

## **A BASIC CONTENT PROPOSAL ON SUSTAINABILITY FOR MANAGEMENT UNDERGRADUATE COURSES**

### **UMA PROPOSTA DE CONTEÚDO BÁSICO EM SUSTENTABILIDADE PARA OS CURRÍCULOS DE GRADUAÇÃO EM ADMINISTRAÇÃO**

**Flávio Hourneaux Junior, Doutor**

<https://orcid.org/0000-0002-0165-7843>

[flaviohjr@uol.com.br](mailto:flaviohjr@uol.com.br)

Universidade de São Paulo | Faculdade de Economia, Administração e Contabilidade  
São Paulo | São Paulo | Brasil

**Bárbara Galleli, Doutora**

<https://orcid.org/0000-0001-9650-2619>

[b.gallelidias@gmail.com](mailto:b.gallelidias@gmail.com)

Universidade Federal do Paraná | Escola de Administração  
Curitiba | Paraná | Brasil

**Carolina Brinholi, Bacharel**

<https://orcid.org/0000-0002-1472-2368>

[carolina.brinholi@gmail.com](mailto:carolina.brinholi@gmail.com)

Universidade de São Paulo | Faculdade de Economia, Administração e Contabilidade  
São Paulo | São Paulo | Brasil

**Laura Martini Zellmeister, Bacharel**

<https://orcid.org/0000-0002-7139-5367>

[laura.zellmeister@gmail.com](mailto:laura.zellmeister@gmail.com)

Universidade de São Paulo | Faculdade de Economia, Administração e Contabilidade  
São Paulo | São Paulo | Brasil

**Isak Kruglianskas, Doutor**

<https://orcid.org/0000-0001-7031-6797>

[ikruglia@usp.br](mailto:ikruglia@usp.br)

Universidade de São Paulo | Faculdade de Economia, Administração e Contabilidade  
São Paulo | São Paulo | Brasil

Recebido em 14/setembro/2018

Aprovado em 17/junho/2019

Publicado em 02/janeiro/2020

Sistema de Avaliação: *Double Blind Review*



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## **ABSTRACT**

This paper aims to propose a basic content for teaching sustainability in undergraduate Management programs, covering a range of topics considered as critical for future professionals' background. Although the existence of several studies on how to incorporate sustainability in higher education, just a few focus on "what" is to be taught, which is the focus of this paper. This exploratory study had two stages. First, a survey of the professional demands regarding sustainability by organizations was carried out, according to specialists. Secondly, we researched the knowledge in sustainability by undergraduate Management students from a recognised university in Brazil. Data analysis was based on exploratory factor analysis. The research presented 38 sustainability topics split into three major subjects organized according to their content to structure a core sustainability curriculum as an initial proposal. This proposal is not a set of unrelated subjects, disconnected from the context of the course, but complementary. Despite the barriers to the inclusion of sustainability in universities, particularly in countries with problems in education, instructors, and academic managers can use a basic content as we propose as a starting point to embed sustainability into students' background, and consequently leading to wider sustainable impacts on society.

**Keywords:** Sustainability. Higher education. Management education. Curriculum. Exploratory factor analysis.

## **RESUMO**

O artigo tem como objetivo propor um conteúdo básico para o ensino de sustentabilidade nos cursos de graduação em Administração, abrangendo uma série de tópicos considerados críticos para a formação de futuros profissionais. A despeito da existência de diversos estudos referentes a como incorporar a sustentabilidade no ensino superior, poucos são os que se dedicam sobre "o quê" deve ser ensinado, foco deste artigo. Este é um estudo exploratório, composto por duas etapas. Primeiramente, foi realizado uma survey com especialistas acerca das demandas profissionais das organizações em relação à sustentabilidade. Em sequência, foi investigado o conhecimento sobre o tema de estudantes de graduação em Administração, em uma universidade do Brasil. A análise de dados foi realizada a partir da análise fatorial exploratória. A pesquisa apresentou 38 tópicos em sustentabilidade, conjugados em três grandes temas, de acordo com seu conteúdo, a fim de estruturar um currículo em sustentabilidade, como uma proposta para a introdução do assunto a graduandos em Administração. A proposta não deve ser vista como uma série de disciplinas desconectadas do contexto do curso, mas complementar. Apesar das barreiras para a inclusão da sustentabilidade nas universidades, particularmente em países com deficiências na educação, como o contexto do caso estudado, professores e gestores acadêmicos podem utilizar um conteúdo básico como o proposto como um ponto inicial para inserir a sustentabilidade na formação de alunos e, conseqüentemente, levar algum impacto à sociedade.

**Palavras chave:** Sustentabilidade. Ensino Superior. Ensino em Administração. Currículo. Análise Fatorial Exploratória.

## **1 INTRODUCTION**

Despite several attempts of defining sustainability, this concept lacks consensus (Lélé, 1991; Van Marrewijk & Werre, 2003). Nevertheless, sustainability initiatives are taking place at a local level, within communities and companies on a worldwide scale (Vos, 2007). Concerning this context, it should be noted that the position of business professionals to be reassessed regarding their new roles and responsibilities. Afterall, they are the ones in a position to persuade their organisations to adopt practices that support a management approach focused on sustainability (Wilkinson, Hill & Gollan, 2001).

In this sense, as the focus of this paper, we discuss the knowledge on sustainability of graduate-to-be professionals in management regarding sustainability. These students soon would be able to place in the same hierarchy of value and importance aspects of social, environmental, political, territorial and cultural nature, as much as the economic ones (Brunstein, Godoy & Silva, 2014). In this scenario, it is necessary to take into account that the overall responsibility for sustainability permeates not only the macroeconomic and individual aspects, but also interests that would shape the profile of the academic education for new generations (Barth, Godemann & Rieckmann, 2007).

The involvement of higher education institutions (HEI) in sustainability is not new. Authors point out that since the late 1980s, there have been conferences and agreements that evidence, affirm and reaffirm the commitment of universities to this theme (e.g. Lozano, 2006; Jacobi, Raufflet & Arruda, 2011; Leal Filho, 2011; Holm, Sammalisto, Grindsted, & Vuorisalo, 2015). There is the demand to insert sustainability in a full implementation approach, i.e., in all university activities for ensuring education for sustainable development. Not only in teaching, research and extension spheres but also in their own management systems (Holm et al., 2015).

Focusing on teaching dimension, specifically in Management courses, some recent studies address the integration of sustainability and show examples of experiences around the world (e.g. Adomßent et al., 2014; Jacobi et al., 2011; Melo & Brunstein, 2014; Rusinko, 2010, Stead & Stead, 2010). Brazilian HEIs have also undertaken measures to include sustainability in its teaching approaches. It is known that there are initiatives in several HEI in Brazil, for example, at Federal University of Ceará (UFC), State University of Londrina (UEL-PR), Pontifical Catholic University of São Paulo (PUC-SP), Mackenzie Presbyterian University and Federal University of Rio Grande do Sul (UFRGS). In common, these

initiatives point challenges and difficulties faced in implementing a sustainability agenda for the universities, in a macro level, institutionally, or a micro level, regarding academic issues.

Leal Filho (2011) states that, regarding sustainable development, to transform knowledge into action it is necessary a curriculum reorientation in higher education. However, despite the intense discussion, just a few studies discuss specifically the content, or curriculum, regarding the introduction of sustainability (Etse & Ingley, 2016; Perera & Hewege, 2016). In Brazil, according to the General Index of Courses (IGC), assessed in 2013 by the Ministry of Education (E-MEC, 2014), two out of the top ten universities that offer undergraduate courses in Management make no mention of any subject that addresses sustainability, and only three of them have mandatory disciplines on this topic. The synergy with labour market demands is also missing in this context, aggravating the distance between the necessary knowledge and the skills in corporation's routine and what have being provided in these terms by the universities to future managers (Demajorovic & Martão, 2014).

Based on the considerations above, this paper aims to propose a basic content for teaching sustainability for undergraduate courses in Management, seeking to contribute to the inclusion of this subject in Management teaching. To do it, we are grounded on the results of a survey conducted in two moments. First, with the identification of the demands of experts in sustainability from several companies. And second, with an assessment of the degree of knowledge on the subject by undergraduate students of a Management course from one of the leading educational institutions in Brazil, the School of Economics, Business Administration, and Accounting (FEA, acronym in Portuguese), the business school of the University of São Paulo (USP).

With this research, we expect to identify aspects that might encourage the convergence between the real needs of organisations, which demand qualified professionals to work with sustainability, and reinforce HEI's role as the main responsible for developing and offering new professionals and future managers to organisations.

This paper is structured as follows: Apart from this introduction, the second section shows the key concepts and practices underlying this study. Then, we explain the methodological aspects of conducting the research. Subsequently, we present and discuss the results, and at the end, we have the implications of the study, its limitations and suggestions for future researches.

## **2 LITERATURE REVIEW**

In this section we expose the literature background that supports our research. Firstly, we explore a contextualization about sustainability. Then, we debate this topic in terms of its relationship with education, higher education, and management teaching.

### **2.1 SUSTAINABILITY: CONTEXTUALIZATION**

The term sustainable development, used in different contexts, became known amid the scenario of a global environmental movement as a result of a long historical process of critical reassessment of the relationship between society and its natural environment (Redclift, 2007). Its most widely accepted definition is the one coined in the document known as the Brundtland Report, prepared by the WCED (World Commission on Environment and Development, 1987).

In general, the terms sustainable development and sustainability have been used interchangeably, despite the evident lack of consensus regarding the meaning of both terms. Erroneously understood in with a meaning similar to the concept of sustainable development, while sustainability refers to the ability to maintain something in a continuous state, sustainable development involves integration processes of changes that seek to maintain the dynamic balance of a complex system in the long term. Sustainable development, therefore, is considered a path to sustainability (Weingaertner & Moberg, 2014).

Even after two decades from the release of the Brundtland Report, we can see is that there is a broad range of designations on the subject and the lack of a singular or universal definition (Van Marrewijk & Werre, 2003; Vos, 2007). This situation could cause the term to become a cliché and meaningless –, and its meaning and interpretation would be varied (Lélé, 1991). In general, these concepts have been widely discussed and applied to almost everything currently, often improperly (Doppelt, 2008).

In the Management field, the focus of this paper, Ransburg and Vágási (2007) postulate that sustainability sets up a complexity of social requirements conceived to maintain the economic development for generations, to promote a responsible and efficient use of natural resources, environmental protection, and social progress, based on the principles of human rights. In a way, there is a convergence towards the fundamental idea that organisational activities are developed in a context that conditions quality and availability for three key

elements for management: economic, environmental and social elements, an approach called triple bottom line, as substantiated by Elkington (1999).

In a nutshell, we should consider that the possible impacts of the sustainability issues caused by the organisations, either positive or negative, will largely depend on the education process of those who will exercise their careers, especially in the Management field (Godoy, Brunstein & Fischer, 2013). Thus, in the next section, we address how sustainability has been considered in education in general, and in higher education, in detail.

## 2.2 SUSTAINABILITY AND ITS RELATIONSHIP WITH EDUCATION, HIGHER EDUCATION, AND MANAGEMENT TEACHING

In 2005, UNESCO (United Nations Educational, Scientific and Cultural Organisation) launched the initiative “The Decade of Education for Sustainable Development (DESD)”, which aims to integrate the values inherent in sustainable development into all aspects of learning in order to promote behavioral changes that allow the creation of a sustainable and fairer society for all (UNESCO, 2005). Through five major goals, that include enhancing the quality of teaching and learning regarding Education for Sustainable Development (ESD), interaction amongst actors and valorization of the key role played by education and learning, DESD program sought to implement ESD in several and new ways, aiming to reflect the environmental, social, cultural and economic conditions of each locality (UNESCO, 2005).

Thus, the DESD would be the guideline for the consolidation of sustainability in education, based on and reinforcing the aspects defined in Agenda 21, emphasizing education as a vital factor in the promotion of sustainable development, seeking to influence and foster a change in the curriculum structure, through the introduction of sustainability (Gadotti, 2009).

More than an alternative to permanently solve all the problems of the ecological crisis, EDS should be seen as a learning approach that provides the ability to cooperate given the uncertainties inherent in the global complexity facing unprecedented challenges (Jones, Trier & Richards, 2008). From its spreading, EDS became a landmark for HEI reinforce changes in their teaching, researching and extension activities towards sustainability (Wals, 2014).

It is also important to highlight another initiative to foster sustainability, social responsibility and ethics in Management Education: the UN’s PRME (Principles for Responsible Management Education). Through six principles – Purpose, Values, Method, Research, Partnership and Dialogue – PRME acts for the transformation of management education, on a global scale, to meet the demands for traditional companies to become



responsible businesses (PRME, 2016). Despite PRME's novelty, its importance has been underlined by scholars (Dickson, Eckman, Loker, & Jirousek, 2013; Godemann, Haertle, Herzig & Moon, 2014; Laasch & Connaway, 2015).

Specifically regarding how sustainability has been considered in higher education, the literature reveals initiatives and approaches in different courses (Adom̂ent et al., 2014; Lozano-García, Kevany & Huisingh, 2014; Melo & Brunstein, 2014; Wals, 2014; Wong, 2011). Several studies have already addressed the way sustainability in higher education has been perceived by the students (Adom̂ent et al., 2014; Aziz, Sheikh, Yusof, Udin & Yatim, 2012; Costa et al., 2013; Yuan & Zuo, 2012), and others have addressed the teaching vision and practice in this context (Sipos, Battist & Grimm, 2008; Melo & Brunstein, 2014).

More specifically regarding Management courses, it is possible to verify the maturity of the inclusion of sustainability in MBA courses in the United States (Christensen, Peirce, Hartman, Hoffman & Carrier, 2007; Stubbs & Cocklin, 2008; Stead & Stead, 2010). Some undergraduate courses in sustainability experiences are worthy of recognition, as the School of Sustainability at Arizona State University (Brundiers, Wiek & Redman, 2010), and cases in Brazil (Jacobi & Beduschi Filho, 2014). Nevertheless, for Management undergraduate courses, despite the proliferation of research studies and practices, the inclusion of sustainability can be understood as still in its early stages (Lozano, 2006).

According to Stead and Stead (2010) and Jabbour, Sarkis, Jabbour and Govindan (2013), we note that the embeddedness of issues related to sustainability begins with research and teaching, depending on the personal motivation of a few teachers – what can represent a fundamental barrier in this process. Moreover, paradoxically, being a leader in higher education does not mean having a leadership position in sustainability teaching. Often, leading universities suffer internal resistance to aggregate changes like this of incorporating sustainability concerns

Thus, a diversity of challenges surrounds the adoption of sustainability in HEIs in different perspectives. The interdisciplinarity of the subject, which hampers an effective implementation (Demajorovic & Martão, 2014; Winter & Cotton, 2012); a systemic view that considers learning from a more concrete participation of the various stakeholders involved (Jacobi et al., 2011); the lack of preparation and resistance of educators (Godoy et al., 2013; Jones et al., 2008); the introduction of new forms of teaching and learning (Gonçalves-Dias, Herrera & Cruz, 2013); the difficulty of identifying and developing a set of skills for

sustainability (Roorda, 2010; Lambrechts, Mula, Ceulemans, Molderez & Gaeremynck, 2012); obstacles to the creation of a new curriculum (Jacobi et al., 2011; Leal Filho, 2011); and the difficult to cover all dimensions and to meet all expectations for both teachers and students (Jones et al., 2008).

Traditional teaching methods and content in Management, along with the unpreparedness of educators and the non-adjustment to sustainability theories and models, contribute to the lack of “greening the syllabus” in higher education (Melo & Brunstein, 2014). Sustainability itself challenges what has been taught and how it is being done: education for sustainability, when applied in higher education, specifically, calls for pedagogical innovations (Brundiers et al. 2009).

Scholars underline the fact that the concept of sustainability is not clear to all stakeholders (Lélé, 1991; Van Marrewijk & Werre, 2003) also seems to be one of the elements that contribute to the difficulty of integrating sustainability in education, in general, and in Management, in particular (Leal Filho, 2011). Raufflet (2014) corroborates that conceptual challenges for the integration of sustainability into Management teaching are due to many definitions and interpretations of the terms ‘sustainable development’ and ‘sustainability’.

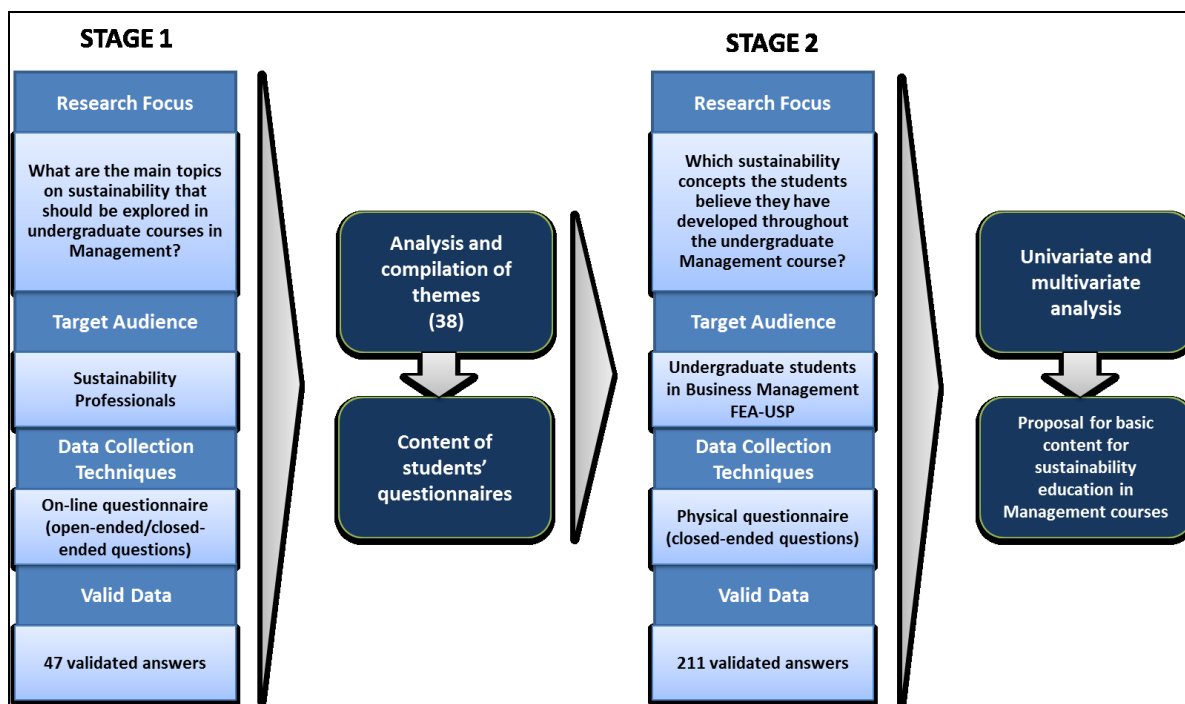
Thus, to make it clear what sustainability comprises regarding content to be taught seems to be a crucial step to an effective teaching in any context. In the next section, we show the methodological steps taken to identify a basic content in sustainability for Management undergraduate courses.

### **3 METHODOLOGICAL ASPECTS**

This study can be characterized as exploratory and descriptive, with a quantitative approach. As shown in Figure 1, to attend the objective of proposing a basic content for teaching sustainability for undergraduate courses in Management, the study was divided into two stages. In each of them, there was a focus on research and specific target audiences, a different data collection technique, and a different sample, as explained in the sequence.



Figure 1 The research's methodological stages



Source: Created by the authors.

In **Stage 1**, we conducted a survey, aiming to identify key aspects and concepts related to sustainability, in the opinion of experts on the subject, therefore, an exploratory stage. The target audience consisted of professionals working in the sustainability area of several companies, most of them affiliated with Brazilian Association of Sustainability Professionals (ABRAPS, acronym in Portuguese).

The questionnaire, made available electronically via e-mail to the professionals, consisted of an open-ended question, which asked the identification, by the respondent, of the five top general concepts related to sustainability, regarding the importance, which should be explored in Management undergraduate courses. The objective here was not to obtain or to comprehend the meaning of the concepts, but indicative terms that would enable a conjunction of a demanded body of sustainability knowledge. The dissemination of the electronic questionnaire was conducted over the Internet, using the snowball method, with no prior definition of sampling. The application of this questionnaire was conducted in the second half of 2013.

After obtaining 47 completed questionnaires, amongst the five possible sustainability related concepts for each one of them, several terms emerged, the majority different, some of them similar, some of them repeated. The answers were then analysed and adjusted in the

following order: (1) standardization of terms, when appropriate; (2) combination of similar terms and with high degree of specificity under the same “umbrella” term, and; (3) counting of repeated terms to determine the most recurrent. The most frequently mentioned terms – 38 at the end (listed in Table 1, in the next section) – were considered as the most relevant and used to perform the second stage of the research. This process, although inductive, was conducted by all the authors, in three rounds, aiming to reduce any possible bias.

In **Stage 2**, we drafted a new questionnaire, physical at this moment, mainly with closed-ended questions. The target audience of the survey included undergraduate students in Management from the School of Economics, Business Administration and Accounting at the University of São Paulo (FEA-USP, acronym in Portuguese). This universe was composed of students from two periods: day (2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup>, and 8<sup>th</sup> semesters/terms), and evening (2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup>, 8<sup>th</sup>, and 10<sup>th</sup> semesters/terms), summing up 1,008 students enrolled in the semester of the research.

Data collection was carried out in the classroom during the second half of 2013. There was consent from the professors and the participation of students as respondents were voluntary. We did this way to ensure a greater number of responses and so that there were representatives from all semesters mentioned. Considering the absence of students in the data collection period, and that it was a voluntary task, we obtained 211 valid answers or 20.9%.

In addition to the qualifying questions of respondent’s profile, the second data collection instrument listed the 38 items validated in Stage 1, to represent the most important concepts related to sustainability, according to practitioners’ opinion. To each of these items, it should be assigned the degree of knowledge acquired by the student over his/her undergraduate course, through a 7-point Likert scale, whereas in extreme “1” we used the term “Strongly disagree” and in extreme “7” the term “Strongly agree”, as verbal anchors. The sentence common to each item was “During the undergraduate course in Management at FEA I studied in class and/or researched in depth on the subject...”. So, the students’ answers referred to the current situation concerning their sustainability knowledge developed during the course.

For this second stage of the research, data analysis was performed, first, in a univariate way, and later, applying multivariate statistics, to which we applied exploratory factor analysis (EFA). This technique was adequate to this research once it aims to analyse the structure of the interrelations (correlations) amongst the variables, defining a set of

dimensions, called factors (Hair Jr, Black, Babin & Anderson, 2009). The variables in agenda were the concepts defined by sustainability experts and confirmed (or not) by the students, whereas the factors, the interrelated concepts, should compose the basic content for a sustainability curricula. To be aware of the main sustainability topics developed in the universities in Management undergraduate courses based on the knowledge demanded by the market can propitiate a better frame for developing curricula basic contents.

The number of respondents in the sample respects the premises of EFA defined by Hair Jr et al. (2009), of at least 50 cases and the proportion of at least five cases per variable, that is, 190 cases. In both cases, the sampling is, therefore, unintentional, that is, it follows a criterion by judgment, that meets criteria determined by the researchers and the one of voluntariness.

#### **4 PRESENTATION AND DISCUSSION OF RESULTS**

This section presents and discusses the results obtained from the second stage of the research, described in the methodological aspects topic. First of all, we briefly describe the insertion of sustainability in the undergraduate Management course of FEA-USP, in order to contextualize our case of study. Then, we explore the univariate and multivariate analysis, resulting in the proposal for basic content for sustainability education teaching in the Management course.

##### **4.1 SUSTAINABILITY IN THE UNDERGRADUATE MANAGEMENT COURSE OF FEA-USP**

With over 60 years of history and more than three thousand students enrolled every year in its undergraduate courses, *Faculdade de Economia, Administração e Contabilidade* (FEA, in Portuguese) is the business school of the University of São Paulo (USP), considered the best university in Brazil, according to the 2013-2014 World University Rankings survey, published by the Times Higher Education and developed by the multinational Thomson Reuters.

Currently, the Management course of FEA-USP offers specific subjects that to some extent are associated with sustainability. They are:

- Corporate Management and Social and Environmental Sustainability (elective subject, offered in the 7<sup>th</sup> semester, with 30 class hours);

- Corporate Responsibility and Social Entrepreneurship (elective subject, offered in the 7<sup>th</sup> semester, with 30 class hours);
- Corporate Governance (elective course, offered in the 7<sup>th</sup> semester with 30 hours);
- Management of Sustainable Operations (optional elective subject, offered in the 8<sup>th</sup> semester with 30 class hours).

Although FEA-USP has subjects that somehow allow the inclusion of sustainability in Management teaching, it is clear that there is room for improvement in the way this is addressed in the undergraduate course. All of them are elective, that is, it is the student's choice to enroll in them. The class hours offered, despite being in line with the rules of the institution, can be considered low; in addition, they are all offered only at the end of the course, when the student had gone through most traditional subjects of the course, maybe when his/her interests in Management had been defined, and professional experience might had already begun.

#### 4.2 UNIVARIATE ANALYSIS

Univariate analyses were applied basically to describe the respondents' profile, as to some initial assumptions about sustainability. The characterization of the respondents is as follows: 44.1% are female, and 55.9% are male individuals; approximately 93% of students are between 17 and 26 years old; and 53.5% are enrolled in 2012 and 2013, that is, attending the first two years of the undergraduate course.

As for the student's professional experience, it was found that 65.9% had already worked, had been interns or were employed at that moment. We asked the students to indicate the degree of certainty they have regarding the professional area they intended to follow. On a scale of 1 to 7, the average was 4.64 (mode 5; standard deviation 1.68). This not very expressive "certainty" is not surprising, since the vast majority of respondents are young individuals at the beginning of their course.

When asked to indicate their level of agreement with the sentence "The Social and Environmental Management is very relevant to the professional area", on the same scale, the average was 4.36 (mode 4; standard deviation 1.59). This answer suggests, beyond its explicit meaning of lack of agreement with the sentence, a possible shortage of knowledge on the subject.

#### 4.3 MULTIVARIATE ANALYSIS

At first, the data were analysed using the SPSS software version 18, in which we conducted descriptive analysis, exploratory factor analysis, and reliability tests.

Amongst the 38 topics listed (as explained in Stage 1 of the methodology section and shown in Tables 1 and 2), the ones with the lowest averages, that is, the minimum degree of agreement on the level of knowledge were “Ecosystem Services” (1.95) and “Waste Management” (2.16). This result may also be a reflection of the curriculum of the management course in the universities, which, in general, does not usually contemplate topics more specific to the environmental area, such as “Ecosystem Services”. Still, it is important to remark that “Waste Management” has gained increasing importance in the national scenario, especially in the business sphere, due to recent public policies (Santos & Gonçalves-Dias, 2012).

On the other hand, for the topics that scored the highest averages, with the maximum degree of agreement about the expertise, were “Value Chain” (5.36) and “Systemic View” (5.2), which are addressed in traditional subjects, especially in the area of organisations and strategy.

After performing the descriptive analysis, we followed the procedures for the exploratory factor analysis. The results indicated that seven factors or dimensions could explain 65.6% of the data variance. By observing the values of commonality of these variables, we have chosen the criterion of elimination of the ones for values lower than 0.5, as recommended by literature (Hair Jr et al., 2009). Thus, “Corporate Governance”, “Ethics”, “Technical Standards for Sustainability” and “Solidary Economy” were taken out of the list. We can notice that the topics “Corporate Governance” and “Ethics”, there are subjects already offered in the curriculum of the Management course of FEA-USP. As for the “Technical Standards for Sustainability”, it also had a very low score, probably because its scope is quite technical, perhaps best addressed in professional or technical courses rather than in the undergraduate Management course. The topic “Solidary Economy” has not been addressed by any previous subject of the Management course of FEA-USP.

After removing these variables, we repeated the EFA, We finally obtained six factors with an explanation of 65.94% of the variance of data. Factor 1 (F1), alone, is responsible for 41.8% of this variance. The six factors and their respective items, factor loadings, Cronbach’s Alpha values and explained variance are shown in Table 1. Note that the Cronbach’s Alpha

values for each factor reach the levels of reliability proposed by Hair Jr et al. (2009) equal or higher than 0.6 for exploratory studies, therefore, are considered suitable.

**Table 1** Factor analysis

Factor	Items	Factor Loadings	Cronbach's Alpha	Explained variance
F1	Waste Management	.767	0.933	41.8%
	Environmental Management	.764		
	Renewable Energy Sources	.708		
	Sustainability Indicators	.676		
	Leadership for Sustainability	.667		
	Innovation and Sustainability	.662		
	Specific legislation of environmental and social standards for companies	.649		
	Climate Changes	.648		
	Climate Compensation (Carbon Credit)	.531		
	Sustainability Report	.528		
	Ecological Footprint	.421		
	Sustainable Procurement	.522		
	Fair Trade	.488		
F2	Value Chain	.840	0.861	7.98%
	Product Lifecycle	.787		
	Stakeholders Analysis	.696		
	Risk Management	.668		
	Labor Conditions	.591		
F3	Triple Bottom Line	.683	0.874	4.73%
	General Sustainability Concepts	.650		
	Guidelines for Sustainability	.643		
	Socially and environmentally responsible investment	.560		
	Competences for Sustainability	.482		
	Strategy and Sustainability	.440		
	Corporate Social Responsibility	.438		
F4	Conscious Consumption	.697	0.789	4.26%
	Diversity in the Workplace	.568		
	Code of Conduct	.550		
	Microcredit	.539		
F5	Systemic Vision	.841	0.721	3.75%
	Long-Term Vision	.687		
	Company's relationship with its surroundings	.552		
F6	System Dynamics	.866	0.608	3.39%
	Ecosystem Services	.517		

Note: Varimax rotation method; KMO (0.925); Bartlett's Sphericity ( $p < 0.000$ ).

Source: Created by the authors based on the data collection

The factor analysis allowed grouping the 38 items, defined previously through a consultation with sustainability professionals. The reduction of these items enables the formation of a core structure for teaching sustainability in the undergraduate course of Management, proposed the topic below.



#### 4.4 PROPOSAL FOR BASIC CONTENT FOR SUSTAINABILITY EDUCATION TEACHING IN THE MANAGEMENT COURSE

Based on the results obtained through the EFA, it was possible to analyse the content suggested to restructure the core curriculum of subjects to insert sustainability in the course of Administration. The topics referred to in Factor 6 (“System Dynamics and Ecosystem Services”, see Table 1) were excluded from this proposal. Despite being considered as relevant by professionals, we believe that is beyond the scope of a curriculum degree in Management. Its low value assigned to the explained variance of this factor reinforces its exclusion.

Finally, Table 2 sums up the basic structure suggested for teaching sustainability in the undergraduate course in Management. For each proposed subject we also recommend some learning goals.

**Table 2** Proposal for a core curriculum of sustainability in the undergraduate course in management

Original factor	Proposed subject	Content (previous items)	Learning Goals
F1	Basic Sustainability Concepts	Waste Management	<ul style="list-style-type: none"> <li>- Present the basic concepts of sustainability and its relationship with the organisations</li> <li>- Show how management techniques can influence the way of organisations to behave towards sustainability</li> <li>- Clarify manager’s role in the practice of organisational sustainability.</li> </ul>
		Environmental Management	
		Renewable Energy Sources	
		Sustainability Indicators	
		Leadership for Sustainability	
		Innovation and Sustainability	
		Specific legislation of environmental and social standards for companies	
		Climate Changes	
		Climate Compensation (Carbon Credit)	
		Sustainability Report	
		Ecological Footprint	
F3	Strategy and Sustainability	Triple Bottom Line	<ul style="list-style-type: none"> <li>- Provide students an understanding of how sustainability fits into the organisational strategy.</li> <li>- Demonstrate how organisational activities can impact sustainability.</li> <li>- Present concepts, tools and alternatives for the management of sustainability within organisations through both internal and external views.</li> </ul>
		General Sustainability Concepts	
		Guidelines for Sustainability	
		Socially and environmentally responsible investment	
		Competences for Sustainability	
		Strategy and Sustainability	
		Corporate Social Responsibility	
F5		Systemic Vision	
		Long-Term Vision	
		Company's relationship with its surroundings	

Original factor	Proposed subject	Content (previous items)	Learning Goals
F2	Sustainability, Stakeholders and Impacts on Business	Value Chain	- Develop students' understanding of the organisational relationships and their stakeholders from both business perspective and society perspective.
		Product Lifecycle	
		Stakeholders Analysis	
		Risk Management	
		Labour Conditions	
F4		Conscious Consumption	
		Diversity in the Workplace	
		Code of Conduct	
		Microcredit	

Source: Created by the authors based on the research data.

Generically, these three subjects **Basic Sustainability Concepts**; **Strategy and Sustainability**; and **Stakeholders and Impacts on Business** are proposed to contain the entire content raised as relevant by the experts and organised by some criteria. Initially, the idea is that the subjects **Basic Sustainability Concepts** and **Strategy and Sustainability** are mandatory, and the subject **Stakeholders and Impacts on Business** is optional. This division was based on the understanding that the contents to be explained to students in mandatory subjects are fundamental to the understanding of sustainability, in addition to being a reasonable amount that requires more time, especially in the case of the first subject. As for the optional subject, its content can be considered complementary and more specific, though not less important.

This proposal also extends to the moment in which these subjects should be included in the curriculum. For **Basic Sustainability Concepts**, the idea is that it is applied right at the beginning of the course, precisely because it would provide an overview of the subject and can take place concurrently with other initial subjects, such as Principles of Management and Introduction to Law. **Strategy and Sustainability** is indicated for students in the middle of their course because they would have already studied **Basic Sustainability Concepts** in addition to traditional subjects associated with Organisational Strategy. Finally, for **Stakeholders and Impacts on Business**, our suggestion is that it to be offered to students at the end of the course, due to the specific nature of its components such as Risk Management, Stakeholder Analysis, and Product Lifecycle, which require a deeper academic maturity of the student, as the full comprehension about previous contents as stakeholders, value chain and product development.

The first subject **Basic Sustainability Concepts** addresses the most relevant topics, mainly because of the media and the pressure from Non-Governmental Organisations

(NGOs). By encompassing a larger number of topics, it can be considered as an essential subject of this proposal, and with a certain probability, be recommended as a subject before others proposed here. The second subject, **Strategy and Sustainability**, emerges from the combination of two factors (F3, F5), and demonstrates the relationship between strategy – a mandatory content and essential content for managers – and Sustainability. It approaches the business strategy from both intra-organisational view and organisations' external environment perspective and the sustainability positioning in this context. This is also the case of the third subject, **Stakeholders and Impacts on Business**, arising from two factors (F2 and F4), focusing the several levels of the relationships between the business and its stakeholders. It is related to the impacts resulting and expected from these relationships, initially with a direction focused on the business and then from a broader perspective of the performance of organisations.

We can notice that, as it is frequent in the traditional disciplines, it is evident that the proposals explored here cannot become completely isolated subjects and independent from the others. On the contrary, it is essential to emphasise the relationship between them and between the other subjects of the course, given their position in the curriculum. It is possible and recommended to study possibilities for multi, inter and transdisciplinary integrations.

## **5 CONCLUSION**

The purpose of this paper was to propose a basic content for teaching sustainability in undergraduate Management courses. Based on the references coming from practitioners understanding regarding the knowledge needed for future managers and what is perceived as known by Management students in the academic environment, it was possible to draw up a proposal with three subjects that could form an essential structure to be introduced in the undergraduate Management course. This proposal, initially, based on the context of FEA-USP, however, could be at least to be a starting point and a target of debates for other HEIs, both in the national and international environment.

### **5.1 THEORETICAL AND PRACTICAL IMPLICATIONS**

Sustainability in HEI is at its early stages of the learning process; there is still a lot to be learned for sustainability to become a genuine and completely integral part of higher education. This study contributes to both instructors and academic management in the sense

of presenting a new approach to the improvement of Management courses' curricula to insert sustainability. Our proposal constitutes in a non-traditional, "non-top-down" approach to the development of undergraduate course curricula that can be spread in academia, through different courses and graduation degrees.

For higher education research field, we advanced on a curricular proposal addressing and reinforcing the necessity of approximation between universities and labour market. Particularly in an Applied Science area as Management, it is imperative to align what is being teaching and learning to what has being demanded by organisations. This reasoning can be widening to other sciences regarding sustainability education, for example, Accounting, Engineering, and Earth and Ocean Sciences.

Although based in a case study, therefore with context limitations, our study can represent at least a source of reflection for diverse undergraduate programs, higher education institutions, and countries that intend to insert/improve sustainability via education. Specially in countries with problems in education and in consistently leading sustainability initiatives, such as the case's context, our proposal can be seen as a viable initial alternative for embedding sustainability in undergraduate students' background, and consequently reflecting wider sustainable impacts on society..

The reflections of this could appear not only academically, but even in professional experiences in organisations. The result is that inconsistently educated students should lead to not well-qualified managers, and consequently, sustainability practices from organisations not as sound as they should be.

So, we add that our proposal reflects implications for the managerial practice as it provides opportunity to approximate companies and HEIs in the sense of align what is demanded by the market in terms of sustainability knowledge domain and what is to be taught and learned by the universities. To close this link can be seen as conditioning for future managers to be better prepared to deal with the sustainability challenges faced by companies and organisations in general.

## 5.2 IMPLICATIONS FOR HIGHER EDUCATION IN MANAGEMENT

In many cases, the HEI approach to sustainability can be seen as classical, since the subject is just added to the traditional curriculum of the courses. Moreover, our suggestion

made follows this pattern aiming to practicality and viability. However, it should not be seen as just a proposition of unrelated subjects, disconnected from the context of the course.

We consider that sustainability is a cross-cutting issue that requires transformational and transdisciplinary learning, beyond simple literacy. From this curricula proposal, we believe in the possible and desirable approach in an integrated manner with other subjects along the course, research and extension activities. This can be done, for example, through the production of a field work involving different subjects simultaneously.

Our proposal tries to follow Stead and Stead's (2010) recommendation that is to adapt a sustainability-based curriculum to the continuous changes in society and structure it in a progressive way. Therefore, it also follows this line of recommendation and works as a starting point for the introduction, and consolidation, of sustainability in Management teaching.

As consequence, the core curriculum of sustainability in the undergraduate course in Management could and should reach the university's department in the sense of rethink Management course, in a first instance, and its supportive structure. Following this, education governmental organisations can also be instigated to revise its requirements, norms and/or suggestions regarding sustainability education in HEIs. In the case studied here, it is especially pertinent due to the relevance and influence of the University of Sao Paulo in Brazilian higher education scenario.

In the particular case of FEA-USP, despite already having some actions for the integration of the subject, it will be possible to see that there is still room for progress in this regard, to have sustainability integrated in a more comprehensively way to the existing practices. The same can be applied to other HEIs and their Management courses.

### 5.3 LIMITATIONS AND SUGGESTIONS FOR FUTURE STUDIES

As last comments, we point out the first limitation of this research, which refers to the complexity of the subject, especially from the standpoint of undergraduate students who have had little or no academic contact with it. Similarly, there is a possibility of the existence of particular interest to students about sustainability, which may have positively or negatively affected the answers. These restrictions may have caused systematic errors at the time of data collection (Mackenzie & Podsakoff, 2012). It is also worth noting that, although the selected case scenario (FEA-USP) is a national and international reference, the natural methodological

limitations of using a single HEI as intentional – and non-probabilistic – sample suggest the need to conduct studies with larger and representative samples of Brazilian and/or foreign universities, both public and private.

It's valid to add that in this study we chose to deal with the students' sustainability knowledge, instead of sustainability competences, as a regular amount of researches have been conducted in the area of higher education (for example, Barth et al., 2007; Haan, 2006; Wieck, Withycombe & Redman, 2011). This option was made due to the understanding that to investigate the students' knowledge in sustainability would better attend the objective of this study, to propose a basic content for teaching sustainability. It is of our concern that the competences approach involves a greater level of complexity, which may demand a more deep and qualitative research

For future studies, we initially suggest the confirmatory factor analysis, using a different technique to validate the results found with EFA, thus providing greater support to the results or indicating points of review in the proposal of this study. We also recommend a comparative research with students who have had contact with specific subjects of sustainability and students have not had, seeking to find contrasts in learning, teaching methods and interest in the subject. Also, studies could be conducted on larger scales with course coordinators, professors, and students seeking to assess the relevance, as well as issues related to the insertion of a teaching content focused on sustainability, as proposed in this paper.

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