and accounting and scientific initiation in accounting (2004) and compares them with the production of the conferences of the Santa Catarina's Federal University (UFSC) of controllership and finance and scientific initiation in accounting (2007), both in Brazil.	Empirical-theoretical studies prevail; Brazilian national references stand out; Books are the most referenced works; There are too many authors for articles at the UFSC Congresses; Most authors have post-graduation; Most authors belong to the northeast, southeast and southern regions of Brazil; The Higher Education Institution (HEI) with the highest participation of authors are UFSC, USP and Pernambuco Federal University (UFPE); The topic of management accounting is the most explored by the authors.
Rosenstreich and Wooliscroft (2009)	It explores alternatives to assessing the impact of accounting journals based on quantitative measures as a complement to peer review-based evaluation.	Google Scholar has broader coverage of accounting citations than Scopus or Web of Science databases. The use of the G-Index to classify the journals is considered a useful innovation in the analysis of quotations, allowing a more robust evaluation of the impact of the journals.
Avelar, Santos, Ribeiro and Oliveira (2012)	It analyses the characteristics of empirical research in accounting published in the main Brazilian journals of the area in the period from 2000 to 2009.	There is a continuous and clear tendency to increase the number of articles published over time; The number of articles in financial accounting is far superior to those of other areas; There is a growing predominance in articles that use a quantitative approach; The main methods used for data collection were: documentary research and external data bases.
Ribeiro (2012)	It contributes to the systematization of knowledge about the profile of research in accounting in Europe, through the development of an empirical study of all articles published in the <i>European Accounting Review</i> , in the period 2007 to 2011.	The research in accounting in Europe results in articles whose main theme is financial accounting, is carried out by male authors in most and who carry out their research in a collective way. Europe had a higher share of participation with prominence for the United Kingdom, which was the country that contributed the most. In relation to the methodology adopted, empirical studies represent most investigations, using the existing databases as the main resource.
Ribeiro (2013)	It studies the academic production of the <i>Revista Contemporânea de Contabilidade</i> during the period 2004 to 2012.	Predominance of articles in partnership; Finding that the HEIs UFSC and USP were the most productive and that cost accounting; teaching and research; environmental accounting; corporate governance; and organizational performance were the most addressed topics.
Silva and Zuccolotto (2014)	It evaluates the scientific production in accounting theory, published in the <i>Revista de Contabilidade e Finanças</i> (RCF), of the Faculty of Economics and Administration of the University of São Paulo (FEA/USP), from 2001 to 2010.	It increased the number of articles with positive approach in the last years analysed, but normative studies are predominant in the period; The authors privileged the empirical studies, with a marked use of statistical tools; The authors favoured the consultation of international journals, national and international books and research on national dissertations and theses.
Saraiva, Silva, Conceição and Lopes (2016)	Performs a bibliometric analysis on the scientific production in accounting of the Latin American meeting of the University Vale do Paraíba	The results showed a low scientific production by students of the accounting sciences courses. It concluded that the adherence of the accounting sciences course to scientific production is low, in relation to the universe of students enrolled in

Author(s)	Purpose	Conclusions
	(UNIVAP) from Brazil.	recent years.
Pedroni, Guerrazi, Serra and Albanese (2016)	It examines research in accounting over the last two decades, in six academic journals of accounting between 1995 and 2014, identifying the relevant articles (most cited) and recognizing knowledge groups in accounting by exploring the intellectual structure of the discipline.	As a result of the analysis, are individualized the 56 most cited publications, distinguishing five groups of knowledge in accounting (results management, disclosure, financial statements and capital markets, corporate government, and cost of capital).
Bujaki and Mcconomy (2017)	It evaluates the productivity of Canadian accounting investigators in accounting journals from 2001 to 2013.	Each member of the Faculty of Canada had approximately 0.50 of a weighted article for the period of 13 years, and 45% of all accounting faculty members had published at least once in one of the top ten accounting journals. Women are less likely to be represented in the lists of those who have more publications in accounting journals.
Ribeiro (2017)	It analyses the profile and growth pattern of the academic production of bibliometric articles, in magazines in administration, accounting and tourism, during the period from 1999 to 2013.	Journals of contemporary administration and business administration were the most productive. There was a growth of bibliometric studies from 2007 onwards. Low density of co-authorship and low HEI's network were observed. The topics: teaching and research in accounting, scientific methodology, teaching and research in administration, strategy, accounting, management accounting, entrepreneurship, controllership, cost management, people management and marketing, were the most published in 15 years of studies.
Rodrigues and Ferreira (2018)	Bibliometric analysis of 258 articles published in 2016 and 2017, on accounting and public management, in three specialty journals, seeking to identify: sector, research areas, country of affiliation of the authors, location of the research, methodologies and theories of support.	Prevalence both of European researchers (mainly from the United Kingdom), and from the place where research is concentrated (European continent). A large part of the articles uses the case study, supported by radical/alternative theories. Public accounting was the area that aroused the most interest to researchers.

**Source: own elaboration.**

As we can see, the bibliometric studies presented are general, and not in any specific area of accounting. From the studies in table 1, we also found that most of them employ the quantitative approach and exploit databases to information collection.

### 3. Methods and Data

The study carried out is characterized by being exploratory, as it aims to become familiar with the object of study or get a new insight of it (Cervo et al., 2007) and descriptive, in the measure in which it seeks to describe the characteristics of scientific publications (Richardson, 1999). As for data collection methods, the study is characterized as bibliographic and documentary, as it presents secondary data, that is, data already published and available for consultation (Prodanov and Freitas, 2013). In addition, the bibliometric research method with qualitative and quantitative analysis was adopted to obtain an overview of the scientific production carried out.

To accomplish the objectives of this study, we conducted a bibliometric analysis consisting of the application of statistical and mathematical methods for the establishment of indicators on the scientific information of a given area, by enabling a quantitative analysis of the information (Araújo, 2006).

According to Yoshida (2010), the bibliometric study is a methodology for the calculation of bibliographical content. That is, it does not analyse the content of the publications, but rather the number of times the investigated terms appear in the publications or the amount of publications that include the terms searched.

Bibliometrics are based on the analysis of historical data from: conceptual maps, publications, words, citations, cited references, co-citations, phrases, and authorships. This assists in the identification of unstructured patterns that contribute to decision making (Daim et al., 2006; Yoshida, 2010). Thus, it is concerned with the measurement, dissemination and use of information of scientific production (Macias-Chapula, 1998; Richardson, 1999; Vanti, 2002; Cooper and Schindler, 2003; Martins and Theóphilo, 2009).

The relevance of the bibliometric analysis is the rationale for the choice of this method. The literature review is a determinant factor in a research, as this is essential the application of objective method and instrument that assists the review (Tranfield et al., 2003; Yoshida, 2010). Thus, we read the abstract of the work to be analysed, since it usually presents, simply and succinctly, a synthesis of the research objective, the methodology used, and the main conclusions obtained.

As we intend to analyse the state of research, data collection focused on information on dissertations/master's projects available in the electronic repositories of the Portuguese polytechnic public HEI that offer master's degrees.

In a first phase, we investigate data from the General Directorate of Higher Education (DGES) in October 2018, to identify the public HEIs that offer master's degrees in the areas of accounting and management. We decided to include the area of management because we have observed that there is a significant number of master's dissertations/projects in accounting that result from masters in the scientific area of management. We opted for public education because it is the prevalent in Portugal. Given the number of studies found in polytechnic and university education, we opted only for those of polytechnic education.

In a second phase, we consulted the repositories of all public polytechnic education institutions (some institutions have their own institutional repository and others are sent to the scientific repository of open access of Portugal (RCAAP)) to identify the dissertations/projects carried out in the accounting area, having used as a research word the expression "accounting" (in Portuguese and in English) to categorize the information. We chose not to consider the internship reports performed in the course of the masters because, most of them, focus more on the description of the tasks performed in the internship, notably for access to the Order of Certified Accountants, and not so much in a topic of concrete research.

We decided to reduce the study to a five years period (2013-2017) due to the high number of existing publications on the subject. This research resulted in 268 documents: 244 dissertations and 24 applied research projects. Table 2 summarizes how the search occurred.

**Table 2. Operationalization of the research.**

<b>Database</b>	Polytechnic HEIs with master’s degrees in the areas of accounting and management (25 institutions; no polytechnic HEIs were identified in the autonomous regions of Madeira and the Azores.)
<b>Used keywords</b>	“Contabilidade” and Accounting
<b>Delimitation</b>	Present in the topic (title, abstract, keywords)
<b>Filter 1 (Time period)</b>	2013-2017
<b>General result (includes master’s dissertations/projects)</b>	268 documents (244 dissertations and 24 projects)

**Source: own elaboration based on research data**

In a third phase, we proceeded to read and analyse the information available in the title and in the abstract (when we could not obtain the information in the abstract, we used to analyze the respective dissertation/project, whose access, generally, was open) of each master's dissertation/project, identifying a set of variables capable of delineating an outline of the research in the subject of study: the general characterization of the studies (number of dissertations/projects per year; geographic location), methodological procedures (research technique and data collection methods), the most studied thematic areas and the sector analysed.

The collected data were treated using descriptive statistics, which allows to visualize, quantitatively, the absolute and relative frequency of the data collected based on the previously established categories.

#### 4. Results

At this point we will carry out a descriptive analysis of the results obtained to withdraw the main conclusions regarding the objectives outlined for this work.

Regarding the number of dissertations and applied research projects in the analysed period (table 3), it was possible to observe some regularity in its number over the years, except for the year 2015 that presented a higher percentage of works (representing 27.24% of total). These data demonstrate the interest in conducting research in the field of accounting over the years as a tool to support decision-making.

It should be noted that almost all works present the nature/classification of dissertation (244 works) and that only 24 works relate to applied research projects. Also, the weight of projects on the overall works was 5.17%, in 2013; had some growth in 2014 and, next, stabilized around 9% in 2015-2017. We understand that there should be a greater number of research projects applied in view of the characteristics of polytechnic higher education, namely its more practical nature, compared to university education.

**Table 3. Number of dissertations/projects in the period 2013-2017.**

Year	Number of dissertations	Number of projects	Total	%
2017	40	4	44	16.42
2016	37	4	41	15.30
2015	66	7	73	27.24
2014	46	6	52	19.40
2013	55	3	58	21.64
<b>Total</b>	<b>244</b>	<b>24</b>	<b>268</b>	<b>100</b>

**Source: own elaboration based on research data**

As expected, most of the works (159 works) are concentrated on the HEIs more directed to the teaching of accounting, namely in the Higher Institutes of Accounting and Administration of Lisbon (ISCAL), Oporto (ISCAP), Aveiro (ISCAA) and Coimbra (ISCAC) (Table 4).

**Table 4. Scientific area of the HEI.**

Area of the HEI	Number of dissertations/projects	%
Accounting (4 HEIs)	159	59.33
Management and other areas (21 HEIs)	109	40.67
<b>Total</b>	<b>268</b>	<b>100</b>

**Source: own elaboration based on research data**

Table 5 shows the main research approach used. We verified that there is a preference for qualitative studies (53.73%). Although there is a predominance of qualitative research, it is observed that quantitative studies are also frequent, since they were verified in 31.72% of the works. The study of Avelar et al. (2012) reveals that there is a growing predominance in articles that use a quantitative approach. In the other hand, the study carried out by Rodrigues and Ferreira (2018) concludes that a significant number of articles uses a qualitative approach, particularly the case study.

We also observed that only 14.55% of the works use both research approaches (qualitative and quantitative).

**Table 5. Research approach.**

Approach	Number of dissertations/projects	%
Qualitative	144	53.73
Quantitative	85	31.72
Both	39	14.55
<b>Total</b>	<b>268</b>	<b>100</b>

**Source: own elaboration based on research data**

Regarding the data collection methods used (table 6), it was possible to observe the predominance of documentary and content analysis (51.68%), similarly to the study conducted by Avelar et al. (2012), followed by interviews (19.88%) and questionnaires (16.51%). Only 2.45% of the dissertations relate to studies exclusively reviewing the scientific literature. There is a single experimental study. The methods of data collection in qualitative studies, particularly in case studies, are essentially content analysis (the financial statements) and the interviews with the management and other collaborators of the organizations. Concerning the research methods that are used in the different researches and projects, in table 7, we see that most of the qualitative works (85.42%) uses interviews (27 works) or document/content analysis (59 works) or a mix of methods (37 works). The quantitative studies use mainly questionnaires (32 works) or document/content analysis (47 works), which represents 92.94%. It should be noted that many studies opted for the triangulation for data collection purposes, that is, they presented more than one method of data collection (17.91%).

**Table 6. Data collection methods.**

Method	Number of dissertations/projects	%
Questionnaire	54	16.51
Interview	65	19.88
Direct/Participant Observation	30	9.17
Document /Content Analysis	169	51.68
Literature Review	8	2.45
Experimental study	1	0.31
<b>Total</b>	<b>327</b>	<b>100</b>

Source: own elaboration based on research data

**Table 7. Data collection methods vs. Research Approach.**

Method \ Research Approach	Qualitative	Quantitative	Both
Questionnaire	9	32	3
Interview	27	1	0
Direct/Participant Observation	4	2	0
Document /Content Analysis	59	47	28
Literature Review	7	0	0
Experimental study	1	0	0
Mix of methods	37	3	8
<b>Total</b>	<b>144</b>	<b>85</b>	<b>39</b>

Source: own elaboration based on research data

About the area of accounting where the investigation is inserted and the sectors studied (table 8), we found that the dissertations/projects essentially focus on the area of general or financial accounting (46.64%), like the studies carried out by Avelar et al. (2012) and Ribeiro (2012), and the area of cost and management accounting (36.19%). Although we consider that two branches of accounting are different, we chose to join cost accounting with management accounting in view of the confusion that still exists in the literature in the separation of the two areas. The remaining works were carried out in the context of environmental accounting and social responsibility (8.96%) (we opted for the inclusion of these two areas in view of their correlation) and public accounting (4.85%). Notwithstanding the importance of continuing to develop investigations in the areas of financial accounting and cost and management, we understand, in view of the results obtained, that there are gaps in the level of research in the other areas. It would be important the expansion of work in less investigated areas, in concrete, in the area of public accounting. It should be noted that some studies have not been identified with a specific area (3.36%), for example, studies concerning the importance of gender in the profession of accountants or the so-called "creative accounting".

Regarding the sectors studied, we decided to separate the work in the private sector, the public sector, and the non-profit sector. We observed that the studies were conducted essentially addressing data from organizations belonging to the private sector of the economy, with a total of 205 dissertations/projects (76.50%). Few studies have been conducted in public sector organizations (with a total of 46 dissertations/projects) and non-profit (with a total of 17 dissertations/projects), which may constitute an opportunity for future investigation.

Crossing both areas of investigation and sectors studied, we found some differences. The financial accounting is the main area of investigation both for private and non-profit sectors. For the public sector, the principal area of investigation is cost and management accounting.

**Table 8. Area of investigation vs. sectors studied.**

<b>Area of Investigation \ Sectors studied</b>	<b>Non profit</b>	<b>Private</b>	<b>Public</b>	<b>Total</b>	<b>%</b>
<b>Financial accounting</b>	11	105	9	<b>125</b>	<b>46.64</b>
<b>Cost and management accounting</b>	6	69	22	<b>97</b>	<b>36.19</b>
<b>Environmental accounting and social responsibility</b>	-----	23	1	<b>24</b>	<b>8.96</b>
<b>Public accounting</b>	-----	-----	13	<b>13</b>	<b>4.85</b>
<b>No specific area</b>	-----	8	1	<b>9</b>	<b>3.36</b>
<b>Total</b>	<b>17</b>	<b>205</b>	<b>46</b>	<b>268</b>	<b>----</b>
<b>%</b>	<b>6.34</b>	<b>76.50</b>	<b>17.16</b>	<b>----</b>	<b>100</b>

**Source: own elaboration based on research data**

## 5. Discussion

As we had the opportunity to analyse throughout the present work, accounting, as a science, is fundamental in the decision-making process of organizations, by providing information for internal and external decision making. Given its importance, research in accounting has increased recently, since it is a fundamental element in the current knowledge society.

The use of bibliometric studies in the area of accounting is increasingly occupying an important role in accounting research, allowing to easily identify various elements of research (such as magazines, information sources, authors, research topics and approaches, research sectors, years of research, entities, among other things) and detect gaps that may possibly exist in the research process and which may be the subject of improvement and future research.

The present work analysed, through a bibliometric study, research in accounting developed in polytechnic public higher education in Portugal in the 2013-2017 period.

From the bibliometric study carried out it was possible to observe some regularity in the number of studies developed in the last five years and that most of the master's dissertations/projects of the higher polytechnical institutions in Portugal are framed in the area of financial accounting, followed by the area of cost and management accounting; The works mostly follow a qualitative research and research approach; They mainly rely on documentary and content analysis as a method of data collection; and they are expressively about organizations belonging to the private sector of the economy. These results point to the need to undertake further investigations in public accounting and in the public sector. Also, the percentage of applied research projects is still low, despite a slight increase during the 2013-2017 period.

The main limitations of the study are that it only analyses master's dissertations/projects defended in Portuguese public polytechnic HEIs (with information available in the respective scientific repositories or in the RCAAP), and the filters used, namely the time period (which has been restricted to five years). It is also important to emphasize that we only consider master's degrees in the area of accounting and management, and, as such, there may be dissertations/projects carried out about accounting developed in master's degrees not included in this study. It is also important to highlight the fact that, in many cases, researchers and academics do not display their work in the scientific repositories.

For future investigations may be included public universities, as well as the remaining private HEIs and widen the temporal horizon (in the study carried out, the time horizon concerns the period from 2013 to 2017, therefore an update would enrich the research). It is also intended to broaden the research: to other sources, such as books and book

chapters, articles published in scientific journals, communications presented at congresses/conferences; to analyse other variables, such as the author's gender, the support theory for research and discussion of results, the most investigated subthemes within each general area of research; and to specify the type of organization studied within each sector, among others. In addition, and to have a more accurate perspective about the research developed by teachers and researchers from Polytechnic institutions, the analysis would have to be carried out including author metrics and author impact analyses. Since the study analysed courses in the area of accounting and in the area of management, it would also be interesting to divide the studies according to the master's course.

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