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Integrating Sustainability Accounting into Algerian Higher Education: A Pathway to University–Stakeholder Collaboration and Sustainable Development – A Field Study

Serbouk Mohamed Bederer
Doctor in Accounting and Audit
Faculty of Economics, Commercial and Management Sciences, Hassiba Ben Bouali University
Chlef, Algeria
E-mail: mohamed.s209@hotmail.fr | ORCID: https://orcid.org/0009-0008-5815-1289

Bouchaala Reguieg Djamel
Doctor in Public Management
Faculty of Economics, Commercial and Management Sciences, Lounici Ali University, Blida 2
Algeria
Email: djameloma2016@gmail.com

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Abstract
The Algerian university system faces a pivotal challenge: bridging the gap between academic knowledge and the practical demands of sustainable economic and social development. This study explores the imperative of integrating sustainability accounting into university curricula as a mechanism for enhancing institutional linkages with key stakeholders and ensuring long-term socio-economic relevance. Using a descriptive–analytical methodology, the research combines theoretical analysis with field-based qualitative data gathered from semi-structured interviews with internal and external university stakeholders, including academic staff, administrators, employers, and public sector representatives. Findings reveal that, despite recent reforms promoting openness and collaboration, Algerian universities still experience structural and operational limitations—particularly in the fields of accounting and finance education—hindering the effective institutionalization of sustainability principles. Respondents emphasized the absence of comprehensive frameworks for identifying, measuring, and disclosing non-financial (ESG-related) indicators, as well as weak coordination between academia and the external environment. The study recommends embedding sustainability accounting into academic programs, establishing multi-sectoral partnerships, and adopting competency-based models that align educational outcomes with the requirements of sustainable national development.
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Introduction

Universities play a central role in generating intellectual capital, promoting human advancement, and supporting sustainable development across economic, social, and environmental dimensions. To fulfill this role, substantial public funding is directed toward modernizing academic programs and aligning them with labor market demands, supported by strategic partnerships that foster the exchange of academic and practical expertise.

In contrast to quantifiable economic shocks, such as the 2008 financial crisis and hydrocarbon price fluctuations, contemporary environmental crises like the COVID-19 pandemic and climate change present challenges due to their qualitative and non-financial nature, complicating data measurement and decision-making. This situation necessitates the development of scientific models within the framework of sustainability accounting to effectively capture and disclose relevant data.

Algerian universities are actively engaging in partnerships and initiatives aimed at integrating scientific research with practical applications to drive sustainable progress. These efforts include the formation of specialized committees, joint research projects, academic events, and international collaborations. Despite these initiatives, universities face persistent challenges, including limited funding, bureaucratic inefficiencies, and inadequate coordination among stakeholders, which hinder the effective implementation of their sustainability-oriented missions.

From the foregoing, the central research question of this study emerges: *What role can accounting play in linking the Algerian university to its practical environment and in fulfilling the requirements of sustainability?*

This research seeks to examine the current state of interaction between Algerian universities and sustainability-oriented stakeholders, evaluating the level of integration among them and identifying potential actions the university can undertake to address existing challenges. It proposes an integrated relational model involving both internal and external actors, with a focus on modernizing academic curricula especially in accounting disciplines. The aim is to enhance the university's capacity to develop effective solutions for identifying, measuring, and disclosing non-financial data related to sustainability impacts, thereby improving the understanding and management of such data within the broader framework of sustainable development.

Theoretical Framework: A Conceptual Review of the Study Elements

01 – The State of the Relationship Between the University and Its Economic and Social Environment Before and After Liberalization

A. The Foundation Phase and Structural Reforms: Following independence, Algeria inherited a weak and underdeveloped educational system. By the late 1960s, early reform efforts were hindered by obstacles, with a major challenge being the disconnect between university research and state-led development initiatives. In agriculture despite the sector's central role in a largely rural (Bououchma & Belhachemi, 2020, p. 103), agrarian society—the application of scientific research to address practical problems was neglected, leading to a disengagement of academia from critical economic and social needs (Gherraz, 2021, p. 15).

A similar disconnect characterized the industrial sector. During the 1970s Industrial Revolution, the university's contribution was largely confined to factory operation and management, excluding essential roles such as design, innovation, and technological development. As a result, the sector remained heavily reliant on foreign expertise (Bensmail, 2019, p. 31). Over time, many factories closed, the industrial initiative failed, and the remnants became financial liabilities for the state, highlighting the missed opportunity for universities to support sustainable national development.

B. Recent Transformations of the University to Meet the Requirements of Openness, Specialization, and the Institutionalization of Sustainability: In response to longstanding challenges hindering university integration with its socio-economic environment, Algerian universities have implemented a series of measures aimed at redefining their role beyond that of a traditional academic institution (Brémaud & Boisclair, 2021, p. 2). These include establishing partnerships with economic entities, professional associations, civil society, and public agencies to foster professionally oriented training programs aligned with labor market needs (Massak, 2010). The overarching goal is to enhance graduate employability and embed universities more deeply within the national development process through applied research, internships, and joint training initiatives.

As multidisciplinary institutions, universities comprise faculties and departments closely tied to sustainability concerns such as Natural and Life Sciences, Social Sciences, Law, and Economic and Management Sciences (Abdelkrim , 216, p. 43). The Finance and Accounting departments, in particular, hold strategic potential for leading interdepartmental and cross-sector collaborations that support the development of sustainability accounting. This emerging field requires integrating technical, financial, social, and environmental knowledge to capture and disclose non-financial data related to ESG (environmental, social, and governance) issues.

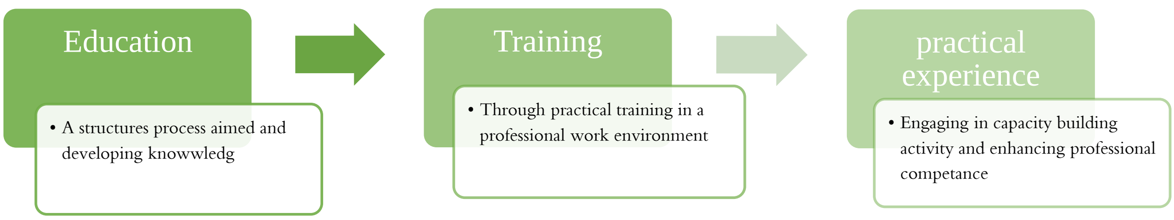
The central challenge lies in the need to identify and quantify sustainability-related impacts, as unrecognized phenomena cannot be measured, accounted for, or reported. This creates both a challenge and an opportunity for accounting education to incorporate ethical and sustainable dimensions into traditional financial frameworks. Additionally, the evolving technological landscape must be considered for its dual impact on organizational practices and the broader environment, further emphasizing the need for innovation in accounting and educational strategies (Fibriyani & Eko Ganis , 2019).

02: The Necessity of Updating Accounting Education Curricula to Ensure the Fulfillment of Sustainability Requirements

A. Integrating Sustainability Accounting into Accounting Education Curricula: The dynamic evolution of the accounting profession and the resulting divergence in practices have underscored the need for internationally standardized accounting curricula. These standards are crucial for creating a unified foundation that meets professional demands and facilitates a common language and framework among accountants globally (Ben salah & Ratoul, 2016, p. 188). In response, academic and professional accounting bodies have collaborated to develop internationally recognized education standards and curricula aimed at advancing the profession.

These initiatives are designed to prepare accountants for a rapidly changing environment shaped by advances in information and communication technologies (Zeghmar , 2023, p. 90). A robust accounting education model must therefore equip students with both theoretical knowledge and practical training to ensure they graduate with the skills and competencies required to operate effectively in the professional field. This educational methodology is typically implemented through the following stages:

Figure 01: The foundational stages of learning and professional advancement



Source: International Education Data Guide, 2017 edition, p. 10.

Accounting education, both academic and professional, is inherently designed to serve the needs of the accounting profession. As such, its development must be informed by a thorough understanding of labor market trends and the evolving demands of practitioners. The International Federation of Accountants (IFAC) emphasizes the importance of aligning educational programs with professional needs to ensure relevance and effectiveness (Ben salah & Ratoul, 2016, p. 191). In the context of sustainability, building ethical, adaptable, and trustworthy accounting systems requires more than academic discourse it demands the integration of sustainability accounting into university curricula. This approach is essential for preparing future accountants with the knowledge and competencies needed to address sustainability challenges and contribute meaningfully to the development of responsible and forward-looking accounting practices. This should occur in two stages:

- The first involves **academic scientific education**, whereby students are provided with theoretical knowledge;

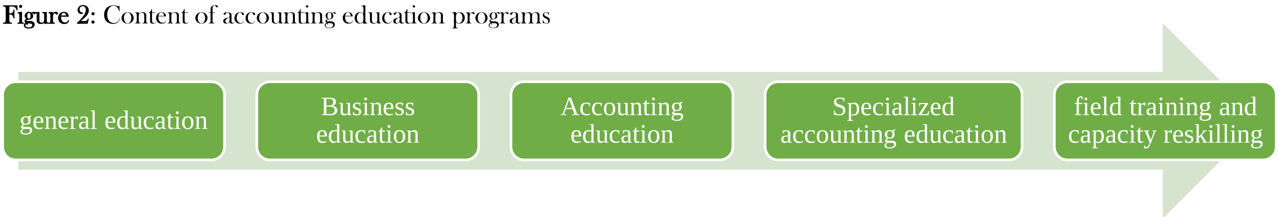
- The second involves **professional and practical training**, whereby graduates acquire applied professional expertise.

The International Federation of Accountants (IFAC), through its International Panel on Accounting Education (IPAE), has played a crucial role in shaping best practices to support the preparation of future-ready accountants. It promotes the use of standardized accounting education frameworks that guide and rationalize pedagogical approaches, emphasizing a shift from passive learning to active, student-centered learning models. In this approach, students engage in problem-solving using a variety of informational resources—technical, descriptive, and financial.

IFAC also advocates for the integration of technology and collaborative learning to enhance educational outcomes and foster essential professional skills. A key focus is on developing students' meta-learning abilities, or their capacity to "learn how to learn," (Stanley & Sherman, 1996, p. 164) which is critical in a rapidly evolving professional landscape.

To address the disconnect between university accounting programs and labor market needs, educational institutions must align curricula with practical expectations, ensuring graduates are well-equipped with both theoretical knowledge and applicable skills relevant to the contemporary accounting profession. the content of academic accounting programs must be structured according to the sequence illustrated in the following steps (Nazim chaalane & Ali soucha , 2020, p. 233) :

Figure 2: Content of accounting education programs



Source: Nazim chaalane,2020,p.235.

form the sequential stages of a multi-stakeholder approach aimed at enhancing the inputs of the educational and training process to achieve a set of goals, as identified by (IFAC, 2025):

- **Establish open career pathways** for all, including accountants interested in disclosing environmental and social issues.

- **Adopt international education standards** that define the principles and curricula of accounting and focus on learning outcomes.

- **Foster full collaboration with professional accounting organizations**, whose educational requirements are based on international standards and who work in partnership with public authorities, regulatory bodies, and universities to adopt and implement those standards.

- **Establish a broad and focused educational ecosystem** that brings together instructors, universities, academics, regulators, governments, and professional accountants working collectively to equip both current and future accountants with the necessary skills and training.

- **Implement ongoing Cycles of evaluation and review** of international education standards to ensure they meet the evolving needs of the global accounting profession and the stakeholders who depend on them.

- In light of the ongoing evolution of the accounting profession, in response to current environmental and social conditions, the IFAC has undertaken efforts to ensure the preparation of future accountants by integrating sustainability concepts into international education standards and giving them an ethical dimension. This is achieved by embedding sustainability into the following elements:

Figure 3: Integrating sustainability concepts into IESs

Source: IFAC 2025.

The International Federation of Accountants (IFAC) emphasizes the reinforcement of education standards as a global benchmark to develop professional competence in sustainability reporting. This commitment reflects IFAC's goal of equipping accountants with the skills necessary to integrate financial and non-financial data in sustainability-related disclosures (IFAC, Sustainability Revisions, 2023). In line with this vision, IFAC and related bodies advocate for stronger collaboration with universities (Ouaker, 2021):

- **Competency-Based Education**: Accounting programs should prepare students to effectively communicate both financial and non-financial information through comprehensive academic training, professional certification, and practical experience.

- **Curriculum Flexibility**: Education systems must remain adaptable to environmental and contextual changes through continuous curriculum review and reform.

- **Interdisciplinary Integration**: Accounting education should incorporate technical, scientific, and interdisciplinary knowledge from fields such as the social and applied sciences to broaden professional capabilities and understanding.

These measures aim to align academic accounting education with evolving professional requirements and sustainability imperatives.

03- Examples of Academic Curricula

A – Lancaster University: Over the course of two years, 41 researchers from around the world collaborated to produce the *Routledge Handbook of Environmental Accounting*, which synthesizes 30 years of academic research and practitioner experience. The handbook addresses both region-specific and global environmental accounting issues. On September 6, 2021, The launch panels featured reflections from the editors and authors on the significance of the handbook and the role of environmental accounting, including the famous professors and researchers like: Jan Bebbington, Carlos Larrinaga, Brendan O'Dwyer, Ian Thomson. The event featured discussions on the use of the *Routledge Handbook of Environmental Accounting* in teaching programs across themes such as environmental literacy, methodology, the relationship between environmental accounting and governance, and the future of accounting for water, biodiversity, and carbon (Lancaster university, 2021).

B – Royal Roads University: On its official website, Royal Roads University presents a comprehensive set of academic modules covering key areas such as environmental and social accounting, sustainable development, climate change, sustainable solutions, marketing and strategic decision-making, disclosure and reporting methods, and governance. These are illustrated in the following Table (Royal Roads university, 2024):

CMDV500: Core Principles of Sustainable Community Development
EECO503: Foundations for Environmental Communication
EECO510: Worldviews, Ethics, and the Environment
EECO586: The Biosphere and Sustainability: Socio-Ecological Justice
ENVP500: Developing a Sustainability Perspective
ENVR530: Economics for Decision Making

ENVR545: Theories and Stories in Sustainable Development
ENVR560: Environmental Accounting and Reporting
ENVR626: Leadership and Sustainable Development
SPCC614: Science and Impacts of Climate Change
SPCC615: Climate Policy and Governance
SPCC616: Climate Solutions

04. Collaboration with Various Stakeholders: In the aftermath of the COVID-19 pandemic, public expectations around environmental and social responsibility have intensified (Chang & Osei Agyemang, 2024), compelling not only private companies but also public institutions, NGOs, and universities to adopt environmentally sustainable practices Despite the voluntary nature of environmental disclosure due to the absence of standardized reporting frameworks there is growing pressure on organizations to be transparent in their sustainability practices (Meilani & Gunarto, 2024).

Within this context, universities play a pivotal role in preparing graduates equipped with sustainability accounting competencies. These skills are essential for influencing organizational behavior, environmental awareness, and decision-making, particularly in areas such as ecological budgeting and strategic participation in sustainability initiatives (Ntui , 2024, p. 11).

In response to these needs, the International Federation of Accountants (IFAC), in collaboration with the Edinburgh Group, has focused on supporting small and medium-sized practices (SMPs) key actors in the sustainability ecosystem. A notable initiative is the **Sustainability Checklist for Small Businesses**, a sector-specific, life-cycle-aware, self-assessment tool developed by IFAC. It enables businesses to evaluate their environmental, social, and governance (ESG) performance (IFAC, R.T Sustainability Tool S.Businesses, 2025), identify associated risks and opportunities, and receive a **sustainability maturity score** (Limited, In Progress, or Mature), thereby supporting continuous improvement in sustainable business practices.

While the majority of sustainability accounting research has traditionally centered on for-profit entities, recent scholarship is increasingly recognizing the critical role of public, non-governmental, and hybrid sectors in advancing the sustainable development agenda (Brusca, 2024, p. 724). These sectors are uniquely positioned to align their operations with the United Nations Sustainable Development Goals (SDGs), given their explicit mandates to serve the public interest.

Emerging research explores the integration of SDGs into core functions of these organizations, including budgeting, management control systems, sustainability performance accounting, and the broader challenges of sustainable development management (Bebbington & Unerman, 2020, pp. 1658-1659). These entities are thus expected to define relevant SDG targets and embed them into strategic planning, internal controls, performance measurement, and external reporting frameworks.

In support of this alignment, the International Federation of Accountants (IFAC) has collaborated with governments to promote accrual-based accounting, enhance public financial management, and reinforce transparency and accountability key pillars for achieving the SDGs by the 2030 deadline. IFAC has issued critical recommendations to G20 leaders and policymakers aimed at strengthening sustainability governance. These include advocating for a global standards-based framework for sustainability disclosures, supporting the International Public Sector Accounting Standards Board (IPSASB) in establishing sustainability reporting standards for the public sector, and encouraging governments to adopt accrual accounting to improve public financial management and transparency.

Amidst the setbacks caused by the COVID-19 pandemic and escalating geopolitical tension Which have impeded progress toward the 2030 Sustainable Development Goals (SDGs)—these recommendations highlight the necessity for collaborative efforts across public, private, and civil society sectors to advance diversified financing mechanisms and institutional accountability (Vaccuri, 2021, p. 252). Scholars emphasize the importance of addressing several critical issues within this context (Kaur, 2025, p. 139):

A. Stakeholder Engagement: Involving stakeholders in sustainability planning, accounting, and reporting processes.

B.Redefining Accountability: Understanding how the SDGs reshape public sector responsibilities, particularly in emerging economies, where accounting reforms have tended to emphasize technical outputs.

C.Technological Innovation: Leveraging big data and digital platforms to enhance sustainability performance measurement and reporting, tools that were underdeveloped during the initial formation of the SDGs.

D. Research Contributions: Encouraging accounting and management scholars to design integrated reporting models that align financial results with environmental, social, and governance (ESG) indicators. Ultimately, a coordinated, innovative, and accountable approach across all sectors is essential to achieving the transformative ambitions of the 2030 SDG Agenda.

Methodology

While prior research on this topic has primarily relied on descriptive and analytical methods—such as literature reviews and statistical analyses of survey data—this study adopts a more nuanced approach by employing qualitative content analysis. Specifically, it analyzes data collected through open-ended, in-depth personal interviews to gain deeper insights into the phenomenon under investigation. This method enhances diagnostic and exploratory capacity and supports foresight by systematically examining trends and perspectives articulated by participants. The interviews were guided by a tailored interview framework adapted to different respondent categories within the study sample. Additionally, the research incorporates document and record analysis, covering a broad array of sources, including:

- Reports from conferences, symposia, and training events;
- Academic curricula and syllabi;
- Financial reports and statements;
- Disclosures and feasibility studies for funding purposes;
- Environmental and social declarations required by law;
- Field visit reports and licensing documentation for environmental compliance;
- Legislative and regulatory texts;
- Reports from governmental, non-governmental, and civil society organizations.

These documents, containing both qualitative and quantitative data, are analyzed using content analysis to validate and enrich the findings derived from the interviews. This comprehensive methodological framework enables a more integrative and contextually grounded understanding of the subject.

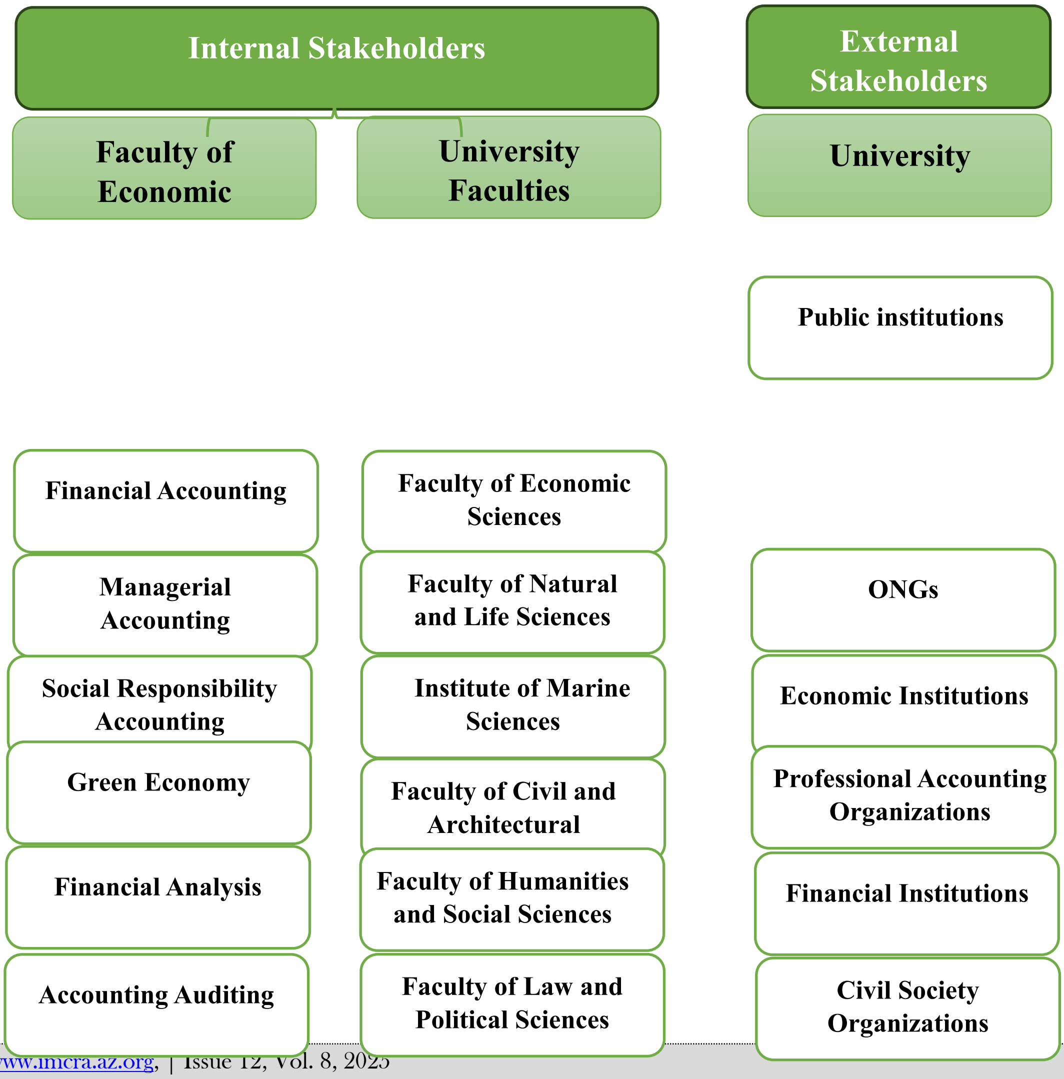
Field Study Procedures: This field study was designed as an **application of the theoretical framework** discussed earlier. The integration of stakeholders enables the formulation of a strategic approach that proceeds through key phases, most notably (Suhardiah & Sidharta, 2019):

Figure 4: Stakeholder sustainability strategy.

Source: Authors own elaboration.

It is essential to examine the relationships of influence and mutual impact with the relevant stakeholders both external and internal in order to assess the capacity of these interactions to contribute to sustainability, as well as the extent to which they can be measured and disclosed financially and from an accounting perspective. The study focused on three subgroups representing the levels through which this approach must progress in order to achieve its objectives and support sustainable development. This field study was conducted through a series of steps aimed at engaging with the stakeholders, who are illustrated in the following figure:

Figure 5: Internal and External Stakeholders for this study.



Source: Authors own elaboration.

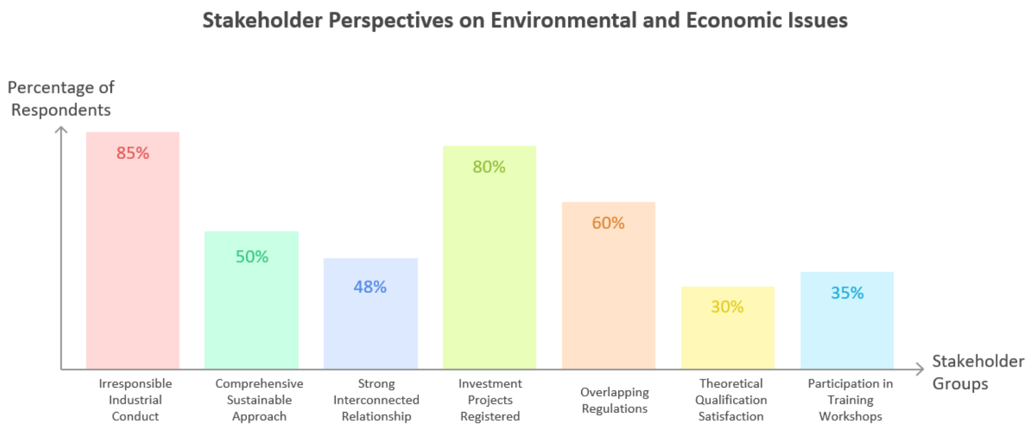
The study investigates the role of the university in promoting sustainable development by assessing its engagement with both external and internal stakeholders.

1. External Stakeholder Engagement: The university's connection to its socio-economic environment reflects Algeria's strategic orientation toward stakeholder openness and mutual benefit. Empirical research involved 58 interviewees from six categories of external stakeholders. Through open-ended interviews, the study evaluated the nature and effectiveness of university–stakeholder relationships, existing partnerships, and their contributions to sustainable development. It also examined whether these interactions adequately address mutual needs for scientific and professional competencies.

2. Internal Stakeholder Engagement:
A. Interdisciplinary Collaboration Across Faculties: recognizing sustainability as an interdisciplinary field that encompasses scientific, technical, legal, social, financial, and accounting dimensions, the study explored cross-faculty integration. Interviews with 25 professors from seven faculties aimed to assess the potential for developing financial indicators from non-financial dimensions taught across various disciplines. The goal was to bridge the gap between technical and engineering outputs and economically interpretable results through academic collaborations.
B. Curriculum Integration within the Faculty of Economic Sciences: building on IFAC's International Education Standards (IES 2, IES 4, and IES 7), the study examined the alignment of accounting-related modules such as financial accounting, auditing, corporate finance, and business strategy with sustainability education. Given the absence of formal sustainability accounting programs, a proposed curriculum model was developed by integrating relevant modules. Targeted interviews with 28 professors were conducted to identify the scientific and pedagogical prerequisites for establishing a sustainability-oriented accounting curriculum. Overall, the study provides a multidimensional analysis of how universities can contribute to sustainable development through strategic external engagement and internal curriculum innovation.

Analysis and discussion:

First: Concerning the University's Relationship with Its External Environment: Through the visual result of the analysis:



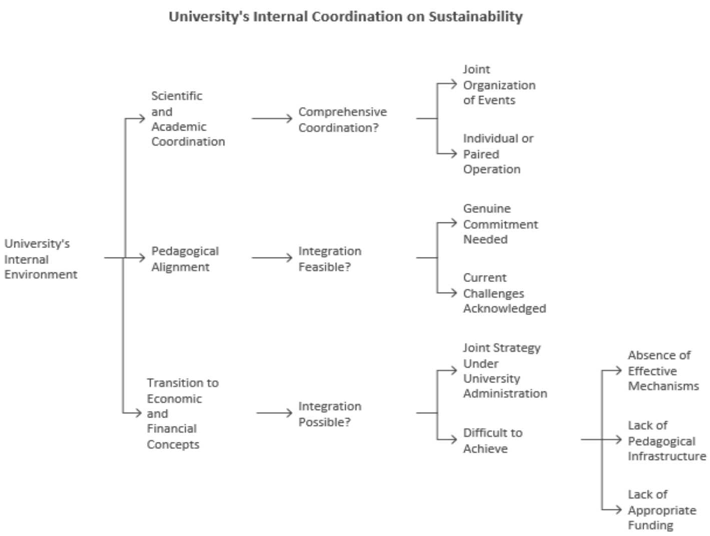
The empirical findings of the study highlight a multifaceted landscape of environmental, institutional, and educational challenges in Algeria, particularly as they relate to sustainable development and the role of accounting and financial systems.

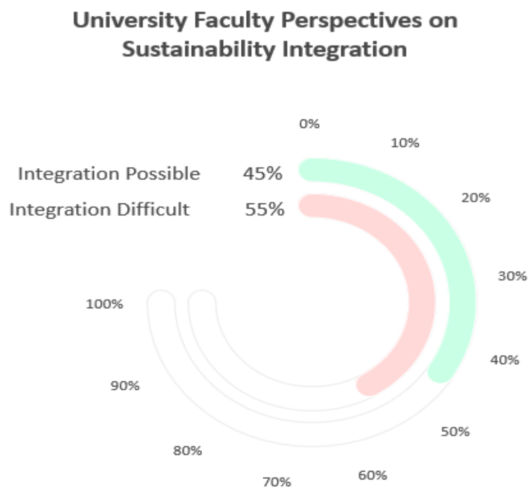
Environmental Challenges and Climate Responsibility: respondents identified key environmental issues including drought, reduced green spaces, airborne dust, and unpleasant odors. In assessing the COVID-19 response, there was consensus on the inadequacy and delay of preventive measures. Regarding climate change, 85% of participants attributed primary responsibility to industrialized nations and criticized the insufficiency of their mitigation efforts. While 45% of respondents prioritized the environmental dimension of sustainability, others emphasized the economic aspect, reflecting divergent perspectives on sustainability priorities. A total of 48% recognized a strong interdependence between environmental, economic, and social dimensions, whereas the remainder remained skeptical, referencing countries with high pollution but strong economic performance. **Investment, Bureaucracy, and Environmental Oversight:** among the 157 investment projects reported, four-fifths of respondents acknowledged procedural flexibility and success in securing tax and investment incentives. However, 20% highlighted bureaucratic inefficiencies and legal inconsistencies particularly in environmental regulation as significant barriers to project implementation. **Disclosure, Reporting, and Environmental Expenditures:** environmental impact assessments are typically outsourced to consultancy firms for regulatory compliance; however, banks rarely consider environmental feasibility studies in financing decisions. Public institutions reported allocating 1.5%–2% of annual turnover to environmental activities, while private entities spent between 600,000 DZD and 1,822,000 DZD.

Accounting Systems and Sustainability Reporting: while 95% of respondents favored the Algerian Accounting and Financial System (SCF) for its automation and usability, they noted its divergence from international standards (IAS/IFRS). Financial information on environmental and social events is only identifiable when explicitly documented, and classification remains problematic due to the absence of clear legal mechanisms. Only 25% of institutions apply specialized procedures, and 90% cited legal and procedural ambiguities as obstacles to proper environmental accounting. Disclosures are typically motivated by the need to acquire ISO certifications for international compliance, rather than voluntary sustainability practices, which remain rare due to the absence of regulatory or financial incentives.
Financial Instruments and Market Limitations: Green loans and environmental investment funds were largely unknown and viewed as impractical due to limited financial market development. **Human Capital and University Collaboration:** Stakeholders source approximately 65% of their workforce from university graduates, yet only 30% expressed satisfaction with their theoretical training. While some institutions conduct outreach and sustainability initiatives, only 35% reported collaboration with universities in training workshops, relying instead on alternative organizations.

The findings underscore the critical need for regulatory clarity, institutional capacity-building, integration of sustainability into accounting education, and improved university–industry collaboration to advance environmental accountability and sustainable development in Algeria.

Second: Concerning the University's Relationship with Its Internal Environment: The study reveals several insights into the current state of scientific, academic, and pedagogical collaboration among university faculties in Algeria regarding sustainability themes:





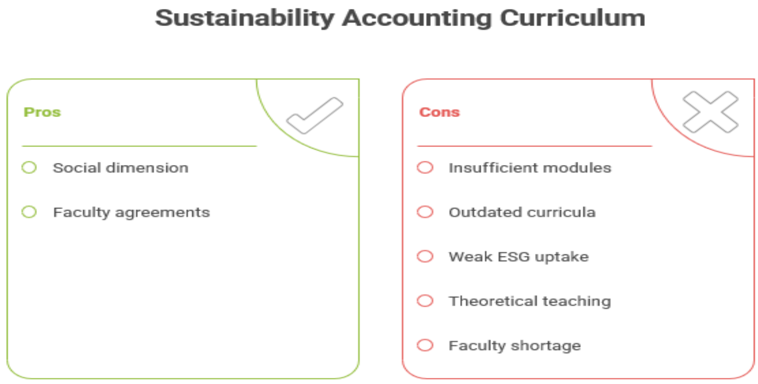
1. Limited Inter-Faculty Coordination on Sustainability Events: although numerous national and international conferences have addressed critical sustainability topics such as renewable energy, waste management, sustainable development, and smart cities these initiatives were primarily organized by individual faculties or, at most,

through bilateral cooperation. There is a notable absence of holistic coordination that involves all relevant internal stakeholders, reflecting institutional fragmentation and missed opportunities for interdisciplinary synergy.
2. Challenges in Pedagogical Integration Between Disciplines: respondents unanimously recognized the difficulties in aligning the curricula of engineering faculties (technical and scientific modules) with those of economics, law, and political science (accounting, legal, and social modules). Despite these challenges, there is cautious optimism that such integration could be realized in the near future provided there is a concerted institutional commitment and strategic leadership to foster cross-disciplinary pedagogical reforms.

3. Divergent Views on Measuring and Reporting Sustainability Dimensions: Opinions were divided on the feasibility of integrating technical and economic dimensions to enable more comprehensive sustainability measurement and reporting. While 45% of respondents believed that developing a joint strategy under university administration is achievable, 55% expressed skepticism. They pointed to structural barriers such as the lack of effective coordination mechanisms, insufficient pedagogical infrastructure, and inadequate funding for establishing interdisciplinary research laboratories as major impediments to progress.

The findings underscore the need for structural reforms within universities to promote interdisciplinary collaboration, curriculum integration, and institutional capacity-building. Enhanced academic coordination, supported by administrative leadership and targeted funding, is essential to enable the transition from isolated sustainability initiatives to a unified academic approach that bridges technical, economic, and social dimensions.

Third: Concerning the Interaction Between the Modules of the Faculty of Economic, Commercial, and Management Sciences for the Establishment of Sustainability Accounting



Interviews with academic staff revealed significant shortcomings in the current curriculum of the Faculty of Economics with regard to sustainability education. The number of modules addressing sustainability dimensions, particularly the financial and economic aspects, was deemed insufficient. Moreover, these modules have not been updated in line with international academic standards, especially when compared to curricula in European universities. Consequently, the existing academic programs fail to reflect current global trends in environmental and climate challenges or to address their financial and economic implications for businesses of varying sizes, thus undermining the foundation for a robust sustainability framework.

Respondents highlighted the limited incorporation of globally recognized standards such as the **International Accounting Standards (IAS/IFRS)**, **International Accounting Education Standards (IAESB)**, and voluntary sustainability frameworks like those of the **Sustainability Accounting Standards Board (SASB)** and the **Global Reporting Initiative (GRI)**. While agreements exist between the university and economic institutions to facilitate student internships and field training, there remains a weak integration of professional expertise particularly in the domains of **environmental, social, and governance (ESG)** practices into academic teaching.

The current pedagogical approach was further criticized as overly theoretical, fragmented, and outdated, hindering the development of relevant financial and accounting models for sustainability reporting. Although certain modules such as auditing and financial analysis indirectly benefit from sustainability accounting outputs, the absence of a structured approach to teaching sustainability severely limits their effectiveness. Notably, modules on **social responsibility accounting** and **social auditing** stand out as exceptions that engage with the social dimension of sustainability. However, efforts to incorporate **environmental accounting** remain tentative and unstructured. This situation is further exacerbated by a shortage of faculty members specialized in these emerging fields, creating additional scientific and pedagogical challenges for the integration of sustainability into the academic curriculum.

Conclusion

The findings of this study underscore a critical shortfall in the Algerian university's current ability to fulfill its foundational mission of extending knowledge beyond the academic sphere and effectively engaging with its broader socio-economic environment. This disconnection significantly impedes the university's capacity to produce knowledge that responds meaningfully to the multifaceted challenges of sustainable development—economic, environmental, and social—and to facilitate students' transition into professional life.

In this context, there is an urgent need for Algerian universities to realign their strategies, curricula, and institutional practices with the demands of contemporary scientific research and modern pedagogical standards. This realignment must be guided by fundamental questions: *What should be taught? How should it be taught? What are the measurable outcomes? What educational culture should be fostered? And how can sustainability be effectively taught, measured, calculated, and disclosed?*

Higher education should no longer be considered a self-contained system, but rather an integral component of the broader societal and economic system. Its strategic role in achieving sustainable development must be redefined. This begins with a comprehensive review of university governance and policy, emphasizing transparent and merit-based leadership selection, and fostering a culture of knowledge dissemination that reaches all societal stakeholders.

Universities must proactively assume a leadership role in national development by building sustainable relationships and reinforcing their integration with external actors in the socio-economic landscape. Toward this end, the following strategic recommendations are proposed:

- **Strengthen partnership agreements with external stakeholders** through university entrepreneurship and innovation centers to ensure practical knowledge exchange and foster job-relevant competencies.

- **Establish institutional quality assurance units** that function as dedicated liaison offices between students, graduates, and the labor market, facilitating smoother transitions into employment and ensuring alignment with industry needs.

- **Promote a culture of entrepreneurship and innovation** within the university by implementing awareness campaigns and offering targeted training programs that support student-led initiatives.

- **Develop interdisciplinary university laboratories** spanning scientific, technical, Economic, and social disciplines—open to collaboration with external actors and aligned with internationally recognized sustainability and research standards.

- **Adopt content-based and outcomes-based education models**, particularly in accounting and management curricula, to ensure that learning objectives are clearly defined and pedagogically effective in developing relevant competencies.

- **Foster integration between academic and professional accounting education**, by clearly delineating each program's role in developing technical competence, ethical awareness.

- In sum, the Algerian university must evolve into an adaptive, outward-looking institution that actively contributes to sustainable development through collaborative, interdisciplinary, and future-oriented education and research strategies.

Universities constitute the cornerstone of intellectual capital creation and play a vital role in advancing the dimensions of sustainable development—economic, social, and environmental. The shift toward sustainability-oriented education requires reimagining curricula to connect theoretical instruction with real-world applications. In Algeria, universities are increasingly engaging in partnerships and institutional reforms aimed at embedding sustainability principles into teaching and research. However, persistent barriers such as limited financial autonomy, bureaucratic inefficiencies, and insufficient stakeholder coordination impede this transformation.

This study investigates how sustainability accounting can serve as a critical instrument for enhancing the interaction between Algerian universities and their socio-economic environment. It further explores how accounting education can evolve from a financially driven discipline to one capable of identifying, quantifying, and reporting non-financial data relevant to environmental, social, and governance (ESG) criteria.

2. Methodology

The study employs a descriptive–analytical research design, combining theoretical exploration with empirical inquiry. Data were collected through semi-structured, open-ended interviews with 24 participants, representing internal (faculty, students, administrative staff) and external (industry partners, governmental agencies, NGOs) stakeholders of Algerian universities. The content analysis method was applied to identify recurring themes, perceptions, and challenges regarding sustainability accounting education and its implementation.

Analytical coding focused on three main dimensions:
1. Curricular relevance – the extent to which accounting programs incorporate sustainability concepts.
2. Stakeholder engagement – the level of collaboration between the university and external entities.
3. Institutional readiness – the availability of frameworks, partnerships, and competencies to operationalize sustainability accounting.

3. Findings and Discussion

The analysis demonstrates a substantial awareness of sustainability principles among respondents but reveals practical deficiencies in translating these principles into academic programs. Accounting departments, though strategically positioned, remain largely confined to traditional financial accounting models that overlook non-financial performance dimensions. Furthermore, stakeholder interaction remains fragmented, lacking structured channels for continuous dialogue, joint research, and co-designed curricula. The study suggests that sustainability accounting—as an interdisciplinary bridge—can enable universities to systematically measure and disclose their environmental and social impacts, thereby reinforcing their accountability and societal role.

4. Conclusion

Sustainability accounting education represents a transformative opportunity for Algerian universities to integrate with their broader environment and contribute effectively to sustainable development goals. By aligning curricula with stakeholder expectations and establishing transparent frameworks for sustainability reporting, universities can redefine their mission from knowledge dissemination to social responsibility and innovation leadership.

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Ethical Considerations

All procedures involving human participants complied with ethical research standards. Informed consent was obtained from all respondents, and data confidentiality was maintained throughout the study. No personal identifiers were used in reporting the findings.

Conflict of Interest

The authors declare no conflict of interest related to this study or its publication.

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