Teaching sustainable development in business sciences degrees: evidence from Portugal

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Abstract

Purpose – This paper aims to analyze the current state of integration of sustainable development (SD), in the academic curricula of Business Sciences degrees, including matters about Ethics, Corporate Social Responsibility and Sustainability. In this way, the paper explores how Portuguese public higher education institutions (HEI) contribute to teaching about sustainable development (TSD).

Design/methodology/approach – The study focuses on Business Sciences degrees. The webpages of all public HEI with BSc and MSc degrees in those areas in Portugal were analyzed, to obtain curricular plans and syllabus. Content analysis was performed on each of these elements of Accounting and Taxation and Management and Business Administration courses.

Findings – There is already some concern about addressing SD in Business Sciences, inasmuch as SD-related topics are taught in Accounting and Taxation and in Management and Business Administration degrees and courses. However, the analysis shows that TSD was integrated into the academic curricula in only 95 degrees (48.5%). Additionally, in these, there are only 79 compulsory curricular units that address this theme. Given the fact that the subject of SD is increasingly relevant, the paper evidence still much room for improvement, indicating that TSD is yet a big challenge for HEI.

Originality/value – TSD is increasingly important because of the growing globalization that requires skilled professionals able to assess the complex and controversial issues related to the topic, to achieve and implement the SD goals in 2030. The literature evidence lack of studies addressing the integration of the SD

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theme in academic curricula. This paper makes here a contribution by showing what HEI is teaching in the area of business studies. It also brings good implications for society, while showing that sustainability content is becoming more apparent within certain HEI courses. This could be used to create follow up research on what type of sustainability content is being included within the courses and the learning that is happening in students in regard to this sustainability content.

Keywords Sustainable development, Teaching, Education, HEI, Academic curricula, Business sciences, Portugal

Paper type Research paper

1. Introduction

At the beginning of the 1970s, the term "sustainable development (SD)" appeared in the initiative of the Club of Rome, with the publication of the book *The Limits of Growth* (Meadows *et al.*, 1974). From this period, the international interest in the role of higher education in promoting a sustainable world has increased considerably. For its part, the concept is fairly recent, bearing in mind that it only emerged in 1987 when the *Brundtland Report* was published. SD may be understood as the development that meets the needs of the present without compromising future generations, aiming at improving the living conditions of all, preserving the environment in the short and long term, aiming at an economically effective, socially equitable and ecologically sustainable world (UNDESA, 2002). SD has become, ever, as, one of the main concerns on a global scale, based on three pillars – environmental, social and economic – called the "Triple Bottom Line" (Elkington, 1998).

The World Summit on Sustainable Development held in Johannesburg in 2002 highlighted education as fundamental to SD and proposed the UN Decade of Education for Sustainable Development (UNESCO, 2005; Annan-Diab and Molinari, 2017). This proposal was approved and was established between 2005 and 2014. In doing so, the UN placed education at the heart of its strategy to promote SD, supporting initiatives such as the *Principles for Responsible Management Education* (PRME) and the *UNESCO Global Program of Action on Education for Sustainable Development*. As a result, degrees and academic curricula were globally reformed. The need to improve the capacity of educational systems for preparing society for SD was also highlighted in the report of the UN Conference on Sustainable Development held in 2012 (Rio + 20) (Filho *et al.*, 2015). Curricular reforms provide an opportunity to produce the desired changes in academic curricula and a natural basis for looking into existing practices and updating learning outcomes (Malkki and Paatero, 2015).

At the heart of the UN Agenda, 2030 are 17 sustainable development goals (SDG) [1] (UNESCO, 2017) unanimously approved by 193 UN Member States, meeting in the General Assembly, which demonstrates the ambition to achieve SD. One of these goals announced by the UN in September 2015 is to ensure that all students acquire the necessary knowledge and skills to promote SD, including, but not limited to, a comprehensive Education for Sustainable Development (ESD). ESD was designed to integrate SD principles and practices into all aspects of education and learning, namely, by encouraging changes in knowledge, values and attitudes and empowering students to promote the transition to sustainability, to ensure a more sustainable and fair society for all.

Both teachings about sustainable development (TSD) and education for sustainable development (ESD) are two important concepts related to SD learning that, though associated, are different. Gadotti (2008), quoted by Nishimura (2015), explains that TSD involves awareness, theoretical discussion, information and data about SD; ESD is broader

and includes many dimensions beyond teaching, research, practice and operations and involvement in society – it says how to use education as a means to build a more sustainable future, which involves setting the example for a sustainable life. Therefore, TSD implies integrating SD themes in curricula and syllabus, ultimately contributing to EDS.

This paper focuses on TSD. Given the relevance of teaching as a means to enhance ESD and achieve a sustainable future, it is important to analyze the contribution of HEI to SD, starting by understanding how they integrate into their degrees and courses, topics concerning Ethics, Corporate Social Responsibility and Sustainability. According to Ceulemans and De Prins (2010), SD topics may be incorporated into academic curricula using horizontal and vertical integration. Horizontal integration consists of the integration of the subject in the academic curricula; vertical integration can be understood as the organization of separate degrees related to a specific topic. This study addresses horizontal integration, as established by Figueiró and Raufflet (2015), Lambrechts *et al.* (2013) and Lozano *et al.* (2013). This research specifically aims to analyze the presence of SD subjects in the academic curricula of Business Sciences degrees in HEI in Portugal.

Several authors (Lozano, 2010; Burns, 2011; Watson *et al.*, 2013; Lozano *et al.*, 2017; Findler *et al.*, 2019; Olalla and Merino, 2019) argue that there is still a gap in the literature on the integration of SD in academic curricula. Therefore, this study makes here a contribution by showing what HEI is teaching in the area of Business Sciences, allowing to infer about the importance they allocate, hence their contribution, to TSD. The paper provides an overview of the general SD presence in Portuguese curricula. This can serve as a case for comparative assessment and policy, as a benchmark for further developments.

Existing research is predominantly dominated by case studies (Barth and Rieckmann, 2012; Taylor and Kraly, 2012; Colombo and Alves, 2017; Kolb *et al.*, 2017) and there is a lack of works aimed at informing about the current state of SD integration in teaching in different study programs (Lambrechts *et al.*, 2013). Several studies only look at postgraduate courses (Matten and Moon, 2004; Cornelius, *et al.*, 2007; Christensen *et al.*, 2009; Wu *et al.*, 2010; Godemann *et al.*, 2011) or only analyze MBA courses (Benn and Dunphy, 2009; Hesselbarth and Schaltegger, 2014); other studies only look at individual courses in engineering (Azapagic, *et al.*, 2005; Boks and Diehl, 2006; Aurandt and Butler, 2011; Bielefeldt, 2011; Malkki and Paatero, 2015; Colombo and Alves, 2017). This paper attempts to fill in this gap by expanding the scope of study comprising all courses, BSc and MSc, in the areas of Accounting and Taxation and Management and Business Administration, in polytechnics and universities, in one country. It brings a contribution showing, for the first time, what the 34 HEI in Portugal are teaching about SD in the field of business studies. Analyzing the current status on the TSD can be a starting point for redesigning academic curricula, and can benefit a number of institutional processes, from the creation and review of academic curricula to teaching and learning assessments.

Henceforth, the paper is divided into four sections. Section 2, the literature review, presents some important aspects that provide the theoretical framework for the empirical work to be developed, namely, concerning TSD overall and the role of HEI in TSD in Business Sciences degrees. Section 3 addresses methodological issues, starting by detailing the objectives and research questions and then describing the methodology for the sample and the gathering and processing of data. Section 4 presents and discusses the findings and, finally, Section 5 summarizes the conclusions and implications of the study.

2. Literature review

HEI seeks to incorporate SD principles into teaching and researching, practices and operations and involvement with society (Weybrecht, 2017). Although teaching SD issues in

HEI is considered a difficult task (Sethi, 1995; Ryan and Tilbury, 2013; Lozano *et al.*, 2017; Lovren *et al.*, 2020), the findings of Ramos *et al.* (2015) in the Portuguese context highlight that academic curricula are key to setting the results of ESD, reinforcing the importance of academic curricula as the main bases that provide a positive impact of sustainability on society. For these reasons, education has been increasingly emphasized as a means to achieve a sustainable future and there is a need to incorporate SD-related matters into academic curricula (Shriberg and Harris, 2012; Grace and Humphris, 2013; Lozano *et al.*, 2017; Creel and Paz, 2018). However, as verified by several authors (Thomas, 2005; Velazquez *et al.*, 2005; Taylor and Kraly, 2012; Xiong *et al.*, 2013; Ferreira and Blomfield, 2016; Antolin-Lopez and Garcia-de-Frutos, 2018), this process has been very slow.

Therefore, HEI faces a big challenge as they take on the mission of training professionals and supporting the development of organizations: on the one hand, responding to present and known needs and, on the other, opening the horizons for the future and new paradigms, helping to strike the balance between teaching and SD (Disterheft *et al.*, 2014; Weybrecht, 2017). In carrying out its function of creating, transmitting and disseminating knowledge under the three basic pillars of sustainability (environmental, social and economic) and considering the teaching dimension, HEI should seek to meet the needs of society by training citizens and multidisciplinary professionals, capable of planning and developing SD-related actions in their field of intervention (Junyent and Ciurana, 2008; Lourenço *et al.*, 2013; Purcell *et al.*, 2019). Also, according to Ramos (2009), HEI should direct their know-how toward the various sectors of activity, thus fostering the necessary market linkages.

2.1 Teaching about sustainable development

In recent decades, sustainability issues in HEI have attracted increasing levels of attention of the general public and policymakers, acknowledging there is a need for more comprehensive SD in academic curricula (PRME, 2018).

Increased globalization requires future professionals to assess complex and controversial SD-related issues. In addition, to preparing students for critical, reflective and autonomous thinking to better assess sustainability issues, TSD should foster the ability to work with stakeholders with distinct interests and value systems to meet common goals (Dale and Newman, 2005, quoted by Annan-Diab and Molinari, 2017).

The integration of TSD has become a key issue in public HEI, not only for differentiating them from other educational institutions but also for finding new ways of creating a kind of knowledge needed in a world characterized by turbulent and growing environmental change in society (Abu-Hola and Tareef, 2009).

As SD is considered to be an integral part of today's business strategy (Hall *et al.*, 2010; Kuckertz and Wagner, 2010; Kolb, *et al.*, 2017), there has been a shift in business strategy in recent years toward engaging SD for the benefit of stakeholders. These issues require the adoption of strategies that include the training of technical and ethical skills and qualifications to build awareness of companies, organizations and citizens. Creel and Paz (2018) explain that, if companies have adopted the "Triple Bottom Line," HEI needs to prepare students for thinking in these various dimensions, environmental, social and economic. Concerns with SD should be present in the educational process of future professionals. Furthermore, it is imperative that this subject is discussed and implemented extensively and in-depth in academic curricula, to ensure that students understand and can apply SD-related matters, such as Ethics, Corporate Social Responsibility and Sustainability, to their future professional life.

Taylor and Kraly (2012) explain that curricular enrichment is a method that can be used to achieve sustainability. Other authors (Sammalisto *et al.*, 2015; Velazquez *et al.*, 2005;

Watson *et al.*, 2013) support this idea and consider that an academic curriculum, in any degree of studies, must have a holistic view; therefore, it should consider SD contents, in the environmental, social and economic dimensions. Also, Abu-Hola and Tareef (2009) emphasize that the improvement of strategies of teaching and learning sustainability involves the integration of these topics in academic curricula.

Fernández *et al.* (2015) analyzed the implementation of sustainability practices in Spanish HEI, concluding that such implementation has been very slow and not significant and that one of the measures to be adopted for continuous improvement must be the integration of courses and academic curricula on SD. Xiong *et al.* (2013) concluded further that there is an urgent need to implement TSD in HEI, and there is still a lot of work to be done in this area. They also point to the need for more efforts to develop academic curricula that specifically address these issues.

Viegas *et al.* (2016) explain that the issue of curricular adaptation is seen as a limitation for changing "old sustainability visions that accommodate future vision" (p. 270). However, the authors argue for the need for SD topics to be discussed in HEI and applied extensively and in-depth, to ensure that students understand and can apply SD in their future professional life. The integration of TSD in higher education helps students to learn in a systemic and holistic way, demonstrating how these subjects can contribute to creating sustainable projects (Ceulemans and De Prins, 2010).

According to Godemann *et al.* (2011), TSD in HEI is a fairly recent practice. After some environmental, social and economic crises in recent years, several organizations have begun to consider the importance of SD issues for the survival of business and society, which leads to the need for teaching on this subject.

Despite the scarcity of literature about TSD, some studies can be found. For example, Xiong *et al.* (2013) analyze the implementation of a "green curriculum" in several areas of study, such as engineering, agriculture, forestry, medicine, education, art, ethics, economics, sports, languages and law, in various Chinese universities. The authors note that institutions located in underdeveloped areas are less concerned with environmental education than those in more developed areas. Also, Aurandt and Butler (2011) conducted a study based on three engineering courses, concluding that SD (environmental, social and economic) dimensions should be addressed simultaneously (and not separately). Other studies, in particular case studies, have been carried out. For example, Colombo and Alves (2017) analyzed how the issue of sustainability is taught in various engineering programs in a Portuguese public university; Taylor and Kraly (2012) carried out a similar study in HEI in the USA and the study by Watson *et al.* (2013) verified that there is an increased number of engineering HEI that incorporate sustainability into teaching.

Despite all authors corroborating the integration of TSD in academic curricula, it was overall acknowledged that curricular reforms are still needed, to improve SD education and raise students' awareness of the implications of their work for the environment and society. Accordingly, it is important to analyze the contribution of TSD, as a starting point to understand how SD is taught and how it can be improved (Malkki and Paatero, 2015). However, incorporating TSD into academic curricula, as an instrument that encourages individuals to reflect and act on environmental, social and economic challenges, is an increasingly complex task in different areas of knowledge (Sethi, 1995).

According to Filho (2017), in the mid-2000s the UN and the academic community recognized that future business leaders would have to play a critical role in tackling sustainability challenges. In response, the initiative "Principles for Responsible Management Education" (PRME) was launched in 2007 by the former UN Secretary-General, Ban Ki-moon. The PRME [2] aims to inspire and promote sustainability in higher

education in management areas. They are a way of implementing in HEI continuous improvement conducive to the development of a new generation of business leaders, capable of managing the complex challenges faced by companies and society in the 21st century.

The PRME initiative is a global call for HEI around the world to gradually adapt academic curricula, research, teaching methodologies and institutional strategies to new business challenges and opportunities (Greenberg *et al.*, 2017). The principles provide a basic framework for HEI and consist of global action to update program content, research and teaching methods of management schools and other academic institutions to meet the social realities and demands of the 21st century, by including social responsibility and sustainability values in the education of future managers.

The intention of UN programs to promote continuous improvement of educational management results from the need to train new business leaders who must be aware of the impacts of their choices at different levels (Fiates, 2012).

2.2 Teaching about sustainable development in business sciences – accounting and management

The demands of the labor market for cross-cutting, technical and behavioral skills are increasing. Employers are looking for professionals who are critical, qualified, skilled and able to deal with various types of problems.

As the PRME (2007) initiative states:

> It has become essential to understand the fundamental connections between business, the environment and society. The responsibility of business as a global force has become urgent, and concepts related to social responsibility and sustainability are recognized as essential elements in the conduct of business. Businesses need management tools that help integrate environmental, social and economic concerns into strategic planning and day-to-day operations. It requires professionals with skills that cannot only anticipate organizational goals and meet obligations for shareholders but also professionals prepared to deal with the impact and the broader potential of the business as a global positive force in society (PRME, 2007, p. 2).

According to Annan-Diab and Molinari (2017), business organizations, and therefore accounting and management areas, have been confronted with the need to process non-financial data. Gray (2010b) explains that the non-financial information disclosed by companies in most cases has little or nothing to do with sustainability. Aware of a company's role in generating profit but also in promoting SD (Gray, 2010a), accounting and management professionals should be prepared to determine the costs and benefits, identify and measure events and their positive and negative impacts and disseminate environmental, social and economic information (Jenkins, 2006; Boulianne, *et al.*, 2018).

Burritt and Schaltegger (2010) find that the process of changing the various types of accounting systems is progressive. According to Carvalho *et al.* (2014) and Sammalisto *et al.* (2015), in the business world, SD issues are still seen as an obstacle to economic development. However, many managers are trying to contribute to SD and need relevant and reliable information to support their decisions, namely, those concerning solving environmental, social and economic problems, while strengthening the competitive position of companies.

HEI degrees in Accounting and Taxation, and in Management and Business Administration, assume as a priority mission the training of future professionals who, in an autonomous or integrated way, reveal the ability to perform accounting, financial, administrative, management and taxation functions, inherent to the correct functioning of a company or any other organization, public or private. These activities should support decision-making and the setting up of assertive strategies, with positive repercussions for

the revitalization and growth of organizations (Burritt and Schaltegger, 2010; Boulianne, *et al.*, 2018). SD matters must have a central position is these strategies, hence becoming crucial for the future of business professionals.

Nevertheless, in the opinion of several authors (Thomas, 2005; Junyent and Ciurana, 2008; Walck, 2009; Wu *et al.*, 2010; Audebrand, 2010; Lourenço *et al.*, 2013; Xiong *et al.*, 2013; Botes *et al.*, 2014; Boulianne, *et al.*, 2018), the integration of TSD in the courses of Business Sciences has not gathered much support. Figueiró and Raufflet (2015) conclude, from their analysis to 63 papers on the topic, for the great need to include environmental, social and economic issues in higher education.

In the case of accounting, there is a need to reflect rigorously on how to better prepare and educate future accounting professionals (Creel and Paz, 2018) and to find more ways of integrating sustainability into academic curricula (Chan *et al.*, 2014). Lourenço *et al.* (2013) explain that teaching in accounting courses establishes a materialistic and profit-oriented vision of the world. This type of teaching can compromise ethical values and weaken students' perceptions of SD issues. As previously argued by Giacalone and Thompson (2006) and Singh *et al.* (2011), Lourenço *et al.* (2013) explain that teaching in these areas is focused on the treatment of financial information for making a profit, without consideration for the importance of themes on SD, sustainability and social responsibility. According to Chulián (2011), academic curricula in accounting courses have been criticized as they focus on two general assumptions, shareholder primacy and the way accounting is presented. While Hazelton and Haigh (2010) argue that accounting perpetuates unsustainable practices, ignoring or even concealing, the effects of social and environmental impacts of organizations, Kelly and Alam (2009) and Boulianne *et al.* (2018) explain that the purpose of the business may gain advantages when decision-making also addresses economic, social and environmental issues. So, accounting and business studies curricula should include such matters.

Gray (2010b) explains that, if one seeks to solve the problems of the world, he will hardly choose or consider accounting to start with. However, accounting is the basis for the dissemination of corporate financial information, which supports management decision-making; therefore, accounting should increasingly be founded on environmental, social and economic issues.

Botes *et al.* (2014) analyzed the perception of students and teachers about the integration of sustainability topics in accounting courses and note that there are already some signs of change. Through a review of New Zealand HEI web pages and interviews, the authors found that there was some integration of TSD; yet, according to the students and teachers, this was not enough. Both groups of participants indicated that the integration of TSD in accounting courses is highly important.

Carvalho *et al.* (2014) present a review of the literature for understanding the progress of TSD in management courses. Just as Audebrand (2010) and later Ferreira and Blomfield (2016), the authors realize the urgent need to adapt academic curricula to prepare professionals for SD. This, in turn, opens up a range of possibilities when thinking about teaching strategies and practices.

To verify the extent to which TSD was incorporated into the management courses taught at Australian HEI, Fisher and Bonn (2011) carried out a documentary analysis using information taken from the web pages of 40 universities. They observed that more than half of the Australian HEI had not integrated TSD in academic curricula, and the rest had done so in limited form. Singh *et al.* (2011) carried out a similar study in India, considering a sample of 35 teachers from 17 HEI; the authors found that the lack of availability,

development of didactic materials and course design represent a difficulty for the integration of TSD.

Filho (2017) found that the integration of SD into academic curricula of a Brazilian business school, as suggested by the PRME and the UN Sustainable Development Agenda 2030, requires greater involvement of students to raise awareness about their role in society and participation as protagonists in the changes the world needs.

Singhal *et al.* (2017) aimed at understanding the PRME implementation process and the challenges they posed to the institutions. They looked, in particular, into a management course in an HEI in north India. The authors highlighted several challenges that arose from adapting the academic curricula according to the PRME; notwithstanding, the integration was successful, which is why continuous improvement for teaching the principles in management courses is expected.

3. Methodological issues

3.1 Objectives and research questions

Considering the importance discussed in the above literature review, this study aims to analyze the current state of implementation of SD, including matters about Ethics, Corporate Social Responsibility and Sustainability, in the academic curricula of Business Sciences degrees. Using Portuguese public HEI data, it explores how HEI contributes to TSD. Taking into account the diversity of HEI and of areas of knowledge, the main goal is to emphasize the academic curricula of courses in Accounting and Taxation and in Management and Business Administration. The research questions (*RQ*) to be addressed are:

RQ1. In which of the two existent types of HEI, universities and polytechnics, is the TSD most prevalent?

RQ2. In which of the two types of degrees (cycles of study) considered, Bachelor (BSc) or Master (MSc), is the TSD most prevalent?

RQ3. What are the areas of the degrees where the teaching of SD is most observed?

RQ4. Which SD topics are taught and in what curricular units?

RQ5. What is the importance of SD in each of the degrees and types of HEI?

3.2 Sample definition

There are 34 public HEI in Portugal and, according to the classification of the General Directorate for Higher Education (DGES) [3], 9 areas of knowledge. The courses in the area of Business Sciences were selected according to the areas in the National Classification of Education and Training. The area of Social Sciences, Commerce and Law was selected from various. As this area is still very broad, there was a need to limit to the Business Sciences and then focus on:

- Accounting and Taxation; and
- Management and Business Administration courses (Table 1).

All public universities (14) and polytechnic institutes (20) were considered [4], with a focus on undergraduate (BSc) and master (MSc) study cycles.

Using the website of the DGES, 359 degrees were initially selected, including, in many cases, the same degree being taught during the day and after labor hours. These cases count as one for this study because there are no differences in their curricular structure. After this

collection, it was necessary to validate the information by checking the website of the Agency for Assessment and Accreditation of Higher Education (A3ES), to conclude whether the study cycle under analysis was accredited and whether it was running in the year 2018/2019. Accordingly, a set of 196 degrees was finally selected, as shown in Figure 1.

3.3 Data collection method

The method used for data collection followed several authors (Mathews, 2004; Wu *et al.*, 2010; Fisher and Bonn, 2011; Botes *et al.*, 2014; Colombo and Alves, 2017), and consisted of verifying the curricular structure of the degrees. The research began with an exploratory analysis intended to obtain information about the integration of TSD in Accounting and Taxation and in Management and Business Administration degrees in Portuguese public HEI. The data of each degree were collected from the curricular plans and course syllabus, scrolling through the web pages of each HEI where the degree is taught (as Cornelius *et al.*, 2007; and Fisher and Bonn, 2011). All curricular plans of the 196 degrees were checked; for those not available, it was necessary to send e-mail messages to the coordinators of each degree requesting this information. The collected data gave rise to a database in *Microsoft Office Excel*®, with the purpose of classifying, grouping and comparing the data, including the creation of categories.

The collection of information began with the identification of each HEI. Accordingly, the data collected for this are of qualitative nature, as they portray several particularities, such as Type of Institution – Polytechnic or University; Degree – Accounting and Taxation or Management and Business Administration; Cycle of studies – Bachelor or Master.

Based on the study by Abbott and Monsen (1979), a score of 0 to 1 was used, where 0 means the absence of the desired information and 1 means it exists. For each one of the degrees, the initial procedure was to verify whether subjects concerning SD were integrated into the academic curricula, that is to say, whether there is TSD. For this, curricular plans were analyzed to identify and gather keywords, a method also used by several authors (Wu *et al.*, 2010; Watson *et al.*, 2013; Botes *et al.*, 2014; Byrne *et al.*, 2015; Holm *et al.*, 2015; Jorge *et al.*, 2017; Stough *et al.*, 2017; and Findler *et al.*, 2019).

One of the criteria for analyzing the integration of TSD into the degrees, was the presence in the title of the curricular units (CU) (or courses) of one of the following keywords, derived

Social Sciences, Commerce and Law	Business sciences	Business sciences Commerce Marketing and advertising Finance, banking and insurance Accounting and taxation Management and business administration

Source: Ordinance N°. 256/2005 – national classification of education and training areas

Table 1.
Areas of study for the analysis

Source: Prepared by the authors

Figure 1.
Sample definition

from those used in the literature, namely, in the above-referred authors: "SD," "environmental," "sustainability" and "social responsibility."

In this stage of data collection, the existence of autonomous CU was considered, whenever a CU in the curricular plan was seen to contain one of these keywords. The second phase consisted of the analysis of the contents of the course syllabus; the research was carried out based on the same approach as the previous stage.

For each syllabus in which any of the keywords were verified, the following information was collected:

- The name of the degree (Wu *et al.*, 2010; Fisher and Bonn, 2011);
- The name of the curricular unit or course (Colombo and Alves, 2017);
- The number of credit units (Lozano and Young, 2013; Colombo and Alves, 2017);
- If the subject of SD is addressed in an autonomous CU or as a chapter in the syllabus or inserted only as a theme within a chapter (Jorge *et al.*, 2017; Stough *et al.*, 2017); consequently, it is classified as "autonomous CU," "CU with the chapter" and "CU with the theme" (Fisher and Bonn, 2011);
- If it is a compulsory or optional CU (Fisher and Bonn, 2011; Watson *et al.*, 2013; Byrne *et al.*, 2015; Jorge *et al.*, 2017); and
- In which semester it is taught; and which specific SD-related topics are taught (Burritt and Schaltegger, 2010).

3.4 Analysis and data processing

This study uses content analysis (Wu *et al.*, 2010; Godemann *et al.*, 2011; Botes *et al.*, 2014; Disterheft *et al.*, 2014; Jorge *et al.*, 2017). The content analysis is divided into three phases: pre-analysis, this being the intuition phase, which aimed at operationalizing and systematizing the information; the exploration of the material, consisting of coding operations, break down or enumeration, according to previously formulated rules and finally, processing of the results obtained and their interpretation (Bardin, 2011). Content analysis was essentially quantitative, counting how often the terms appear; however, some qualitative assessment was also done regarding the context in which they appear.

Based on frequency tables to characterize the population of the 196 degrees in the area of Business Sciences, it was found that 110 are taught in Polytechnic institutes and 86 in Universities; 146 degrees are in Management and Business Administration and 50 in Accounting and Taxation; and 117 are MSc, whereas 79 are BSc degrees (Table 2).

For Abu-Hola and Tareef (2009), SD topics that must be explicitly addressed in higher education programs vary according to the CU. Holm *et al.* (2015) have identified relevant aspects of academic curricula in the Nordic countries, including Sustainable products and solutions, Sustainable production, Sustainable technical solutions, environments, natural resources and the local environment. Also, Wu *et al.* (2010) had previously carried out a similar analysis in the main European Business Schools, considering as the most frequent

196 degrees	146 Management and business administration degrees 50 Accounting and taxation degrees	117 MSc 79 BSc

Source: Prepared by the authors

Table 2. Characterization of the study population

terms: Ethics, Sustainability, Sustainable Development, Corporate Social Responsibility and Natural Resources.

Taking into account the objectives established for the research in this paper, and basing on the information collected about what is taught in each of the CU, SD-related topics were grouped into seven categories: "Social Responsibility;" "Ethics;" "Environment or Environmental;" "Sustainability;" "SD;" "Corporate Governance" and "Report." The classification and categorization of the different topics resulted from the combination of those found in the academic curricula and the literature analyzed.

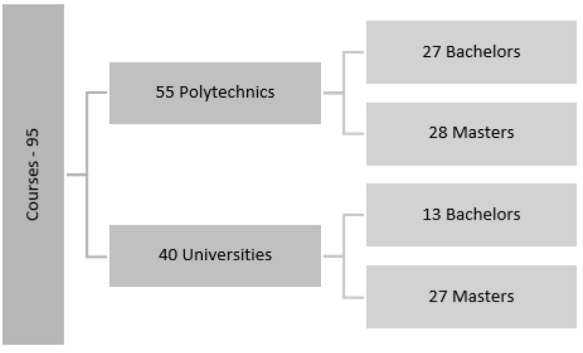
4. Main findings – presentation and discussion

Authors such as Lozano (2010) and Jorge *et al.* (2017) consider that the integration of TSD in academic curricula lacks, among other things, assessing the proportion of curricular units contributing to SD, given by the number of courses related to the topic, divided by the total number of courses. Attempting to fill in this gap, this study first characterized the sample, highlighting that none of the 196 Accounting and Taxation and Management and Business Administration degrees contained in its identification any of the defined terms; nevertheless, TSD was integrated into the academic curricula of 95 degrees (48.5%). Therefore, TSD is not yet integrated into more than half of the degrees analyzed. These findings are in accordance with Watson *et al.* (2013), who showed that sustainability has been broadly integrated into academic curricula but, despite the efforts, there are still significant improvements to be made.

This study considers the way HEI is organized in Portugal – a binary system that includes university and polytechnic education (see footnote 4). As explained, while university teaching is oriented toward research and creation of scientific and cultural knowledge, polytechnic teaching is oriented toward applied research and the creation of professional knowledge. To the best of our knowledge, no study has been found to have made this distinction so far but, taking into account the different orientations in teaching, it was considered important to make such a division herein.

Therefore, to answer *RQ1*, the degrees were classified by type of HEI. Of the 95 degrees, it was observed that TSD is more frequent in polytechnic institute degrees, as shown in Figure 2.

Based on the quantitative analysis and using frequency tables, it was found that TSD is a reality in 139 CU of the 95 degrees previously mentioned. It was also verified that the



Source: Prepared by the authors

Figure 2.
HEI of business sciences with TSD

distribution of CU by type of HEI is contrary to the previous case, that is, when analyzing the type of HEI where TSD occurs in each CU, one concludes that the number of CU with TSD is slightly higher in universities (51 %), although the number of degrees is smaller.

However, it is also important to consider the CU which is mandatory, out of the 139, as this greatly impacts the total number of students that will be reached through the integration of TSD, ensuring that at least one CU addresses these issues. It was verified that about 56.80% (79) of the CU of Business Sciences degrees at HEI in Portugal integrating subjects on SD are compulsory, and 43.20% (60) of the CU are elective. In the study by Wu *et al.* (2010), in which the authors analyzed TSD in management courses worldwide, the number of compulsory CU is also higher than the number of elective ones. Of compulsory CU, 64% are taught in polytechnic institutes and the remaining 36% in universities.

RQ2 intends to analyze the type of degrees and study cycles in which the TSD is identified. For this, only the compulsory CU were considered (79) because it is not sure that the elective ones are in fact taught, as it depends on the choice of the student. As shown in Figure 3, it was verified that the integration of TSD is a reality in half of both MSc (51 %) and BSc programs (49%).

In respect to the distribution of TSD between BSc and MSc degrees, Wu *et al.* (2010) found that TSD is most frequently found in undergraduate degrees. The study by Botes *et al.* (2014), in turn, revealed that a large part of HEI in New Zealand does not integrate TSD in the academic curricula of the BSc and MSc degrees, which, according to the authors, reveals a lack of priority on the part of this subject's teachers. The Portuguese case goes beyond these, already showing some concern in including SD-related topics at both levels of study cycles.

Regarding the area of the degree (*RQ3*), it was found that TSD (namely, in compulsory CU) is more frequent in Management and Business Administration (75 %) than in Accounting and Taxation (25%) degrees, which can be explained by the fact that, in the sample, there are more degrees in the former area than in the latter. These findings go with the literature that emphasizes the low importance of SD topics in accounting degrees, Singh *et al.* (2011) and Lourenço *et al.* (2013).

RQ4 aims to ascertain which subjects on SD are taught and in what CU. As displayed in Figure 4, it was verified that there are no significant differences between the number of "autonomous CU" (25), "CU with the chapter" (30) and "CU with the theme" (24) in the different areas of knowledge; however, the "CU with the chapter" appear more frequently, namely, within the degrees in Management and Business Administration.

In contrast to Fisher and Bonn (2011) in Australia, where TSD was found in only 14.58% of all CU, currently in Portugal 31.5% of all CU address these matters as a general theme; CU that address SD only in one Chapter reach 38.1% and finally 30.4% of CU address these topics under a Theme in a chapter.

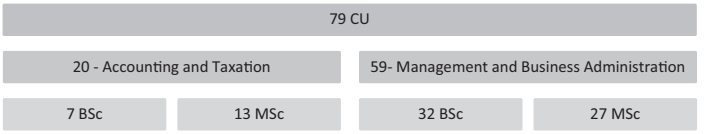
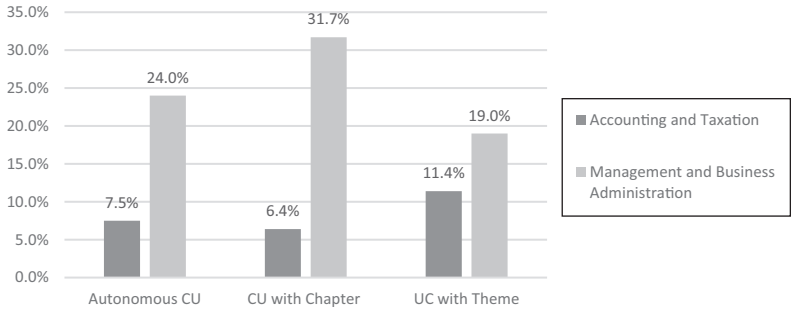


Figure 3.
Mandatory CU with TSD

Source: Prepared by the authors

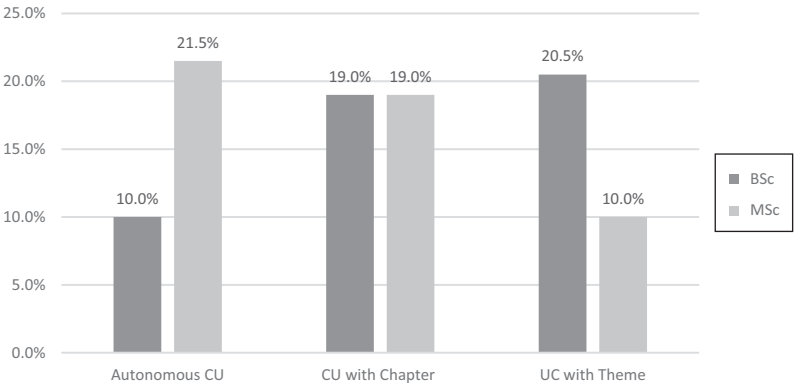


Source: Prepared by the authors

Figure 4.
Type of CPU with TSD in business science degrees

Moreover, in the case of cycles of study (Figure 5), some differences were observed. In the case of MSc, "autonomous CU" prevails, unlike what happens in the BSc, where the "CU with the theme" is the most frequent.

Based on the themes found in the syllabus contents of the 79 compulsorily CU, a categorization was then applied considering SD-related matters referred to in the literature and listed in section 3.4. Accordingly, one of the seven categories of themes is "*Environment or Environmental*." Within this, the following topics were considered: Accounting and Reporting Standard 26 – Environmental Matters, Environmental Auditing and Policies, Legal Instruments of Environmental Law, Environmental Management Systems (e.g. ISO 14001, EMAS), Environmental Performance, Environmental Accounting, Environmental Licensing and Technologies and Environmental Resources Management. Another category is "*Sustainability*" comprising topics such as Accounting and Sustainability, Sustainability Indicators, Sustainability Fundamentals, Sustainability Practices, Energy Sustainability, Sports, Environment and Tourism and Tourism and Sustainability. Under the category "*SD*" the topics considered were: Sustainable Development, Sustainable Development Strategies, 2030 Agenda for Sustainable Development, Sustainable Development Goals and Regional Sustainable Development Models. Another category is "*Report*" in which topics



Source: Prepared by the authors

Figure 5.
Cycle of study with TSD in business sciences degrees

such as Sustainability Reports, Integrated Reports, Social and Environmental Reports were considered, which typically involve non-financial information and auditing-related information. To the themes "*Social Responsibility,*" "*Ethics*" and "*Corporate Governance*" the topics considered were exactly the expression of the theme. Table 3 summarizes these findings, considering the frequency distribution of the various topics taught by each CU of the various degrees.

The SD-topics mostly taught are included in the categories of "Environment," "Social Responsibility" and "Sustainability." Moreover, except for the topics in the category "Report," the topics appear much more frequently in CU of Management and Business Administration degrees than in those of Accounting and Taxation degrees, again confirming that SD matters are not given such importance in accounting-related courses.

Finally, *RQ5* aims to analyze the importance of SD topics in each of the degrees. As in other European countries, in Portugal, the educational courses on offer in HEI are organized according to credit units (ECTS [5]). This system of credit allocation to courses was developed to regulate the recognition of higher education programs in Europe (Ceulemans *et al.*, 2011). Based on these assumptions, this study evaluates the importance of the SD subjects in each degree based on the number of ECTS awarded (Colombo and Alves, 2017; Lozano and Young, 2013). Accordingly, of the 95 degrees with TSD, comprising 139 CU, it is important to analyze again: whether the CU is mandatory or elective, thereby demonstrating the importance awarded to these themes in academic curricula (Fisher and Bonn, 2011; Watson *et al.*, 2013; Byrne *et al.*, 2015); whether courses are "autonomous CU," "CU with a chapter" or "CU with a theme" (Stough *et al.*, 2017) and how often do CU on SD occur in each of the degrees (Wu *et al.*, 2010; Lozano and Young, 2013).

This analysis begins by characterizing the total of 139 CU initially considered. In Accounting and Taxation degrees, 59% of the CU are compulsory, while 41% are elective; in Management and Business Administration degrees, 56% of the CU are compulsory, while 44% are elective. Therefore, in both cases, mandatory CU is more frequent.

Concerning "autonomous CU," "CU with a chapter" or "CU with a theme," in both areas of knowledge it was found that 50% of the CU are autonomous. "CU with a chapter" on SD topics are most frequent in the degrees of Management and Business Administration; "CU with a theme" on SD are more common in Accounting and Taxation, as displayed in Table 4.

As for ECTS, 59% of CU has 5 or more ECTS. Table 5 shows the frequency per degree and study cycle.

Regarding the CU frequency in each degree, for the 95 degrees (40 BSc and 55 MSc), in most cases, there is only one CU on SD, as shown in Table 6.

Table 3.
Summary of themes in CU in each degree

Themes/degrees	Accounting and taxation	% of themes	Management and business administration	% of themes	Total
Environment or Environmental	16	26	46	74	62
Social responsibility	13	24	41	76	54
Sustainability	10	30	23	70	33
Report	6	55	5	45	11
Sustainable development	3	17	15	83	18
Ethics	0	0	10	100	10
Corporate governance	0	0	4	100	4

Source: Prepared by the authors

Although TSD is acknowledged to be rather important, considering the respective ECTS, most of the 95 degrees and 139 CU that address SD, only dedicate one CU to the subject. Taking into account the importance of this topic for companies and society in general, the integration of TSD in Business Sciences degrees is fundamental, but it can be said that it is still at an early stage in Portugal. HEI in this country still has a long way to run and big challenges to face, TSD reaches a satisfactory level.

Taking into account the different characteristics in teaching between universities and polytechnics, it was found interesting to analyze which type of HEI gives more importance to the integration of these themes in Accounting and Taxation and in Management and Business Administration degrees. In a similar way to what was previously done, also, in this case, it was considered for this comparison that CU is mandatory or elective, the SD topics are addressed in "autonomous CU," "CU with the chapter" or "CU with the theme," and finally the ECTS assigned to each SD-related CU.

Looking at the issue of mandatory and elective CU, as previously concluded, 79 out of 139 CU analyzed, are mandatory. Regarding the distribution by type of HEI, of compulsory CU, 64% are taught in polytechnic institutes and the remaining 36% in universities. From

Curricular units / Area of study	Accounting and taxation		Management and business administration	
Autonomous CU	17	50%	53	50%
CU with chapter	6	18%	34	33%
CU with theme	11	32%	18	17%
Total	34		105	

Source: Prepared by the authors

Table 4. Curricular units by area of study

Study cycle / ECTS	Up to 3 ECTS		Between 3 and 5 ECTS		More than 5 ECTS	
	BSc (%)	MSc (%)	BSc (%)	MSc (%)	BSc (%)	MSc (%)
Management and business administration	4	4	12	9	22	24
Accounting and taxation	1	3	1	6	4	9

Source: Prepared by the authors

Table 5. ECTS by degree and study cycle

Curricular units / TSD per study cycle	1 CU		2 CU		3 CU		4+ CU		
	BSc	MSc	BSc	MSc	BSc	MSc	BSc	MSc	Total
Management and business Administration	5	17	3	7	2	2	3	1	*40*
Accounting and taxation	22	20	5	8	0	0	0	0	*55*
Total	*27*	*37*	*8*	*15*	*2*	*2*	*3*	*1*	*95*

Source: Prepared by the authors

Table 6. Curricular units with TSD per study cycle

the total (139) 37% are offered in polytechnics and 20% in universities. So, one may say that polytechnics find SD topics more important, as they have relatively more compulsorily CU.

As to SD topics being addressed in "autonomous CU," "CU with the chapter" or "CU with the theme," findings summarized shown in Table 7.

Therefore, universities seem to find more important to address SD topics separated from other disciplines, while polytechnics tend to teach these as parts of other courses, which could indicate the former allocate more importance to SD matters. However, a more refined analysis of the ECTS allocated, as in Table 8, must complete these findings.

When the analysis is performed taking into account the 139 CU, 35% of CU with 5+ ECTS are found in polytechnics and 40% in universities, showing not such a considerable difference between the two types of institutions.

But when the analysis is made taking into account only the 79 mandatory CU, the distribution becomes contrary, with 49% of CU with 5+ ECTS by polytechnics and 25% by universities. This points to polytechnics giving more importance to SD topics as more HEI of this type make them compulsory for students in their business degrees, with 5+ ECTS.

Based on all the issues considered for the analysis of the importance of TSD, it becomes evident that HEI that teach Business Sciences in Portugal, regardless their type, consider this topic important and put already some care into the integration of TSD in the Accounting and Taxation and above all, in Management and Business Administration degrees. Special attention seems to be given to it by the MSc degrees, where "autonomous CU" on SD issues prevail.

5. Conclusion and implications

As the UN acknowledges that education is a considerable instrument of change for adopting more integrated forms of SD, HEI is seen as crucial stakeholders in such change. They can contribute significantly to promoting the transition to a sustainable society, as well as to achieving the SDG because of their dual role in generating knowledge and transferring it to society and preparing students for their future in society. According to Creel and Paz (2018), HEI needs to prepare students for the various organizational dimensions – environmental, social and economic – as increasingly more companies have adopted the "Triple Bottom Line."

Table 7.
Curricular units by the type of HEI

Curricular units / Type of HEI	Universities		Polytechnics	
Autonomous CU	41	58%	29	43%
CU with chapter	21	29%	19	28%
CU with theme	9	13%	20	29%

Source: Prepared by the authors

Table 8.
ECTS by Curricular unit and type of HEI

Type of HEI / ECTS	CU	5+ ECTS	(%)	Mandatory CU	Mandatory CU with 5+ ECTS	(%)
Polytechnics	68	49	35	51	39	49
Universities	71	55	40	28	20	25
	139			79		

Source: Prepared by the authors

In response to the UN calls for students to acquire knowledge about SD and how to apply it in professional and social life, it is imperative that themes on Ethics, Corporate Social Responsibility and Sustainability be integrated into academic curricula.

The above being considered, this study explores how HEI contribute to TSD to the students in Business Sciences degrees, by researching TSD subjects. An analysis was made of the current state of implementation of SD-related matters, including Ethics, Corporate Social Responsibility and Sustainability, in the academic curricula of 196 degrees in Accounting and Taxation and in Management and Business Administration, both at BSc and MS levels, in Portuguese HEI. Based on the analysis of the importance that HEI give to TSD, this paper tried to ascertain to what extent SD topics are integrated into the degrees those institutions offer, ultimately inferring about their contribution, via teaching, to EDS.

The study found that there is already some concern about the integration of TSD in Business Sciences degrees in Portugal, as SD topics have been integrated into the academic curricula in 48.5% of the degrees. However, given the fact that the SD subject is increasingly relevant, it is apparent that there is still much work to be done and HEI still faces significant challenges to increase the level of TSD. As stated by Xiong *et al.* (2013) and Watson *et al.* (2013), also in Portugal, curricular reforms in HEI are still needed in Business Sciences degrees, to improve education and prepare students for the implications of their work on the environment and society.

Several authors (Singh *et al.*, 2011; Chulián, 2011; Hazelton and Haigh, 2010) found that education in these areas focuses on the processing of financial information targeting at profit-making, not considering the relevance of themes on SD, sustainability and social responsibility. Taking into account the issues addressed, this study otherwise concluded that, taking the Portuguese example, there is already some concern about addressing sustainable development issues in the preparation of accounting information for decision-making, inasmuch as SD topics are addressed in Accounting and Taxation and in Management and Business Administration degrees and courses. However, the challenges for improvement continue, and this paper highlight that they are especially important in the former area of knowledge, where TSD is (traditionally) lesser.

Understanding what is taught, and how, about SD in HEI in a first step toward analyzing how these institutions care and ultimately contribute to EDS. This paper not only assessed what Portuguese HEI teaches about SD but also evidenced how: at undergraduate or postgraduate level, via compulsory or elective courses, considering entire or just parts, of courses. Moreover, the distinction between universities and polytechnics allowed evidencing different priorities between more applied or more theoretical type of teaching. The main findings bring interesting implications for policy-making in Portuguese HEI, namely, about redesigning academic curricula and reflecting on pedagogic issues concerning how to teach. The analysis in this paper may be taken as a starting point to comparative analyzes in other jurisdictions.

Every year, hundreds of thousands of students graduate. These students will become professionals in the organizations where they will put into practice the knowledge they acquired; they can influence different types of organizations and foster SD practices. HEI not only prepare future business leaders but also global leaders. Therefore, Portuguese HEI must realize that it is necessary to develop academic curricula in Business Sciences studies that can deliver a more holistic education to help develop a more sustainable society.

All in all, this paper expects to draw attention to the importance of the SD theme to be taught in HEI, meeting the UN proposals and building on the importance of TSD as a contribution to mainstreaming principles and practices in all aspects of education and learning, encouraging changes in knowledge, values and attitudes and enabling students to

foster the transition to sustainability. It brings good implications for society while showing that sustainability content is becoming more apparent within certain HEI degrees and courses. This could be used to create follow up research on what type of sustainability content is being included within the courses and the learning that is happening in students (competencies) in regard to this sustainability content.

Additionally, highlighting the increasing prevalence of sustainability teaching may help to contribute to the shifting narrative regarding education for sustainability, providing validity and motivation to continue the integration of sustainability thinking into HEI and specifically into business education, which has traditionally been focused on other topics.

Despite these contributions, the study presents some limitations. One concerns that fact that it is essentially exploratory and descriptive, lacking a further analytic perspective. Another one relates to the fact that it addresses only Business Sciences degrees; extending to other areas would allow a boarder and more accurate perspective on TSD in the HEI in Portugal.

Future extensions of this study could explore students' perceptions of SD in education and analyze their views on the contribution thereof to their future professional life. The research could focus not only on the current situation but also on whether the students of the Accounting and Taxation and Management and Business Administration degrees, at Business Schools in Portugal, have a forward-looking perspective, given the new trends of reorienting companies to SD.

Notes

1. www.globalgoals.org/
2. The PRME are composed of six principles based on universally accepted values and inspired by the UN *Global Compact* initiative to transform teaching, research and thinking in the areas of management, with the overall objective of supporting universal values of sustainability, social responsibility and ethics, providing the framework of principles for responsible management, developing skills and promoting awareness of the SDG.
3. www.dges.gov.pt/guias/indarea.asp?area=VII (accessed in February 2018).
4. University vs Polytechnic – In Portugal, higher education is organized in a binary system that includes university and polytechnic education. University education is guided by a perspective of promoting research and creating knowledge, to ensure sound scientific and cultural preparation and to provide technical training that enables the exercise of professional and cultural activities and fosters the development of design, innovation and critical analysis skills. Polytechnic education has in view applied research and development, aimed at understanding and solving concrete problems; it seeks to deliver solid cultural and technical training at the higher level, to develop the capacity for innovation and critical analysis and to provide scientific knowledge of theoretical and practical nature for the pursuit of professional activities. https://www.dges.gov.pt/pt/pagina/sistema-de-ensino-superior-portugues?plid=371 (accessed in February 2018).
5. ECTS – European Credit Transfer System.

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