

Integrating Sustainability into the Administration of Business Management Curriculum: A Sustainability Competencies Map.

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Abstract

The study examined the integration of sustainability into the administration of Business Management curricula through the development of a Sustainability Competencies Map (SCM). The study adopted a descriptive and analytical research method. The population comprised 63 academic staff and administrators from the Business Management departments of three universities in Rivers State, Nigeria. Since the population was small, a census approach was used. Data were collected using a structured questionnaire and analyzed using SPSS version 27, applying descriptive statistics and the Pearson Product Moment Correlation Coefficient (PPMCC) to test the hypotheses. Findings revealed a strong and significant relationship between sustainability competency frameworks and curriculum design effectiveness ($r = 0.682$, $p < 0.05$); between integration approaches and competency development ($r = 0.711$, $p < 0.05$); and between institutional support mechanisms and sustainability implementation ($r = 0.754$, $p < 0.05$). The study concluded that integrating sustainability into Business Management curricula requires a coherent competency framework, strategic curriculum redesign, and strong institutional support. It recommended that universities adopt internationally recognized competency-based sustainability frameworks, invest in faculty development, and implement transformational curriculum integration models.

Keywords: sustainability, business management curriculum, competency framework, curriculum integration, institutional support, higher education.

Introduction

The urgency of global sustainability challenges has positioned higher education institutions as critical actors in preparing future business leaders capable of addressing complex environmental, social, and economic issues. Business Management (BM) programs face increasing pressure to integrate sustainability concepts systematically rather than treating

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them as peripheral subjects (Godemann et al., 2014). The traditional business education paradigm, focused primarily on profit maximization and short-term financial performance, requires fundamental transformation to address the interconnected challenges of the 21st century.

Recent research indicates that while sustainability integration in business schools has gained momentum, significant gaps remain in systematic implementation and competency development (Rusinko, 2010). The emergence of frameworks such as the United Nations Sustainable Development Goals (SDGs) and various sustainability competency models provides opportunities for more structured approaches to curriculum integration (UNESCO, 2017). However, the translation of these frameworks into practical, pedagogically sound curriculum designs remains a complex challenge for business educators worldwide.

The concept of sustainability competencies has evolved significantly over the past decades, with scholars identifying core competencies essential for sustainability professionals and leaders. Wiek et al. (2011) established foundational work in defining key sustainability competencies, which has been further refined through subsequent research, examining systems thinking, anticipatory competence, normative competence, strategic competence, and interpersonal competence. These competencies form the basis for understanding what business graduates need to develop to become effective sustainability leaders.

Irrespective of the widespread recognition of sustainability's importance in business education, significant challenges persist in effective curriculum integration. Current approaches to sustainability integration in BM programs are often characterized by fragmentation, inconsistency, and lack of systematic framework application (Godemann et al., 2014). Many institutions adopt ad-hoc approaches, introducing sustainability topics in isolated courses without comprehensive integration across the curriculum. The primary problem lies in the absence of a coherent, competency-based framework that guides systematic integration of sustainability throughout BM curricula. This gap results in several critical issues: graduates who lack comprehensive understanding of sustainability principles, inconsistent learning outcomes across institutions, and limited preparation for addressing complex sustainability challenges in professional contexts (Rieckmann, 2012).

Furthermore, faculty members often lack adequate preparation and resources to effectively integrate sustainability concepts into their courses. The absence of clear competency maps and learning outcome specifications creates uncertainty about what students should achieve and how progress should be assessed. This situation is compounded by institutional resistance to curricular change and the perceived tension between traditional business education objectives and sustainability imperatives. The problem is further complicated by the rapidly evolving nature of sustainability challenges and the need for curriculum to remain current with emerging issues such as climate change adaptation, circular economy principles, and social justice considerations. Without systematic frameworks for competency development,

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BM programs struggle to prepare graduates who can navigate the complexity of contemporary sustainability challenges while maintaining business viability.

Therefore, this study presents a comprehensive framework for developing sustainability competencies within business education through the creation of a sustainability competencies map. Specifically, the study was conducted to:

- i. To develop a comprehensive sustainability competencies map for Business Management curricula that integrates established sustainability competency frameworks with the specific requirements of business education.
- ii. To analyze current approaches to sustainability integration in Business Management programs in order to identify best practices, implementation challenges, and pedagogical gaps affecting competency-based sustainability education.
- iii. To evaluate the relationship between the level of sustainability integration in Business Management curricula and the development of sustainability competencies among students and faculty.

Based on these objectives the following hypotheses were postulated

- i. There is no significant relationship between the application of sustainability competency frameworks and the quality of Business Management curriculum design.
- ii. There is no significant relationship between the types of sustainability integration approaches (bolt-on, built-in, redesign, and transformation) and the level of sustainability competencies developed among Business Management students.
- iii. There is no significant relationship between institutional support mechanisms (faculty development, pedagogical strategies, and resource allocation) and the effectiveness of sustainability competency implementation in Business Management programs.

Literature Review

Evolution of Sustainability in Business Education

The integration of sustainability into business education has evolved through several distinct phases. Initially, environmental concerns were addressed through specialized courses or electives, often positioned as supplementary to core business subjects (Rusinko, 2010). This approach, while introducing students to environmental issues, failed to demonstrate the interconnections between sustainability and fundamental business functions.

The emergence of corporate social responsibility (CSR) concepts in the 1990s marked a shift toward broader consideration of business impacts on society and environment. Business schools began incorporating CSR modules into strategy and ethics courses, expanding the scope beyond environmental concerns to include social and governance issues. However, this

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integration remained largely theoretical and disconnected from core business disciplines such as finance, marketing, and operations management. The development of the triple bottom line framework by Elkington (1997) provided a more systematic approach to understanding business performance through people, planet, and profit dimensions. This framework offered business educators a structure for integrating sustainability considerations across multiple business functions. Subsequently, the emergence of the UN Global Compact and Principles for Responsible Management Education (PRME) provided institutional frameworks for systematic integration of sustainability into business education. Recent developments have emphasized the need for transformative approaches to business education that fundamentally reconsider business purposes and methods. The concept of regenerative business, circular economy principles, and stakeholder capitalism represent paradigmatic shifts that require comprehensive curriculum transformation rather than incremental additions (Stubbs, 2017).

Sustainability Competencies Frameworks

The development of sustainability competencies frameworks has provided structured approaches to understanding what knowledge, skills, and attitudes students need to develop for effective sustainability leadership. Wiek et al. (2011) identified five key competencies that have become foundational to sustainability education: systems-thinking competence, anticipatory competence, normative competence, strategic competence, and interpersonal competence. Systems-thinking competence involves the ability to recognize and analyze complex systems, understanding interconnections and feedback loops that characterize sustainability challenges. This competence is particularly relevant for business students who must understand how organizational decisions impact multiple stakeholders and environmental systems (Rieckmann, 2012).

Anticipatory competence refers to the ability to analyze, evaluate, and craft rich pictures of the future related to sustainability issues. Business students need this competence to engage in strategic planning that considers long-term sustainability implications and emerging challenges such as climate change impacts on business operations. Normative competence involves the ability to map, specify, apply, reconcile, and negotiate sustainability values, principles, goals, and targets. This competence is essential for business leaders who must navigate competing stakeholder interests and align organizational objectives with broader sustainability goals.

Strategic competence encompasses the ability to collectively design and implement interventions, transitions, and transformative governance strategies toward sustainability. Business graduates require this competence to lead organizational change processes and develop innovative solutions to sustainability challenges. Interpersonal competence involves the ability to motivate, enable, and facilitate collaborative and participatory sustainability research and problem-solving. This competence is crucial for business leaders who must work across organizational boundaries and engage diverse stakeholders in sustainability initiatives. Recent research has expanded and refined these foundational competencies.

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Brundiers et al. (2021) conducted a comprehensive review identifying additional competencies including intrapersonal competence, implementation competence, and contextualization competence. These expanded frameworks recognize the complexity of sustainability challenges and the diverse competencies required for effective action.

Current Approaches to Curriculum Integration

Research on sustainability integration in business curricula reveals four primary approaches: bolt-on, built-in, redesign, and transformation (Godemann et al., 2014). Each approach represents different levels of integration and institutional commitment to sustainability education.

The bolt-on approach involves adding sustainability content to existing courses without fundamental changes to course structure or learning objectives. This approach is often the first step in sustainability integration, as it requires minimal curriculum redesign and faculty development. However, research indicates that bolt-on approaches are limited in their effectiveness for developing comprehensive sustainability competencies.

Built-in approaches involve systematic integration of sustainability concepts into existing courses with modifications to learning objectives, content, and assessment methods. This approach requires greater faculty development and institutional support but produces more meaningful learning outcomes related to sustainability competencies.

Redesign approaches involve fundamental restructuring of courses or programs to center sustainability as a core organizing principle. This approach requires significant institutional commitment and resources but can produce transformative learning experiences that develop comprehensive sustainability competencies.

Transformation approaches involve systemic change to institutional culture, pedagogy, and curriculum structure. These approaches recognize that sustainability integration requires changes beyond curriculum content to include institutional practices, faculty development, and assessment methods.

Recent research suggests that effective sustainability integration requires combination of multiple approaches tailored to specific institutional contexts and learning objectives (Lozano et al., 2017). The most successful programs demonstrate coherent progression from introductory sustainability concepts to advanced application in specialized business contexts.

Theoretical Framework

Competency-Based Education Theory

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Competency-based education (CBE) provides the theoretical foundation for developing systematic approaches to sustainability integration in BM curricula. CBE focuses on learning outcomes defined in terms of specific competencies that students must demonstrate rather than traditional measures such as credit hours or course completion (Mulder, 2017). The application of CBE principles to sustainability education involves several key elements: clear definition of sustainability competencies, alignment of learning activities with competency development, and assessment methods that measure competency achievement rather than knowledge retention. This approach ensures that graduates possess demonstrable capabilities for addressing sustainability challenges in professional contexts. Competency-based approaches to sustainability education recognize that effective sustainability leadership requires integration of knowledge, skills, and attitudes across multiple domains. Traditional disciplinary boundaries become less relevant as students develop capabilities for addressing complex, interdisciplinary challenges that characterize sustainability issues.

Transformative Learning Theory

Transformative learning theory, developed by Mezirow (1991), provides additional theoretical grounding for understanding how sustainability education can produce fundamental changes in student perspectives and capabilities. Transformative learning involves critical reflection on assumptions, exploration of new roles and relationships, and development of plans for new ways of acting. Sustainability challenges often require transformative learning because they challenge fundamental assumptions about business purposes, success metrics, and stakeholder relationships. Students must critically examine traditional business paradigms and develop new frameworks for understanding organizational success that incorporate environmental and social considerations. The application of transformative learning theory to sustainability education involves creating learning experiences that challenge student assumptions, provide opportunities for critical reflection, and support development of new perspectives on business practices. This approach recognizes that sustainability integration requires more than knowledge transfer; it requires fundamental shifts in worldview and professional identity.

Systems Thinking Theory

Systems thinking theory provides essential theoretical foundation for understanding sustainability challenges and developing appropriate responses. Systems thinking involve understanding complex relationships, feedback loops, and emergent properties that characterize social-ecological systems (Senge, 1990). Business sustainability challenges are inherently systemic, involving interactions between organizational, social, and environmental systems across multiple scales and timeframes. Students must develop systems thinking capabilities to understand these complex relationships and design effective interventions.

The integration of systems thinking into BM curricula involves developing student capabilities for mapping system structures, understanding dynamic relationships, and

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recognizing leverage points for system change. These capabilities are essential for business leaders who must navigate complex stakeholder relationships and understand long-term implications of organizational decisions.

Methodology

This study adopts a descriptive and analytical research design aimed at developing and evaluating a Sustainability Competencies Map (SCM) for Business Management curricula. The descriptive aspect of the design enables the researcher to systematically document existing sustainability integration practices in Business Management programs, while the analytical component allows for the examination of relationships among competency frameworks, institutional support mechanisms, and the development of sustainability competencies among faculty and students. This mixed approach is appropriate because the study seeks not only to describe current trends but also to analyze the extent to which sustainability competencies are integrated into higher education programs. The population of the study comprises 63 academic staff and administrators from the Business Management departments of three universities offering Business Management or related programs in Rivers State. Since the population is relatively small, the entire population was studied using the census method. Thus, the sample size was 63. The study employed both primary and secondary data sources. Primary data was obtained through a structured questionnaire designed to capture perceptions, experiences, and institutional practices regarding sustainability integration and competency development. Secondary data was sourced from institutional reports, curriculum documents, published articles, and sustainability policy frameworks such as the United Nations Sustainable Development Goals (SDGs) and the Principles for Responsible Management Education (PRME). Data collection was carried out using both online and physical distribution methods to enhance response rate and coverage. Collected data were analyzed using both descriptive and inferential statistical techniques. Descriptive statistics such as frequency counts, percentages, mean scores, and standard deviations were used to summarize demographic characteristics and provide an overview of existing sustainability integration practices. Inferential statistics, particularly the Pearson Product Moment Correlation Coefficient (PPMCC), was employed to test the formulated hypotheses.

Result and discussion**Demographic Characteristics of Respondents**

Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	38	60.3
	Female	25	39.7
Age	25–34 years	9	14.3
	35–44 years	22	34.9

IJO -INTERNATIONAL JOURNAL OF BUSINESS MANAGEMENT

(E:ISSN 2811-2504) (P.ISSN: 2384-5961)

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<https://ijo-journals.com/>

Volume 08 || Issue 10 || October, 2025 ||

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Variable	Category	Frequency (f)	Percentage (%)
Educational Qualification	45–54 years	20	31.7
	55 years and above	12	19.0
	B.Sc./BBA	8	12.7
	M.Sc./MBA	38	60.3
	Ph.D.	17	27.0
Work Experience	Below 5 years	11	17.5
	5–10 years	26	41.3
	11–15 years	15	23.8
	Above 15 years	11	17.5

The demographic data show that the majority of respondents were male (60.3%), with most participants aged between 35 and 54 years. Over 60% held a master's degree, while 27% had doctoral qualifications. This indicates that the respondents were academically qualified and experienced to provide valid insights into the integration of sustainability competencies into Business Management curricula.

Test of Hypotheses

Hypothesis One (H_0): Correlation between Sustainability Frameworks and Curriculum Design

Variables	N	r	Sig. (2-tailed)	Decision
Sustainability Frameworks × Curriculum Design	63	0.682**	0.000	Significant

The Pearson correlation coefficient ($r = 0.682$, $p < 0.05$) shows a strong positive relationship between sustainability competency frameworks and curriculum design effectiveness. Therefore, the null hypothesis (H_0) is rejected, and the alternative hypothesis is accepted, implying that applying competency frameworks significantly enhances curriculum quality.

Hypothesis Two (H_0): Correlation between Integration Approaches and Competency Development

Variables	N	r	Sig. (2-tailed)	Decision
Integration Approaches × Competency Development	63	0.711**	0.000	Significant

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The result indicates a strong positive relationship ($r = 0.711$, $p < 0.05$) between integration approaches and sustainability competency development. Hence, H_{01} is **rejected**, suggesting that higher levels of integration (redesign and transformation) yield greater competency development among students.

Hypothesis Three (H_{03}): Correlation between Institutional Support and Sustainability Implementation

Variables	N	r	Sig. (2-tailed)	Decision
Institutional Support × Sustainability Implementation	63	0.754**	0.000	Significant

The correlation coefficient ($r = 0.754$, $p < 0.05$) reveals a strong, statistically significant relationship between institutional support mechanisms and sustainability implementation. Consequently, H_{03} is rejected, indicating that faculty development, administrative commitment, and resource allocation play critical roles in implementing sustainability competencies.

Discussion

Objective One: The findings revealed a strong and significant relationship between the adoption of sustainability competency frameworks and the effectiveness of Business Management curriculum design ($r = 0.682$, $p < 0.05$). This result indicates that the systematic application of recognized sustainability competency models such as those proposed by Wiek et al. (2011) enhances curriculum coherence, relevance, and outcome-based learning. This supports the position of Mulder (2017) and Rieckmann (2012) that competency-based education frameworks help align teaching objectives, pedagogical approaches, and assessment methods with measurable competencies. The finding further aligns with Godemann et al. (2014), who emphasized that integrating sustainability competencies into business curricula leads to a shift from profit-centered teaching to responsible, sustainability-oriented management education. Therefore, the study confirms that the competency-based framework serves as a robust foundation for developing sustainable business education programs that meet global expectations such as the United Nations Sustainable Development Goals (SDGs) and the Principles for Responsible Management Education (PRME).

Objective Two: The correlation analysis showed a strong positive relationship ($r = 0.711$, $p < 0.05$) between sustainability integration approaches and the development of sustainability competencies among students. This finding implies that higher levels of integration particularly redesign and transformational approaches produce better learning outcomes than bolt-on or built-in methods. This outcome is consistent with Rusinko (2010)

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and Lozano et al. (2017), who argued that superficial integration through isolated courses (bolt-on) fails to achieve deep learning, whereas curriculum redesign and transformation foster critical thinking, systems analysis, and anticipatory competence. The result also resonates with Stubbs (2017), who emphasized that transformative sustainability education requires structural change in institutional culture, pedagogy, and assessment. Hence, the study underscores the need for holistic curriculum transformation that embeds sustainability competencies into all aspects of business education from strategy and marketing to operations and ethics.

Objective Three: Findings from the Pearson correlation analysis ($r = 0.754$, $p < 0.05$) demonstrated a strong and statistically significant relationship between institutional support mechanisms—such as faculty development, administrative commitment, and resource allocation—and the effective implementation of sustainability competencies. This finding supports the assertions of Godemann et al. (2014) and Lozano et al. (2017) that institutional support is the backbone of sustainability integration. Without strong faculty preparation, adequate funding, and supportive policy frameworks, the process of embedding sustainability into the curriculum becomes inconsistent and unsustainable. Furthermore, Rieckmann (2012) argued that continuous professional development for educators enhances their ability to teach sustainability-oriented competencies effectively. Thus, the present study confirms that administrative leadership, faculty capacity building, and incentive structures are indispensable for institutionalizing sustainability.

Summary and Conclusion

- i. There is a significant and positive relationship between sustainability competency frameworks and the effectiveness of Business Management curriculum design.
- ii. Sustainability integration approaches (bolt-on, built-in, redesign, and transformation) significantly influence the development of sustainability competencies among students.
- iii. Institutional support mechanisms strongly predict the successful implementation of sustainability competencies in Business Management curricula.

The study concludes that the effective integration of sustainability into Business Management curricula depends on three interrelated pillars: (1) the systematic adoption of sustainability competency frameworks, (2) the strategic redesign of curriculum approaches, and (3) robust institutional support systems.

First, the Sustainability Competencies Map (SCM) developed in this study provides a structured and practical framework that guides curriculum developers in aligning learning outcomes with essential sustainability skills and attitudes. Second, comprehensive curriculum integration through redesign and transformation approaches yields superior results compared to fragmented or ad-hoc inclusion of sustainability topics. Third, the sustainability agenda cannot succeed without committed institutional leadership, faculty empowerment, and

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adequate resource allocation. Overall, the study demonstrates that integrating sustainability into Business Management education promotes not only academic excellence but also societal transformation, producing graduates capable of leading organizations toward sustainable futures.

Recommendations

Based on the findings and conclusions, the following recommendations are made:

- i. Business schools should adopt and adapt internationally recognized sustainability competency frameworks, such as those of Wiek et al. (2011), to ensure alignment between curriculum content, pedagogical methods, and measurable learning outcomes.
- ii. Institutions should move beyond the bolt-on or elective approach and instead embed sustainability across all business disciplines—finance, marketing, operations, strategy, and human resources. Curriculum transformation should integrate systems thinking, ethical leadership, and strategic competence as core learning objectives.
- iii. Universities should establish continuous professional development programs for faculty members to enhance their capacity for sustainability-oriented teaching. Administrative leadership should provide incentives, funding, and policy frameworks that encourage curriculum innovation and interdisciplinary collaboration.
- iv. Institutions should build strong partnerships with industries, non-profit organizations, and government agencies to provide students with experiential learning opportunities that develop real-world sustainability competencies.
- v. Universities should implement monitoring and evaluation mechanisms to measure students' competency development and curriculum effectiveness over time. This will ensure continuous improvement and alignment with global sustainability education standards.

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