



Review

Systematic Review of Sustainable-Development-Goal Deployment in Business Schools

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Abstract: In 2015, more than 190 countries pledged to meet by 17 sustainable development goals (SDGs) by 2030 that aim to ensure sustainable global social and economic development, and to strengthen universal peace. Public institutions, businesses, organizations and individuals are all called upon to contribute to this challenge. Focusing on business schools (BSs), and the potential impact they have on graduates, we ask what they are doing for the deployment of these objectives. To this end, we conducted a systematic review of the literature related to SDGs and business schools in the WOS, SCOPUS and ERIC databases. A multi-stage exclusion process resulted in 16 documents for review. The findings of this study provide key information on the role that business schools have to play in achieving SDGs and the ways in which they can be incorporated into their activity: from more in-depth actions linked to creating awareness, questioning current paradigms, fostering cooperation and interdisciplinarity with stakeholders, and working on coherence; to more specific interventions such as creating student associations, incorporating new teaching methodologies or increasing students' participation in extracurricular activities. In addition, this study also allows us to identify gaps in the literature, giving ideas on necessary future lines of research.

Keywords: SDGs; education for sustainable development; education for sustainability; higher education; business and management education; business schools; responsible management education; systematic review

1. Introduction, Background and Literature Review

Today's society faces very complex social, political, economic and environmental challenges. These issues concern citizens, businesses, institutions, and governments. The Millennium Development Goals guided the work of the United Nations from 2000 to 2015. As a consequence of this process, the United Nations Security Council began the process to define the so-called "2030 Agenda" [1]. This program focuses on people and their human rights, in particular poverty eradication and sustainable development in its social, economic and environmental dimensions. The 17 sustainable development goals (SDGs) included in the Agenda were adopted by governments at the United Nations in 2015, and will guide and frame global development until 2030. The SDGs, with 169 associated targets that are integrated and indivisible, are listed in Table 1.

Table 1. Seventeen sustainable development goals (SDGs) [1].

17 Sustainable Development Goals	1. No poverty	2. Zero hunger	3. Good health and well-being	4. Quality education	5. Gender equality
6. Clean water and sanitation	7. Affordable and clean energy	8. Decent work and economic growth	9. Industry innovation, and infrastructure	10. Reduce inequalities	11. Sustainable cities and communities
12. Responsible consumption and production	13. Climate action	14. Life below water	15. Life on land	16. Peace, justice and strong institutions	17. Partnerships for goals

The economic, social and environmental concerns considered in the definition of these 17 objectives can no longer be dealt with in a separate and independent way [2,3]. These objectives have to be approached in an interdisciplinary way, with all actors assuming their share of responsibility (individuals, companies, private and public organizations and institutions, and governments). In this sense, universities are called upon to play a relevant role in the development of these objectives, since they are important agents for the integral development of future citizens [4,5].

Higher-education institutions (HEIs) play an essential role in providing future professionals with the necessary skills and competencies to respond to the sustainability challenges identified in increasingly complex and global contexts [5–7]. They can become catalysts for change [7] and must play an increasingly important role in helping students to become responsible and active citizens, with a clear vision of the future challenges of sustainability [8]. Thus, education for sustainable development (ESD) or education for sustainability (ES) aims to enable people to not only acquire and generate knowledge, but also to reflect on the effects and complexity of behaviors and decisions from a responsible, global and future-oriented perspective [9].

Within HEIs, this paper focuses on the impact that business schools (BSs) can have on the achievement of SDGs.

For many years, the prevailing paradigm in management education has been the neoclassical paradigm. This paradigm is based on a selfish conception of the human being, who tries to maximize its benefit or self-interest [10]. In this way, shareholders (who are the owners of the scarce factor, capital) seek to maximize their profit, which in the business world means that the company's objective is to maximize economic value for shareholders.

This paradigm has coexisted with certain negative externalities over the decades, such as environmental pollution or increasing inequalities in the distribution of income among people, which are precisely part of the problems that the SDGs aim to tackle.

This is why in recent years criticism of the dominant model has emerged. On the one hand, financial capital is no longer the most relevant factor within organizations (e.g., human capital, natural resources, social capital) and it is necessary to consider all the stakeholders who are affected by the organization. On the other hand, it has been proven that maximizing individual profit has not succeeded in improving living conditions for all people. In addition, and against the selfish conception of the human being, new voices advocate for a more humanistic conception of the individual, understanding that the human being is social, morally oriented, free and with dignity [10]. The individual uses his freedom to engage in social interactions in the long term, considering the others as ends by themselves and not as means [11], and people are intrinsically motivated to improve and grow as human beings [12].

Education in BSs is especially relevant, since depending on the paradigms, theories, models, competencies and values that they promote and teach, university graduates will build one type of organization or another, which will generate one type of impact or another on the society as a whole. As long as the theory and approaches taught in the classroom defend one or another paradigm or business model, the future actions proposed in the organizations will be in line with one or another

trend. Even more, taking into account that theories in social sciences are often self-fulfilling [13]: if management theory indicates that the individual is selfish, individualistic and opportunistic, future managers will adapt their behaviors and treat them that way.

This is what Aguado and Eizaguirre (2020) [14] call the virtuous circles of humanistic management: education in BSs can positively impact the way of being and doing of organizations, which contribute to the generation of social value through their economic activity.

The truth is that there are no “magic solutions” on how to proceed in educational institutions when it comes to developing responsible citizens who are aware of the economic, social and environmental impact of their decisions. First, some HEIs have opted for the integration and achievement of learning outcomes in the form of attributes, competencies, capacities and aptitudes in their programs [15]. Therefore, many scholars defend the critical role of defining key competencies and specific learning outcomes to successfully design and teach in academic programs [16]. Although there is still no agreement on what these key sustainability competencies really are [17], there is consensus in the literature that it is not enough for finance, marketing or strategy professionals to be good technicians (or to master key contents of finance, economics, strategy or marketing), but that they must also develop a set of values to guide their approach to reality and their way of acting [18,19]. In this sense, SDGs can be a suitable guide for efforts to be made in the education of BS graduates.

Second, it seems essential to generate a paradigm shift and a change in the university syllabus that addresses students’ sustainability needs, aspirations and concerns, for example by incorporating subjects focused on these issues [3,20,21]. Increasingly, university-management teams and faculty are aware of the importance of encouraging students to question the economic paradigm and move towards a humanistic paradigm [22–25]; to incorporate the theoretical foundations of sustainability into courses, promoting critical thinking and decision-making [12,26,27]; and to create opportunities for students to experience and connect with the real world, for example through extracurricular activities [28]: “as businesses need to change towards sustainable development, apparently changes in business education become inevitable” [29] (p. 282).

Third, the literature mentions a variety of methodologies for students to deploy these competencies for sustainability: offering students volunteer experiences; applying the service-learning methodology; reinforcing tutorials or development tools on the basis of conversation, such as mentoring; using real case studies in the classroom; incorporating the debate methodology; encouraging the use of methodologies that generate self-knowledge and reflection; working in laboratories; and organizing workshops with professionals [20].

Finally, an important part of what students learn is achieved through the example they receive from teachers and other university agents (administrative and service staff, managers, and employers) [13,22]. We must not forget the relevance of teachers questioning certain paradigms, as well as the need for them to develop new skills. It is also necessary to ensure that all university processes, policies and activities are coherent with the development of SDGs. It is useless to focus on teaching if students perceive that the research or management of the educational institution is not coherent with the inspiring principles of the SDGs [13,20].

In this context, there is a growing need to strengthen, structure, and synthesize the existing literature on the role of BSs in the deployment of SDGs, given the impact they have on the profile of graduates. Conducting a systematic review on this topic can add value to the existing body of research and identify literature gaps.

Systematic reviews are interesting, as they satisfy the need to take a broad look at all existing research related to a particular research question [30,31]. They are very enlightening for the academic and social world, since they identify, analyze, critically evaluate, and summarize the knowledge of a given area of knowledge in a clear, replicable, and rigorous way [32,33].

Sciences in general, and social sciences in particular, evolve in a more robust way when research is developed from an existing knowledge basis. When doing so, new research is able to respond to limitations posed by previous research, to contrast results obtained by previous studies in new

contexts, to detect gaps, to provide new empirical evidence, and to suggest new niches of interest for future research.

In particular, research in education (“engineering education” or “management education”) is a multidisciplinary field that takes from many other fields, usually more mature, contents, theoretical frameworks, or research methodologies [34]. That is why identifying, codifying, and synthesizing previous insights is an essential basis for moving forward and reducing the likelihood of constantly “reinventing the wheel”. These same authors [34] (pp. 47–48) state that “in education, three organizations have made strides in creating reviews and developing methods: the Norwegian-based Campbell Collaboration (...); the Evidence for Policy and Practice Information and Co-ordinating Center (EPPI-Center) was founded in 2000 by the Department for Education and Skills, part of the Social Science Research Unit at the Institute of Education of the University of London (...); in 2002, the United States Education Sciences Reform Act established the What Works Clearinghouse”. From all of them, we consider the EPPI Center as the one providing more specific methods and tools for conducting systematic reviews on education.

Being aware of the importance of the implementation and deployment of SDGs in BSs, we present a systematic review of this issue below. This is a systematic review of the literature published in three major databases to learn about the different approaches and actions of BSs to contribute to SDGs.

There are already some systematic reviews related to SDGs. Caiado et al. (2018) [35] presented a comprehensive review of the literature and develop a novel framework in order to tackle the barriers and challenges to operationalize and monitor the implementation of the SDGs. They wanted to uncover the various gaps and suggested some means via which some of challenges seen in the accomplishment of the 17 SDGs may be faced. Cordeiro Ortigara, Kay, and Uhlenbrook (2018) [36] conducted a review of the SDG 6 Synthesis Report 2018 from an education, training, and research perspective. Ferreira Gregorio, Pié, and Terceño (2018) [37] analyzed the publications grouped under the concepts “circular economy”, “green economy” and “bioeconomy”, all of which are linked by the common objective of promoting sustainable development. Finally, in the area of entrepreneurship, there are two highlighted works: Perenyi and Losoncz (2018) [38] investigated the body of international entrepreneurship knowledge to identify key trends, research directions and emerging research topics; and Rashid (2019) [39] attempted to analyze recent literature to identify the extent to which entrepreneurship education and training research addresses SDGs.

Therefore, although there are some systematic reviews of related topics, a systematic review on how the deployment of SDGs in business schools is still missing.

2. Methods

This research presents a systematic review following the guidance of Gough, Oliver and Thomas (2012) [32], and the methodology developed by the EPPI Center. We have also taken into account the checklist and recommendations by PRISMA [40], and the checklist by the Joanna Briggs Institute (JBI) [41], aiming to offer study transparency, validity, and replicability. This is a qualitative systematic review, in the sense that several of the primary studies considered are of this nature; configurative, being the focus on the range and nature of found concepts, rather than on exhaustivity; and, following an inductive method, applying iterative methods that interpret specific examples to address questions about experiences and meaning to generate and explore theory [32].

2.1. Research Questions

A common way to establish research questions in systematic reviews is to follow the PICO framework from the National Institute for Health and Clinical Excellence [42]. The acronym stands for P (patient, problem, or population), I (intervention), C (comparison, control, or comparator), and O (outcomes).

Thus, our research question would be: what kind of actions (intervention) should business schools (population) carry out to contribute to the advance of SDGs (outcome)? We aim to find out what actions

BSs are implementing (or would have to implement) in their different fields of action (teaching, research, social projection, and management of educational institutions) in order to contribute to the achievement of the SDGs, either directly (e.g., waste management, sustainable campuses, gender-equality policies, use of clean energies, collaboration with stakeholders), or indirectly, seeking a change in the profile of the graduates: teacher training, student training, awareness-raising workshops, inclusion in the mission, innovative teaching methodologies, etc.

2.2. Search Strategy

In order to carry out the systematic review, we considered articles published in international scientific journals up to July 2019 in the area of higher education, and focused on the deployment of SDGs in BSs. To that effect, and considering their relevance in the area of education, the following databases were analyzed: Web of Knowledge, SCOPUS, and ERIC.

The articles were searched using the following keywords: “SDG*”, “higher education”, “business school”, “entrepreneurship”, and “management education”. The exploration was completed with searches that employed synonyms or derivatives of keywords, such as “management”, “entrepreneurship”, or “business”. Keywords were also combined to refine the search. Publications containing the search criteria in the title, in the keywords, and/or in the abstract were included (depending on the search allowed by each considered database).

In order to ensure the replicability of the study, as recommended by Ferreira Gonzalez, Urrutia and Alonso-Coello (2011) [33], we present in Table 2 below the searches and terms used in these databases.

Table 2. Search terms.

Search Terms	SCOPUS	WOS	ERIC
<ul style="list-style-type: none"> • SDG* or sustainable development goals AND <ul style="list-style-type: none"> ○ higher AND education ○ business AND school* ○ management AND education ○ higher AND education ○ management AND education ○ business AND education ○ entrepreneurship AND education 	TITLE ABS KEY	TITLE TOPIC	TITLE DESCRIPTOR ABSTRACT TITLE

2.3. Inclusion and Exclusion Criteria

We first excluded from this study articles prior to the definition of the SDGs (which could have appeared in the results because they were linked to sustainability); second, those that did not refer to SDGs in a general way (and that only considered one of the specific objectives, referring, for example, to poverty, immigration, and gender issues); third, those not related to BSs; and fourth, book chapters or books.

Documents that met the inclusion criteria at various stages were considered for data extraction and analysis. They represent a total of 16 documents. The selection of studies was independently carried out by three researchers in order to increase the reliability and security of the process [33].

2.4. Trial Flow/Selection Process

The initial search identified 293 papers for review, considering all three databases, and after the deletion of repetitions. Figure 1 shows a flow diagram of the manuscript selection process.

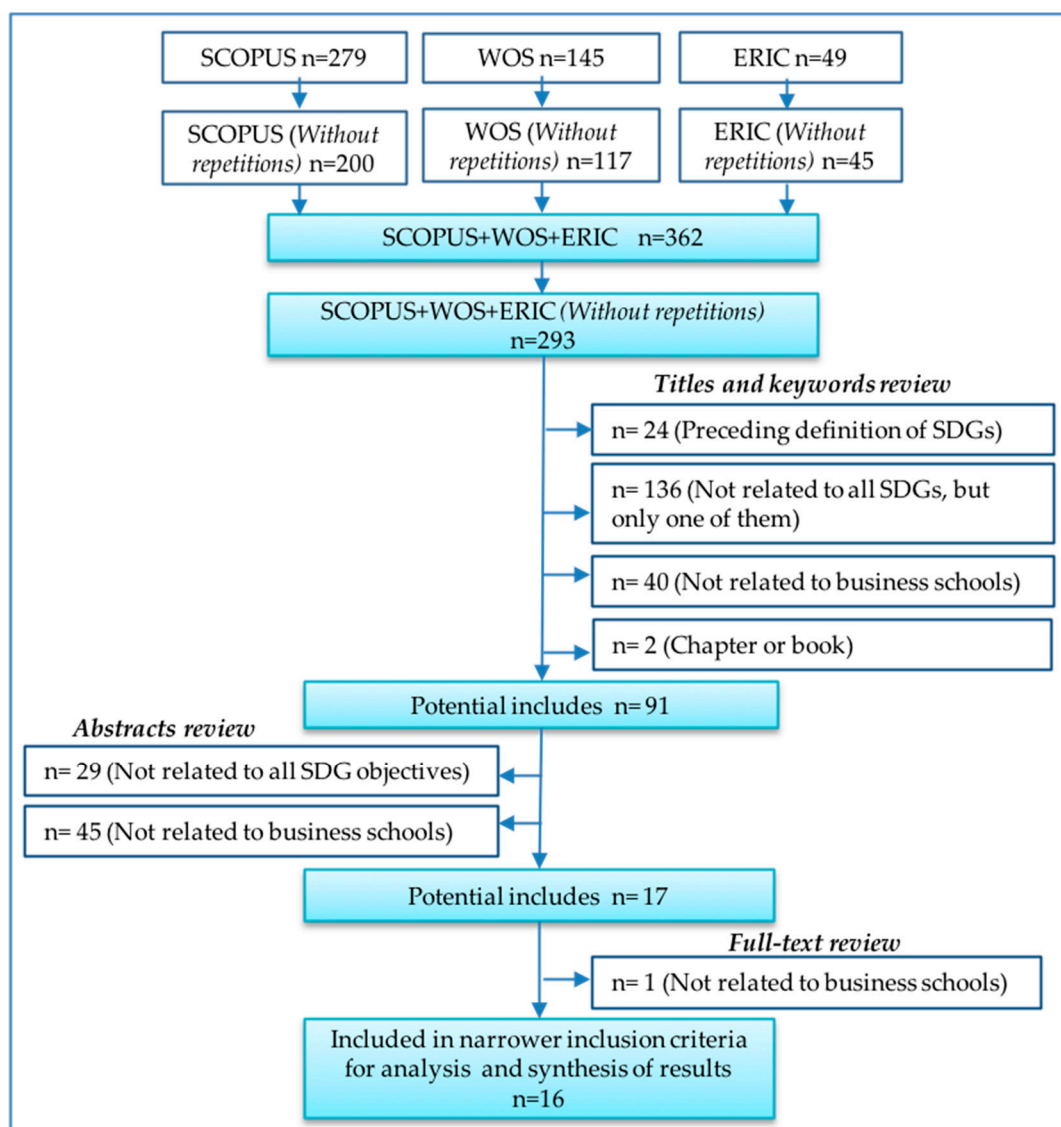


Figure 1. Flow diagram to show study-selection process.

At a first stage, the titles and keywords of each article were reviewed to determine if the document really had the deployment of SDGs in a BS as a theme. With the first exclusion criterion, 24 documents were eliminated; with the second, 136; with the third, 40; and with the fourth criterion, two documents were eliminated. For a second stage, 91 articles were left. In this second phase, the abstracts of the resulting 91 articles were reviewed to determine whether the document really had as its theme the deployment of SDGs in a BS. With the second exclusion criterion, 29 articles were eliminated, and with the third, 45. Finally, after the full reading of the documents, one article was discarded because it did not refer to the subject under study.

Agreement among the researchers on the article-selection process was 100%, which can be attributed to the simple and concrete selection criteria used. In addition, multi-stage selection allowed collaboration to iteratively refine and clarify the criteria.

2.5. Quality Assessment (of Initially Considered Studies)

The quality of the selected studies was assessed following the list of 10 key control questions proposed by the Joanna Briggs Institute (JBI) for systematic reviews [41]. The evaluation results of the 16 studies are presented in Table 3.

Table 3. Quality of studies.

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Borges, Cezarino, Ferreira, Sala, Unglaub, and Caldana (2017) [43]	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes
Borges, Ferreira, Borges de Oliveira, Macini, and Caldana (2017) [44]	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes
Cicmil, Gough, and Hills (2017) [45]	Yes	Yes	—	Yes	Yes	Yes	No	—	—	Yes
Goodall, & Moore (2019) [46]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kolb, Fröhlich, and Schmidpeter (2017) [29]	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes
Melles (2015) [47]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Moon, Walmsley, and Apostolopoulos (2018) [48]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Moon (2017) [49]	Yes	Yes	—	Yes	Yes	No	Yes	—	—	Yes
Ojeda Suarez and Agüero Contreras (2019) [50]	Yes	Yes	—	Yes	Yes	Yes	Yes	—	—	Yes
Parkes, Buono, and Howaidy (2017) [51]	Yes	Yes	—	Yes	Yes	Yes	Yes	—	—	Yes
Poleman, Jenks-Jay, and Byrne (2019) [52]	Yes	No	—	Yes	No	Yes	No	—	—	No
Quadrado, and Zaitseva (2019) [53]	Yes	No	—	Yes	No	Yes	No	—	—	No
Sonetti, Brown, and Naboni (2019) [54]	Yes	Yes	—	Yes	Yes	No	Yes	—	—	Yes
Storey, Killian, and O'Regan (2017) [55]	Yes	Yes	—	Yes	Yes	No	Yes	—	—	Yes
Weybrecht (2017) [56]	Yes	Yes	—	Yes	Yes	No	Yes	—	—	Yes
Younie, Audain, Eloff, Leask, Procter, and Shelton (2018) [57]	Yes	Yes	—	Yes	Yes	No	Yes	—	—	Yes

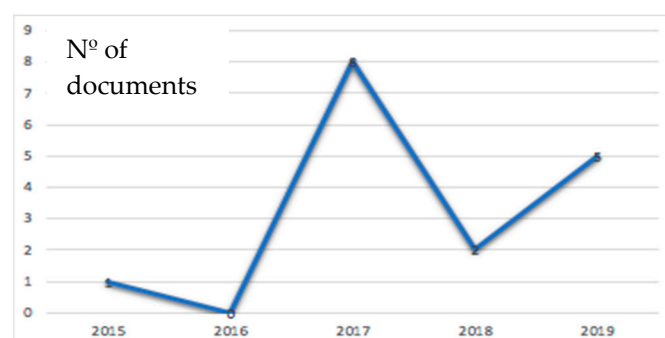
Q1: Is there congruity between stated philosophical perspective and research methodology?; Q2: Is there congruity between research methodology and research questions or objectives?; Q3: Is there congruity between research methodology and methods used to collect data?; Q4: Is there congruity between research methodology, and representation and analysis of data?; Q5: Is there congruity between research methodology and interpretation?; Q6: Is there a statement locating the researcher culturally or theoretically?; Q7: Is the influence of the researcher on the research, or vice-versa, addressed?; Q8: Are participants and their voices adequately represented?; Q9: Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?; Q10: Do conclusions drawn in the research report flow from data analysis or interpretation?

3. Results

For analysis of the studies, the three researchers developed an analytical grid/chart to systematize the most relevant information of the considered articles: study descriptors (origin, authorship, year of publication), methodology (study characteristics and design), type of interventions (performed activities related to the SDGs), and conclusions of each study (effects on student profile, problems, challenges, and recommendations). First, each researcher independently analyzed the studies with the purpose of identifying the main ideas. Following this process, researchers compared their analysis to reach a consensus to report the main findings from the review.

3.1. Study Descriptors

Of the 16 reviewed articles, 15 were written in English and one in Spanish. With respect to their publication date, we found five articles from 2019, two from 2018, eight from 2017, none from 2016, and only one from 2015 (Figure 2).

**Figure 2.** Publication years.

The authors' affiliations were broad, as can be seen in Table 4a. Ranked from highest to lowest, there were four articles signed by researchers from educational institutions in the USA, three from the UK, two from Brazil, and one from each of the following places: Germany, Australia, and Ireland. Finally, there were several studies in which researchers from several countries collaborated: Ecuador and Cuba; Portugal and Russia; Italy, the UK, and Denmark; and the UK and South Africa.

Table 4. Researcher affiliation and publication journals.

Doc.	Researcher Country	Doc.	Journal
[46,51,52,56]	USA		
[45,48,49]	UK		
[43,44]	Brazil	[29,43–45,51,55,56]	<i>Int. J. of Manag. Educ. Proceedings</i>
[29]	Germany	[47–49]	<i>Sust.: The Journal of Record</i>
[47]	Australia	[46,52]	<i>Revista Conrado</i>
[55]	Ireland	[50]	<i>Vysshee obrazovanie v Rossii</i>
[50]	Ecuador and Cuba	[53]	<i>Sustainability</i>
[53]	Portugal and Russia	[54]	<i>J. of Educ. for Teaching</i>
[54]	Italy, UK, and Denmark	[57]	
[57]	UK and South Africa		
(a)		(b)	

As for publication journal, the 16 documents were published in seven different journals, as can be seen in Table 4b, with the *International Journal of Management Education* standing out with seven documents.

3.2. Methodology

From the final 16 reviewed studies, 10 were descriptions, general reflections or theoretical approaches; five were qualitative or quantitative studies (with primary data collection); and one was content analysis. The classification and detailed methodology of each study is shown in Table 5.

Table 5. Type of article and used methodology.

Authorship	Type of Document *			Method Explanation
	A	B	C	
Borges, Cezarino, Ferreira, Sala, Unglaub, and Caldana (2017) [43]		X		Questionnaires to members of nine student associations, including six open-ended questions. Obtained sample was 109 students between the ages of 17 and 25 from the area of Business and Economics.
Borges, Ferreira, Borges de Oliveira, Macini, and Caldana (2017) [44]		X		Exploratory study carried out with an online questionnaire that included six open-ended questions addressed to nine student associations. Resulting sample was 106 respondents between 17 and 25 years of Economics, Management, and Accounting.
Cicmil, Gough, and Hills (2017) [45]	X			As their starting point, they took an academic work on models for management education and their recommendations. They critically examined the practice of integrating education for sustainable development (ESD), and the United Nations Principles of Responsible Management Education (PRME) (as two complementary schemes) into one particular institution, the University of the West of England, Bristol. They explored the nature and inter-relationships of Holman's five axioms (epistemological, pedagogical, practical management, social and organizational) to provide a reflective account of their experiences and elucidate a deeper understanding of what responsible education for sustainable development can mean in practice. Their arguments were based on both the literature and practical experience (in PRME/ESD initiatives).

Table 5. Cont.

Authorship	Type of Document *			Method Explanation
	A	B	C	
Goodall, & Moore (2019) [46]		X		From spring 2017 to fall 2018, a team of five student research assistants reviewed the biographies, syllabi, and websites of over 4400 faculty members. Questionnaires were sent to 4400 faculty members and researchers of Yale University to explore how the scholarly activities of higher-education institutions (HEIs) are connected to the SDGs. In 2018, Yale organized and led a half-day event on the role of academia in advancing SDGs on behalf of the IARU (IARU is a network of 11 universities from around the world committed to accelerating progress through collaboration).
Kolb, Fröhlich, and Schmidpeter (2017) [29]		X		One private business school (BS) in Cologne (Germany) was selected as a case study: <ol style="list-style-type: none"> To outline the implementation practice of sustainable management education in a specific BS. To propose a conceptual model of how BSs can contribute to SDGs. The applied methods were of both quantitative and qualitative nature. The case study was approached on different levels of analysis: <ol style="list-style-type: none"> The curriculum and its relation to sustainable management on one particular Master's study program was screened. Sustainable-management activities outside the curriculum were analyzed by employing a keyword list.
Melles (2015) [47]		X		The author describes two study tours for social impact in Swinburne University (Melbourne, Australia).
Moon, Walmsley, and Apostolopoulos (2018) [48]		X		The target sample was the 307 HEIs' signatories to the UN Higher Education Sustainability Initiative (HESI). Analysis of this database revealed which HESIs had committed to which SDGs. They then conducted a follow-up survey via email to identify best practices across HESI signatories. Finally, results were presented to a sample of entrepreneur students and academics for their validation. The main survey instrument included questions on to which SDGs each HESI has signed up, progress with their implementation, faced challenges, and how obstacles were overcome. Moreover, a series of statements from the literature were designed to test the validity of the literature on ESD pedagogy and implications for governance.
Moon (2017) [49]			X	The study used a data set from Sustainia (2014, 2015, 2016) where several thousand projects are reviewed by experts, and a short-list of the 100 most innovative and inspiring projects across the globe is produced each year. The article analyzed key trends identified across the three years, reviewed the 100 latest projects submitted for 2016 by sector, and discussed implications of key trends and selected projects for HEIs.
Ojeda Suarez and Aguero Contreras (2019) [50]		X		The descriptions and reflections of the paper are based on analysis of national and international documents and the experiences of the authors in teaching, research, and linkage in the university.
Parkes, Buono, and Howaidy (2017) [51]		X		The document presented a Special Issue of the <i>International Journal of Management Education</i> that looked at the evolving nature of the UN Global Compact's initiative focused on BSs (PRME) as it reached the end of its first decade and entered the SDG era.
Poleman, Jenks-Jay, and Byrne (2019) [52]		X		The authors described three cases of international networks: Regional Centers of Expertise (RCEs), the Global Alliance for Transformative Environmental Change (Global Alliance), and Global Partnerships in Sustainability (GP).
Quadrado, and Zaitseva (2019) [53]		X		The authors described a teaching project at the higher-education level: the implantation of flipped classroom methodology in specific subjects of the Master's in Development Practice Program (MDP) at Instituto Politécnico do Porto (Portugal).
Sonetti, Brown, and Naboni (2019) [54]		X		The authors reviewed a number of multi- and transdisciplinary scholarly works related to sustainability in three areas: <ul style="list-style-type: none"> individual scale, global dimension, and the role of academics in the emerging integrative-humanities science, with education promoted as an essential driver in moving from sustainability to regenerative paradigms.

Table 5. Cont.

Authorship	Type of Document *			Method Explanation
	A	B	C	
Storey, Killian, and O'Regan (2017) [55]	X			The article described the role of different initiatives in the field of Responsible Management Education: UN PRME, membership or affiliation organizations, teaching and learning initiatives, and student-centered or -led groups.
Weybrecht (2017) [56]	X			The paper proposed a framework in four steps for BSs to help move the SDGs forward.
Younie, Audain, Eloff, Leask, Procter, and Shelton (2018) [57]	X			The article described translational research as a tool to address improvement challenges in the education sector.
* Type of document: A: Descriptions, general reflections, or theoretical approaches. B: Qualitative or quantitative studies (with primary-data collection). C: Content analysis.				

3.3. Study Content: Type of Intervention and Conclusions

In the table below, we collected the fundamental ideas of the 16 analyzed works, separating, on the one hand, the type of intervention or action proposed to address SDGs in a BS and, on the other, the main conclusions to be drawn (Table 6).

Table 6. Proposals and conclusions.

What do They Propose to Deploy SDGs?		What Conclusions do they Draw?
Borges, Cezarino, Ferreira, Sala, Unglaub, and Caldana (2017) [43]	Supporting student organizations as they act as true learning communities, connecting people through their shared beliefs, passions and values. The consequence is SDG development among participants.	The development of sustainable-development values at the university occurs in: <ul style="list-style-type: none"> • Project design, • Social-responsibility teams, • Collaboration in events and interventions, • Replacing paper with digital content, • Supporting specialized NGOs, • Conferences and volunteering, • Participating in the university's sustainability office, and • Participating in the organization of economic, social, and environmental projects.
	They advocated the promotion of student associations, as they enabled students to create, research, and develop their own transdisciplinary educational content, complementing the formal curriculum of postgraduate courses in management, accounting and economics with the so-called 'hidden curriculum'.	The benefits of participating in a student organization exceeded initial expectations: friendships are made, learning takes place, and skills such as interpersonal relationships, teamwork, and leadership are developed. They are a fertile field for developing social-impact actions, promoting responsibility, ethics, interest in sustainability, and awareness of society.
Cicmil, Gough, and Hills (2017) [45]	The dominant belief in an objective epistemology among educators is not effective in addressing the complexity and non-mechanical nature of management practices. Alternative pedagogies may be more beneficial in addressing the challenges of sustainability. Alternative pedagogies and epistemologies encourage educators to: <ul style="list-style-type: none"> • Reflect on their own practice, creating a space to develop practical ethical wisdom; • Seek university autonomy; and • Resist the bureaucratization and mercantilization of academic work. 	It is necessary to: <ol style="list-style-type: none"> 1. Better understand the political and cultural context; 2. Be an example of responsible management; 3. Explicitly address the issue of international human rights; 4. Address challenges and opportunities posed by the internationally diverse profile of stakeholders; 5. Pay attention to the process of globalization, microdiversity, culture, ethics, history, and the human condition in the context of education; 6. Re-examine the purpose, value and nature of HE in its contribution to positive and sustainable global development, involving all stakeholders; and 7. Clarify to whom, how, and for what HEIs are responsible.

Table 6. Cont.

	What do They Propose to Deploy SDGs?	What Conclusions do they Draw?
Goodall and Moore (2019) [46]	Yale SDG project data show that each academic department or school has at least one faculty member whose work relates to the SDGs, and the teaching and research of 44% of Yale University faculty members are connected to at least two SDGs. Thanks to the collected data, interdisciplinary collaboration is being promoted.	Achieving the SDGs requires inclusive and innovative collaboration, and the full potential of HEI involvement in SDGs has not yet been exploited. Through ongoing discussions, innovations and research on this topic, it is possible to design effective strategies for HEIs to contribute to the advancement of SDGs.
Kolb, Fröhlich, and Schmidpeter (2017) [29]	<ol style="list-style-type: none"> 1. Direct BS impact is mainly in the field of SDG #4 (quality education). 2. By improving the educational level of managers, better and more results in the field of several SDGs (8, 9, 12, and 17) can be achieved. 3. They propose the use of the concept of sustainable management (a management practice that applies sustainability concepts by managing a business in a way that creates value for businesses, society, and the environment at the same time). 4. Sustainable management should be the center of research at the BS. 5. Students are invited to work on concrete green business cases or to take part in international case competitions related to SDGs. 	<ul style="list-style-type: none"> • It is almost impossible to address all SDGs at the same time, so priorities have to be stated. • The BS has to focus on several stakeholders and not only students. • Managers need empathy and the ability to articulate and defend the company's sustainable value proposition; in our affluent society, this is not an easy task to fulfil. • They showed how the school developed an integrated sustainable educational approach bearing in mind the need to find a blueprint on how to successfully address SDG. • Concrete instruments and the first control tools were also developed.
Melles (2015) [47]	Short-term study tours allow students to practically engage with sustainability.	<ul style="list-style-type: none"> • Much work remains to be done to achieve an equitable and sustainable future. • This requires not only theoretical but also practical engagement with low and middle income economies in transition. • A combination of theoretical and practical work is relevant to rethink one's own assumptions and mindset. • Student mobility and study tours focused on social impact offer an opportunity to expose students to the complex challenges of balancing human, economic and ecological demands.
Moon, Walmsley, and Apostolopoulos (2018) [48]	<p>The paper reviewed the progress reported by 307 HEI signatories with their implementation of SDGs, and focuses on governance implications. They propose that:</p> <ul style="list-style-type: none"> • Interdisciplinary and transdisciplinary research and studies are needed to implement SDGs. • Governance systems can help and support SDGs or not since institutional university structures and hierarchies can impede interdisciplinary research. 	<ul style="list-style-type: none"> • HEIs are catalysts for a sustainable society. Therefore, they need to develop sustainably. • The rate of progress with SDGs is slower than needed. • Most HEIs have only signed up to one SDG (#4, quality education). • Specific goals regarding SDGs have to be set, with measurement and reporting systems. • HEIs need to more actively consider partnerships (#17 partnerships for goals) • Silo thinking is an obstacle to tackle SDGs: a holistic approach to implementing sustainability is needed.

Table 6. Cont.

	What do They Propose to Deploy SDGs?	What Conclusions do they Draw?
Moon (2017) [49]	<p>Innovative thinking, collaboration and interdisciplinarity are skills needed to tackle SDGs:</p> <ul style="list-style-type: none"> The paper reviewed the latest trends to address social and environmental problems by examining a sample of 100 innovative projects across the globe. The research question is what kind of strategic policy support is needed within HEIs to develop the skills that those projects require. 	<p>HEIs need to completely transform themselves, in collaboration with practice (going beyond isolated actions). Trends and solutions are transdisciplinary and impact multiple sectors. The transformation would be enhanced by the following actions [52]:</p> <ul style="list-style-type: none"> Establishing transdisciplinary settings for research and education; Training to enable individual and collective leadership for sustainability; Initiating the assessment of global, regional and local challenges to link global challenges to regional context; Establishing sustainability as a baseline for higher-education policies at national, regional, and global level; Applying a whole institutional approach that reflects people's needs and competencies; Inspiring transformations at the interface of education, research, policy, and practice; and Supporting a stronger focus on transformative education, and new ways of teaching and learning.
Ojeda Suarez and Aguero Contreras (2019) [50]	<p>The authors described the progress in meeting SDGs in Latin America and the Caribbean, and how globalization processes have impacted higher education. They added reflections related to teaching, research, and linkage with society in order to generate a culture of quality that responds to the interests of society and of the community as support for local sustainability.</p>	<p>The main reflections of the authors related to our research question are the following:</p> <ul style="list-style-type: none"> Course design must be innovative in its form and content; Course design must favor the integration of contents and topics; PhDs must respond to the updated development of science, taking into account economic, social, technological, scientific and technological development, and the local, regional, and national policies of the country; and There has to be a holistic approach both in teaching and management of an institution.
Parkes, Buono, and Howaidy (2017) [51]	<p>There was not specific intervention proposal.</p>	<ul style="list-style-type: none"> BSs are in a unique position to influence the mindsets and actions of some of the largest and most powerful organizations on the planet. Working towards achieving the SDGs provides a range of challenges for responsible management education (in curriculum design, content, and pedagogy, in research, in building partnerships, and in the management of the institution). There must be an alignment between the messages in the classrooms and the actual practices of HEIs. Interdisciplinary education is a necessary response to the requirements of the SDGs.
Poleman, Jenks-Jay, and Byrne (2019) [52]	<p>The authors described the importance of HEIs to be part of interdisciplinary and diverse networks to work jointly for sustainability.</p>	<p>The authors concluded that networks foster the connection between research and practice, promote sustainability solutions at all levels, and empower students to live consistent and engaged lives.</p>
Quadrado, and Zaitseva (2019) [53]	<p>They proposed the use of "flipped classroom methodology" for the development of sustainability competencies.</p>	<p>The authors concluded that a flipped classroom</p> <ul style="list-style-type: none"> Can be a solution that involves extra upfront work, and Might not match with the teaching style of every educator.

Table 6. Cont.

What do They Propose to Deploy SDGs?		What Conclusions do they Draw?
Sonetti, Brown, and Naboni (2019) [54]	HEIs, as education providers, have a crucial role in cultivating sustainability awareness and values within in future generations of citizens, entrepreneurs, and policy makers.	<p>The university could, and should, be the place of transition of values, addressing coordinated actions in two areas:</p> <ul style="list-style-type: none"> Promoting education for sustainability in curricular and extracurricular activities; and Practicing what they communicate in their classrooms, promoting concrete and sustainable practices in the daily activities of the campus (recruitment, promotion, collaboration, and coordination).
Storey, Killian, and O'Regan (2017) [55]	<p>This article examined the field of Responsible Management Education (RME) in the context of the 2030 Agenda and the SDGs. RME includes a range of initiatives and bodies that seek to progress RME but remain diverse. This leads to a certain amount of incoherence in the field, with many overlapping initiatives. The paper described the role of the following initiatives in helping BSs to address SDGs:</p> <ol style="list-style-type: none"> 1. UN PRME 2. Membership or affiliation organizations: GRLL, ABIS, GBSN, and EUAC. 3. Teaching and learning initiatives: Giving Voice to Values, Aim2Flourish, Future MBA, and Sulitest. 4. Student-centered or -led groups: Enactus, and Oikos International. 	<ul style="list-style-type: none"> The RME field is fluid and cluttered, but is beginning to converge with 2030 Agenda and the SDGs as an emerging doxa. The diversity of agents/organizations in the field is a strength, presenting a range of different opportunities for engagement by HEIs and BSs. Networks facilitate an alignment around SDGs. Membership networks also provide access to specific teaching and learning initiatives, international links and innovative pedagogies. UN PRME could become a connector of individual classroom practices, school initiatives, and regional and global organizations.
Weybrecht (2017) [56]	<p>Management education is called to play an important role in the achievement of SDGs, but it seems that it is not doing so at the expected speed. In order for BSs to reflect on where are they today, and set out where and how to move forward, the article proposed a four-step framework:</p> <ol style="list-style-type: none"> 1. Setting the scene (auditing what is happening, what is missing, and what is working and what is not); 2. Integrating sustainability (in theory and in practice) and collaborating with a range of different partners and disciplines; 3. Focusing in, developing, and leveraging Unique Engagement Points (since every BS is different); and 4. Empowering communities—creating an enabling environment. 	<ul style="list-style-type: none"> BSs have yet to reach their full potential as agents in moving SDGs forward. To do so, they need to change, and those not doing so, will disappear: “The real success of a business education program will increasingly be judged on whether it is able to train graduates to think about business and making money in different ways, aligning social and environmental objectives with financial gains” (p. 92). The presented framework could help, as it is essential to assess where the BS is, and to embed sustainability topics across all programs, initiatives, and activities in a differentiated and unique way.
Younie, Audain, Eloff, Leask, Procter, and Shelton (2018) [57]	<p>The article reviewed translational research (TR, “theory-to-practice” research) as a tool to address improvement challenges to the education sector identified by the OECD and UNESCO. It presented the mapping educational specialist knowhow (MESH) system. MESH provides a system for knowledge management (KM) through the communication and dissemination of research for professional practice in education.</p>	<ul style="list-style-type: none"> There are no knowledge-management and research-informed systems in education. The model presented in the article could be a low-cost and sustainable proposal. Collaborative partnerships can facilitate the harvesting of research knowledge from organizations to provide teachers with content and the latest pedagogic research for their subjects. However, some challenges appear related to the governance of such an international TR knowledge management system.

4. Discussion

The 16 reviewed documents have different objectives, scope and methodology. However, they all analyze how to contribute to the achievement of SDGs through higher education and, more concretely, in BSs. In no case do they question the important role that BSs have in contributing to the training of future citizens and managers.

With the aim of answering our research question, to know what kind of actions BSs should carry out to contribute to the advancement of SDGs, we use the simile of a tree (with its deep roots, its trunk,

and its visible and leafy leaves). We thus represent the main ideas proposed in the reviewed studies grouped into three levels, as shown in Figure 3.

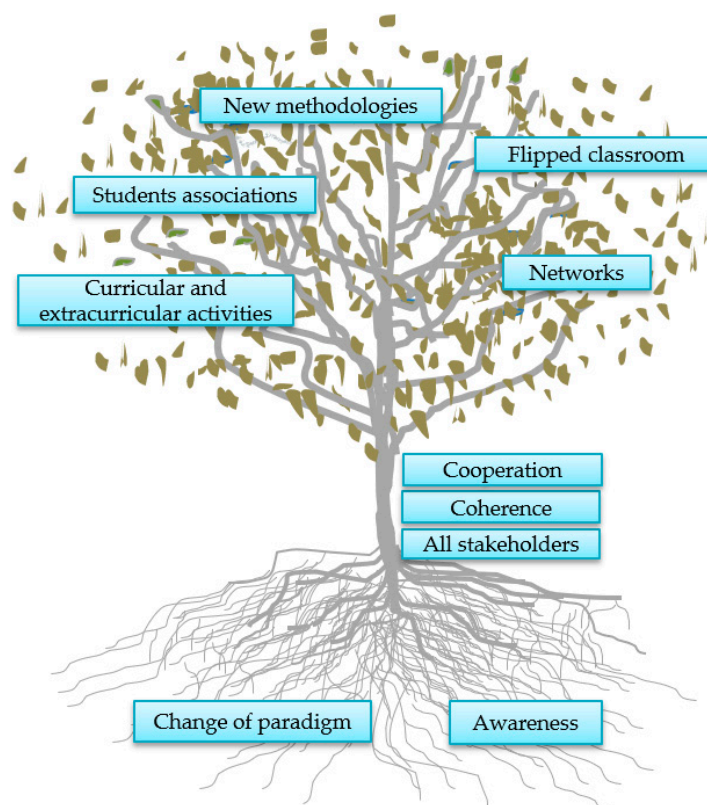


Figure 3. Synthesis of proposals.

In order for the tree to have strength and be able to shine in splendor, it must have strong roots. Several of the reviewed articles point to the importance of getting to the root of challenges posed by 2030 Agenda. These roots are awareness of the economic, social, and anthropological models that underlie the curriculum, as well as the development of critical thinking and sustainability values in students. Weybrecht (2017) [56] affirmed that BSs have yet to reach their full potential as agents in moving SDGs forward. To do so, they need to change and transform, and those not doing so, will disappear. Sonetti, Brown, and Naboni (2019) [54] concluded that HEIs, as education providers, have a crucial role in cultivating sustainability awareness and values within future generations of citizens, entrepreneurs, and policy makers. Cicmil, Gough, and Hills (2017) [45] insisted on the importance of alternative pedagogies and epistemologies. They considered it very important to encourage educators to reflect on their own practices, creating a space to develop practical ethical wisdom. To begin this change, it is necessary to start with the faculty, not only because of their direct contact with the students, but also because they can generate research that produces changes (2017) [56].

The trunk has to do with the solid daily work of the BS, in a coherent, interdisciplinary, and collegial way. Moon (2017) [49] explains that innovative thinking, collaboration, and interdisciplinarity are needed skills to tackle SDGs. Both Moon, Walmsley, and Apostolopoulos (2018) [48], and Goodall and Moore (2019) [46] considered the joint and interdisciplinary work of teachers and researchers to be crucial. In addition to this multidisciplinary and interdisciplinary work, it is necessary to foster networking and to work with stakeholders in a coordinated way [48,55–57]. Kolb, Fröhlich, and Schmidpeter (2017) [29] proposed the use of the “sustainable management” concept (a management practice that applies sustainability concepts by managing a business in a way that creates value for business, society, and the environment at the same time). Sustainable management is the center of research at BSs, which encourages professors to streamline their research resources. Ojeda Suarez and

Aguero Contreras (2019) [50] defended, among others, two main ideas: it is necessary to (1) have a holistic approach both in the teaching and management of the institution, and (2) generate a culture of quality that responds to the interests of society and of the community. Parkes, Buono, and Howaidy (2017) [51] talked about coherence: there must be an alignment between classroom messages and the actual practices of HEIs. In general, all authors agreed on the idea that sustainability and SDGs must be present in all university activities: teaching, research, social projection, and management of the institution. They insisted on the importance of seeking coherence between what is defended and declared, and day-to-day activities: “Schools send strong signals to students about what is and what is not important to them as graduates in the business world from the minute they first interact with the school” [56] (p. 87).

In a third group of ideas, and thinking of the branches and leaves of the tree, we found articles that more concretely suggested methodologies, proposals, and both curricular and extracurricular activities that contribute to the development of SDGs. These practices or suggestions would have no value and would generate little impact if they were not based on the aforementioned strong roots. In first place, the importance of student organizations that act as true learning communities is mentioned, as they are a fertile field to develop actions of social impact, promoting responsibility, ethics, interest in sustainability, and awareness about society [33,44]. Second, Melles (2015) [47] defended that student mobility and study tours focused on social impact offer an opportunity to expose students to the complex challenges of balancing human, economic, and ecological demands. Third, Poleman, Jenks-Jay, and Byrne (2019) [52] described the importance of HEIs to be part of interdisciplinary and diverse networks to work jointly for sustainability. Fourth, Quadrado and Zaitseva (2019) [53] proposed the use of the flipped classroom methodology for the development of sustainability competencies. Finally, Storey, Killian, and O’Regan (2017) [55] described the role of different initiatives in helping BSs to address SDGs, and mentioned the importance of applying innovative teaching pedagogies.

Summing up, HEIs need to undergo deep and complete transformation in collaboration with practice [48]. Dominant paradigms should be questioned, and management education needs to embed sustainability and SDGs across the curriculum in a way that is useful and relevant to all students. This embodiment goes beyond simply presenting definitions and issues of relevance to business; it is also about developing a number of key skills in graduates that enable them to put concepts into practice [56]. Moreover, BSs must align teaching, management and research policies, prioritize, and be consistent [29]. In the end, the development of the school itself must be sustainable, and management must support SDG deployment [48,56]. To do so, specific goals regarding SDGs have to be set, with measurement and reporting systems [48].

As far as the literature gaps and ideas for future research identified in the literature are concerned, not all the articles mention any. Those that explicit ideas for future research focus on the need to test specific interventions, strategies and methodologies. Some research work has been done related to designing strategies to reach SDGs fulfilment, but little research has been done on measuring their implementation. In this sense, Borges et al. (2017) [43] state the need to deepen the measurement of the individual and collective performance of the student organizations and the range of impact of these actions on SDGs implementation. Goodall and Moore (2019) [46] mention the necessity to validate the publicly available data, obtaining primary data. In a similar way, Moon et al. (2018) [48] conclude that the impact of staff development in students profile has to be analyzed, and the efficacy of the competency model and the role of broader definitions of competencies should be tested.

Other literature gaps identified in the reviewed articles are the following:

- More research should be done to better understand the organizational context (political and cultural) for implementation of ESD in higher education [45].
- Greater attention should be paid to the challenges and opportunities posed by the increasingly internationally diverse profile of both student and staff, and to related topics such as globalization, diversity, or culture [45].
- More debate is needed regarding how responsibility shared in the higher education context is [45].

- More work should be done to explore how to engage students directly with civil society, non-profits or public policy in the key areas impacted by the SDGs [55].

5. Conclusions

The interest in the deployment of SDGs in BSs is evident. After their recent definition in 2015, many researchers are concerned about the topic, the role that BSs should play, and how to address this challenge.

The reviewed articles did not question that BSs are change agents that could contribute to achieving SDGs; even if they are not doing so at the expected pace. At the same time, although there is no consensus as to where to start, there are several common ideas of interventions to be carried out, both in the field of teaching and in research and management: promoting a paradigm shift, encouraging interdisciplinary and collaborative work, opening universities to the local and global environment, and adding new activities, as well as promoting the use of active methodologies.

From the literature review, we can conclude that there are more theoretical or reflective approaches than measurements or analysis of specific interventions, so it seems that there is a gap in the literature. Thus, we defend the need to carry out two types of future research about the deployment of SDGs in the BSs: case studies with best practices, and evaluations of specific interventions.

The described systematic review has the following limitations:

- Research on any particular SDG in a BS has not been reviewed, considering that it was more interesting to first know the state of the art from a more general perspective;
- For a similar reason, searches in marketing or finance education were discarded;
- The choice to restrict our search to English and Spanish-written articles may have influenced our findings, not considering other relevant results;
- The selection of only three specific databases;
- Documents after July 2019 have not been reviewed, nor books or book chapters;
- The reviewed studies were carried out in different contexts, so cultural variables may have had an influence that we have not considered, and interpretation of the studies was hindered by the fact that many of the studies provided limited information on their context;
- The concept we explored (interventions to deploy SDGs in BSs) is broad and presents limitations in providing a consistent definition within the interventions; and
- The variability of the interventions and the small number of studies with primary data collection made it difficult to reach a conclusion on the effectiveness of the interventions.

Some of these limitations open up opportunities to carry out future research, for example, reviewing what has been done in BSs in relation to specific SDGs or searching in other databases and/or in other languages.

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