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Triple Bottom Line in Universities: Outcomes and Factors Driving Sustainability

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Abstract

Despite the growing prominence of the triple bottom line (TBL) framework in university sustainability discourse, empirical research examining how environmental, social, and economic outcomes are realized across diverse national contexts within higher education institutions remains limited. This qualitative study explored how 12 STARS-rated universities from both Anglo-American and Emerging regions have achieved TBL outcomes and the institutional and contextual factors that influence them. In-depth interviews with sustainability coordinators revealed that environmental outcomes, such as zero-waste goals and carbon neutrality, were well developed; social outcomes, such as student engagement, SDG-aligned curricula, and gender equity, showed emerging integration; and economic outcomes, such as sustainable procurement and green budgeting, remained less defined. The findings also showed that internal drivers, such as governance arrangements, capacity, culture, and external drivers, such as rankings, funding availability, and national policies, shaped the scope and success of initiatives. These findings highlight that TBL implementation in universities is an uneven, contextually mediated process and provide insights for higher education leaders seeking to strengthen institutional strategies for sustainability transformation.

Keywords: triple bottom line; higher education; sustainability; sustainable universities

1. Introduction

The integration of sustainability into higher education has emerged as a critical area of focus in recent years, prompting an increasing number of universities worldwide to adopt initiatives aimed at enhancing their social, environmental, and economic sustainability, commonly known as the triple bottom line (TBL) (Aung & Hallinger, 2023; Elkington, 1998). Despite this momentum, limited empirical research examines how environmental, social, and economic outcomes are realized across diverse national contexts within higher education institutions (Giesenbauer & Müller-Christ, 2020). Menon and Suresh (2020) indicated that few universities have successfully achieved a holistic and balanced integration of all TBL dimensions. Additionally, Mader et al. (2013) asserted that higher education institutions tend to prioritize discussions on the need for change over the practical implementation of these transformations, thus hindering the impactful realization of sustainability goals (Rieg et al., 2021).

Universities play a vital role in advancing sustainability through their educational, research, and community engagement functions (Leal Filho, 2015). As centers of innovation

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and leadership development, they are increasingly expected to demonstrate tangible contributions to environmental preservation, social well-being, and economic viability. Yet, there remains a limited understanding of the specific outcomes achieved through university-led sustainability initiatives, as well as the internal and external factors that shape these results across different regional and institutional contexts (Ferrer-Balas et al., 2008; Giesenbauer & Müller-Christ, 2020; Leal Filho et al., 2020; Stephens et al., 2008).

This qualitative study explored how twelve STARS-rated universities (AASHE, 2019) in Anglo-American and emerging regions achieved TBL outcomes, and the institutional and contextual factors that shaped their efforts. The study was guided by the following research questions.

1. What environmental, social, and economic outcomes have universities achieved through their sustainability initiatives?
2. How do internal institutional conditions influence these sustainability outcomes?
3. What external factors support or hinder sustainability efforts in higher education?

2. Literature Review

2.1. Landscape of Sustainability in Higher Education

Universities, just like any other organization, utilize natural resources, create waste, and impact the environment (Grecu & Ipiña, 2014). Despite some institutional tendencies towards corporatist and profit-seeking values (Clair, 2020), higher education institutions globally have increasingly pledged commitment to a sustainable future. This commitment is evidenced by widespread participation in initiatives such as The Talloires Declaration, a strategic framework for integrating sustainability across university operations (Grecu & Ipiña, 2014).

Between 1990 and 2009, more than 14 initiatives, declarations, and charters were issued to guide universities toward the adoption of policies and processes designed to enhance their sustainability (Lozano et al., 2013). Furthermore, the adoption of the United Nations Sustainable Development Goals (SDGs) by 2030 (SDSN, 2017; UN General Assembly, 2015) has provided a universal blueprint for a more sustainable future, urging all sectors, including higher education, to align their efforts (Giesenbauer & Müller-Christ, 2020).

For centuries, universities have been instrumental in fostering innovation and educating future decision-makers, entrepreneurs, and leaders (Lozano et al., 2013). Higher education can play a part in developing a sustainable world by designing and helping societies to implement social, environmental, economic, and technological solutions (Leal Filho, 2015). However, at this stage, the enactment of sustainability outcomes in higher education has yet to achieve a critical mass (Bien & Sassen, 2020; Leal Filho et al., 2020). The current challenge lies in how higher education leaders can fully realize this potential, catalyzing universities to transform communities and societies by equipping new generations with the essential sustainability knowledge, skills, and mindset (Grecu & Ipiña, 2014). This frames the core inquiry into how universities achieve comprehensive sustainability outcomes.

2.2. Triple Bottom Line Framework in Higher Education

The concept of sustainability has evolved significantly since the Brundtland Report (World Commission on Environment and Development, 1987), expanding beyond environmental protection to encompass interconnected social and economic dimensions. Elkington's (1998) TBL framework formalized this holistic view, asserting that organizational performance should be measured not only by financial outcomes but also by environmental and social impact. Known as "People, Planet, and Profit," the TBL emphasizes the need to balance these three interdependent pillars (Elkington, 1998; Saeudy, 2015),

a shift reflected in the growing adoption of TBL-aligned performance metrics (Hallinger & Suriyankietkaew, 2018).

In higher education, the TBL offers a comprehensive lens for assessing universities' contributions to sustainable development (Amaral et al., 2015; Ceulemans et al., 2015). While environmental initiatives are more common, sustainability in universities requires integrating environmental, social, and economic considerations across all decision-making processes (Sima et al., 2019; Tangwanichagapong et al., 2017). The TBL positions universities as community anchors by promoting public trust, social welfare, and local development through socioeconomic engagement (Menon & Suresh, 2020). Universities also shape local economies through employment, spending, and tax contributions, while also fostering innovation and preparing students for the labor market (Yong et al., 2025).

Moreover, the TBL can serve as a guiding framework for institutional planning and evaluation (Saeudy, 2015). Integrating sustainability into academic and operational activities, such as teaching and curriculum design, enhances both institutional effectiveness and long-term accountability (Yong et al., 2025). However, few HEIs have achieved balanced implementation of all three TBL dimensions, highlighting the persistent gaps in institutional leadership and strategy (Bien & Sassen, 2020; Menon & Suresh, 2020; Umar et al., 2025).

2.3. External and Internal Influences

In the literature, several authors have identified key external and internal influences that can be either barriers or drivers of sustainability transformation in higher education (Bien & Sassen, 2020; Ferrer-Balas et al., 2008; Leal Filho et al., 2020; Stephens et al., 2008). External and internal influences can affect the decision-making processes of sustainable leadership, the widespread embrace of a sustainability vision, the commitment of stakeholders, the process of transforming university practices, and the outcomes produced (Jenks-Jay, 2004; Umar et al., 2025).

Several internal factors can influence the implementation of sustainability in universities. Firstly, rewards and incentive structures of universities are essential in advancing the organization toward sustainable development (Ferrer-Balas et al., 2008). Anyone, regardless of whether they are staff or students, assuming a sustainable leadership role and contributes to the sustainability transformation of universities, needs to be recognized and rewarded through grants or awards (Jenks-Jay, 2004). Lack of incentives has been associated with barriers to achieving sustainability implementation in higher education (Asa et al., 2023; Karatzoglou, 2013; Menon & Suresh, 2020).

Secondly, the existence of a core unit, department, or school for sustainable development is another internal factor that can drive the process of change toward sustainable development (Errida & Lotfi, 2021; Ferrer-Balas et al., 2008). For example, in 1995, Columbia University established the Earth Institute that combines science, engineering, and public policy to produce the basic and applied knowledge required to achieve sustainability (SDSN, 2020). As a third internal factor, the size of the organization may also play a role, as larger universities with increased complexity may find it more challenging to produce rapid transformation (Ferrer-Balas et al., 2008).

Other internal factors that can affect sustainability implementation include the flexibility of the organizational structure to allow interdisciplinary education (Stephens et al., 2008), institutional policies to promote sustainability on campus (Giesenbauer & Müller-Christ, 2020; Velazquez et al., 2005), academic freedom for faculties to carry out research outside their discipline (Menon & Suresh, 2020), limitation of time, materials, and financial resources (Karatzoglou, 2013), and a lack of data access, communication, performance indicators, and training (Velazquez et al., 2005).

External factors include interests in the surrounding community (Leal Filho et al., 2020), the source of funding for the university (Stephens et al., 2008), pressure from society (Ferrer-Balas et al., 2008), geopolitics (Giesenbauer & Müller-Christ, 2020), and the extent of democratic processes in the region (Asa et al., 2023; Stephens et al., 2008), pressure from peer institutions (Ferrer-Balas et al., 2008), and the dominant sustainability challenge of the region (Stephens et al., 2008). For example, if society makes no demand for transformation in the expected outputs and outcomes of higher education, universities are more likely to remain unchanged (Ferrer-Balas et al., 2008). Similarly, Jenks-Jay (2004) argued that external organizations significantly impact the behavior and norms in universities as they gear toward sustainability. International non-governmental organizations, national councils, peer universities, and top-tier institutes may serve as examples and a driving force to promote change (Ferrer-Balas et al., 2008).

3. Materials and Methods

This study employed qualitative research methods to explore the environmental, social, and economic sustainability outcomes, including the interplay of internal and external factors, within university settings.

3.1. Participants and Sampling

The selection of participating universities and individuals was conducted using purposive sampling (Cohen et al., 2018), aiming to identify those with significant experience and insights into the complexities of achieving sustainability outcomes in higher education. Universities were primarily identified through their participation and performance in the Sustainability Tracking, Assessment, and Rating System™ (STARS), an internationally recognized framework developed by the Association for the Advancement of Sustainability in Higher Education (AASHE, 2019). Universities that had achieved Platinum, Gold, or Silver STARS ratings were specifically chosen because they demonstrably excelled in sustainability performance across environmental, social, and economic aspects.

Following an initial approach to 53 universities, 12 dedicated sustainability coordinators consented to participate in the study. While the response rate was moderate, the sample encompassed a diverse range of countries and participant roles, supporting its adequacy. Data saturation was achieved after 10 interviews, as no new themes or concepts emerged, and the 12 interviews conducted were deemed sufficient, in line with Creswell and Creswell (2018) and Guest et al. (2006).

These universities represented a global cross-section, including institutions in the USA, Canada, Taiwan, Ecuador, Australia, Mexico, and the UAE, all of which maintained STARS ratings from Silver to Platinum. Universities were categorized as "Anglo-American" if they were from Anglo-American or Western countries that dominate the sustainability in higher education literature, and as "Emerging" if they were from non-Western countries with growing but less represented contributions (Hallinger & Chatpinyakoop, 2019).

As detailed in Table 1, the participants themselves represented a broad spectrum of roles within their institutions, from Assistant Directors to Chief Sustainability Officers, with professional tenures in sustainability ranging from 3.5 years to 23 years. This diversity in job titles and experience levels was crucial for eliciting varied and comprehensive insights into the environmental, social, and economic dimensions of sustainability initiatives at these institutions.

Table 1. University and participant information.

Code Name	Nation	STARS Rating	Participant Job Title	Gender	Years in Role
Anglo-American Societies					
U1	USA	Platinum	Assistant Director	M	3.5
U2	USA	Platinum	Director of Sustainability	F	20
U3	CAN	Platinum	Manager of Sustainability Programs	M	10
U4	CAN	Gold	Director	F	5
U5	USA	Gold	Sustainability coordinator	F	4
U6	USA	Gold	Assistant to Provost for Sustainability	M	14
U7	AUS	Gold	Chief Sustainability Officer	M	12
Emerging Societies					
U8	TAI	Gold	Director of the Center of Sustainability	M	23
U9	TAI	Gold	Chief Sustainability Officer	M	19
U10	ECU	Gold	Sustainability and Innovation Officer	F	4
U11	MEX	Silver	Coordinator of Sustainability Projects	M	10
U12	UAE	Silver	Head of Sustainability	F	5

USA = United States of America; CAN = Canada; TAI = Taiwan; ECU = Ecuador; AUS = Australia; MEX = Mexico; UAE = United Arab Emirates.

3.2. Data Collection

To holistically capture the multifaceted nature of sustainability outcomes and the factors influencing them, this study conducted in-depth qualitative interviews with 12 sustainability coordinators. The interviews were conducted remotely via Zoom, which facilitated participation from diverse geographic locations and enabled precise recording of the conversations. Each interview, averaging approximately 40 min, began with rapport-building before moving to a semi-structured questioning format. To maximize data richness, the researcher strategically used active listening and empathetic probing and maintained a neutral stance throughout each conversation (Cohen et al., 2018).

The interview protocol (see Table 2) was designed to elicit comprehensive insights into the environmental, social, and economic dimensions of sustainability outcomes within universities. The questions were initially formulated based on a thorough review of the literature on sustainability in higher education and on frameworks for assessing TBL performance. The sequence of questions was structured to move from broad contextual information to specific examples of progress, along with the drivers and barriers encountered.

Table 2. Interview protocol.

#	Interview Questions
1	Could you please describe your primary responsibilities in sustainability leadership at your university?
2	Can you explain the origins and initial momentum for sustainability initiatives at your institution?
3	What specific actions and approaches has your university undertaken to achieve its sustainability objectives?
4	How is the university different today compared to five years ago?
5	Can you give specific examples of the progress for environmental sustainability?
6	Can you give specific examples of the progress for social sustainability?
7	Can you give specific examples of the progress for economic sustainability?
8	What factors or conditions have significantly supported your university's journey toward sustainability?
9	What factors or obstacles have impeded your university's sustainability progress?

3.3. Data Analysis and Synthesis

The qualitative interview data underwent a systematic analysis guided by the principles of grounded theory (Corbin, 2021; Corbin & Strauss, 1990). The analytical process commenced with open coding (see Table 3), in which each transcribed interview was broken down into conceptual units (phrases and sentences) and assigned preliminary codes reflecting their underlying meaning. This initial coding was managed efficiently using TAMS Analyzer software Version 4.56b6 (Weinstein, 2002–2012).

Table 3. Example of the coding process.

Verbatim Quotes	Open Coding	Axial Coding	Selective Coding	Central Theme
All universities are guided by the Ministry of Education, so they must follow government policy (U8).	Government mandates	Regulatory pressure	External factors	Context of change
As a public institution, it has to submit a report, it's called a Climate Action Plan report, to the recognized Government (U3).	Reporting requirements			
They're very much framing their potential policy around what's in the STARS report (U4).	STARS framework	Global standards		
We also started doing the Times Higher Impact rankings, which look at how institutions are doing against the Sustainable Development Goals from the UN (U5).	Ranking			

Subsequently, axial coding was performed to identify connections and relationships between the initial codes. This process involved grouping related codes into higher-order subcategories and then into overarching categories, revealing initial patterns within the data. For instance, detailed codes such as 'Biodigester,' 'Retrofit,' 'Food Waste,' and 'Solar Energy' were grouped into the broader category of 'Environmental Sustainability,' reflecting their direct impact on the natural environment.

The final analytical stage, selective coding, integrated these established categories into coherent, explanatory themes that formed the study's emergent theoretical framework. For example, the categories of 'Environmental Sustainability,' 'Social Sustainability,' and 'Economic Sustainability' were synthesized into the overarching 'Triple Bottom Line' theme, providing a robust interpretation grounded in participant narratives. To enhance trustworthiness, coding decisions and emergent categories were discussed and refined through peer debriefing and intercoder checks with the study supervisor, an experienced qualitative researcher. This process helped ensure interpretive credibility and consistency across the dataset.

For data synthesis, a comparative thematic analysis, consistent with Braun and Clarke's (2006) framework, was applied across all university narratives. This analysis built directly on the grounded theory coding, using the emergent categories from each university to enable coherent cross-case comparison and synthesis of themes. This iterative process involved systematically comparing verbatim quotes and coded segments from each institution to discern both commonalities and distinctions in their sustainability outcomes, examples, strategies, challenges, and overall progress towards the TBL outcomes. This allowed for the identification of cross-cutting patterns and unique contextual variations in how sustainability-driven change manifested in higher education.

3.4. Ethical Issues

This study strictly adhered to established ethical guidelines (Tracy, 2020), ensuring the protection and respectful treatment of all participants. Prior to their participation, informed

consent was obtained from each participant, clearly outlining the study's purpose, procedures, and their rights. Confidentiality was maintained throughout the research process, with all identifying information anonymized to protect participant privacy. Participation was entirely voluntary, and individuals were informed of their right to withdraw at any point without penalty. Transparency guided all interactions, ensuring participants understood how their data would be used. Furthermore, emphasis was placed on building rapport with participants (Tracy, 2020) to foster an environment of trust and open communication.

The research protocol received full approval from the Mahidol University Institutional Review Board (IRB), as evidenced by Certificate of Approval (COA No. 2022/06-152), confirming its alignment with rigorous ethical standards.

4. Results

This section presents the findings from the 12 qualitative interviews conducted with sustainability coordinators at the participating universities. The findings are organized around three interrelated themes of environmental, social, and economic sustainability outcomes, reflecting the TBL framework. Table 4 provides an illustrative summary of the key outcomes identified across these three dimensions.

Table 4. Triple bottom line outcomes in universities.

Environmental Outcomes	Social Outcomes	Economic Outcomes
Carbon emissions reduction & neutrality (U1–U7, U10–U11)	Equity, diversity & inclusion (DEI) (U6, U10, U11)	Cost savings from energy & resource efficiency (U3, U5)
Energy efficiency & renewable energy (U1–U8, U11)	Health & well-being (students, staff, community) (U5, U6, U10, U12)	Sustainable & ethical procurement (U2, U4, U6, U7, U11, U12)
Green buildings & retrofits (U4–6, U12)	Community engagement & social justice (U2, U6, U9, U10)	Responsible investment (ESG) (U4, U7)
Waste reduction & circular practices (U1–U5, U7)	Food security & ethical food systems (U2, U8)	Graduate employability & sustainability skills (U8, U9, U10, U12)
Water conservation & reuse (U1, U3, U8)	Indigenous engagement & cultural preservation (U2, U9)	Local & national economic development (U8, U9, U10)
Campus ecosystems & landscaping (U1)	Access, affordability & scholarships (U2, U12)	Innovation, entrepreneurship & circular economy (U9, U10)

4.1. Environmental Sustainability Outcomes

Environmental sustainability emerged as the most established and systematically pursued dimension of university sustainability efforts across both Anglo-American and emerging region institutions. Nearly every university reported significant investments in environmental initiatives with a strong emphasis on quantifiable metrics and operational changes aimed at minimizing ecological footprint. Environmental sustainability outcomes included reductions in carbon emissions, energy efficiency, green infrastructure, waste management, water conservation, and sustainable transportation.

Reducing energy consumption emerged as a primary means of achieving carbon emission goals for nearly all participating universities. In the Anglo-American regions, universities demonstrated ambitious commitments to energy management and carbon reduction, underpinned by clear emissions targets and large-scale infrastructure upgrades. For example, U4 in Canada committed to "a reduction of 50% emissions by 2030", while U7 in Australia celebrated achieving certified carbon neutrality, becoming the second Australian university to earn this status. Extensive energy retrofits were a hallmark of these efforts, addressing aging infrastructure across campuses. U4 noted "lots of energy retrofits in our aging buildings or campuses have buildings that are like 112 years old", a

sentiment echoed by U6 in the USA, where they have undertaken "retrofits on nearly every building on campus". Innovative technologies were also being integrated into campus energy systems. U4 installed "electric boilers on our district heat system that will reduce our emissions", while U3 in Canada built a state-of-the-art energy hub using "air source heat pumps and water source heat pumps" that is expected to "reduce our emissions from 2020 levels by 95%" and become "one of the most advanced energy systems in the world".

Renewable energy infrastructure was another pillar of these universities' strategies. U1 in the USA installed "about 25 megawatts of solar panels on campus to support our electrical needs as well as outside contracts for solar power". U5 built "the largest solar carport in North America", generating 10.5 megawatts at peak power and earning numerous awards for its visibility and impact. U2 enhanced its operations with a "geo exchange system" and "over 40 solar arrays", while U7 in Australia implemented an LED lighting upgrade that delivered "a 5-month payback and annual energy and labour savings of greater than $15,000."

In emerging regions, government mandates often drive energy management efforts, pushing universities toward consistent reductions in consumption and emissions. In Taiwan, for example, universities are required to achieve a "2% reduction every year for the energy consumption and water consumption" (U8), leading to innovative projects such as ecological roofs that harness alternative energy from sunlight and water. Similarly, U11 in Mexico reported new solar installations above residence halls: "We got money to create a solar farm. . . solar panels above the residence halls." Despite these advances, major challenges remained, particularly in managing Scope 3 emissions. As the participant from U10 in Ecuador explained, "more than 70% of our emissions are due to scope 3. . . travel between the campuses of all of our people," which remained a "big challenge" for achieving carbon neutrality.

Integrating sustainability principles into new construction and existing building management is a critical environmental outcome, ensuring long-term efficiency and reduced impact. In the UAE, a participant emphasized the goal to "put criteria in any construction project that we do, they should do these six sustainability things. . . make sure that we're kind of codifying that so that it happens when those projects happen" (U12). In the USA, the participant from U5 noted that for upcoming construction projects, "how are we gonna design these so that they can help us meet our goals, and, like really huge paradigm shift in how they're thinking about buildings which I think is really exciting" (U5).

Waste management evolved from simple recycling to complex, integrated zero-waste strategies, particularly in Anglo-American universities. Canadian institutions such as U3 and U4 have transformed their waste systems over time. U3 described the shift from "mostly throwing everything in the garbage to managing "20 different waste streams—batteries, Styrofoam, textbooks," and U4 highlighted "implementing campus-wide organics collection." Similarly, universities in the USA such as U1 has expanded composting from dining halls into residence halls and U5 reported notable success in food waste reduction, achieving a decrease of "over 3 ounces per person per year" through sustained food waste audits. Reuse and repurposing were also key elements, with U5's "surplus store" reselling unwanted goods to reduce landfill waste and U2's "significant composting and surplus operations to try to reuse items instead of just throwing them away" as part of their zero waste strategy.

Water conservation was addressed both through technology and cultural change. In the USA, U1 in Arizona reduced grass landscaping to save water: "We're transitioning to native desert landscapes to reduce water use below baseline." In Canada, a program called "Fill It Forward" encourages the reuse of "reusable water bottles, instead of buying plastic water bottles" (U3), tackling both waste and water consumption. In Emerging

Regions, an example from Taiwan highlighted the collection of "all the building water, for the plants on the roof. And also we use them for the restroom" (U8), showcasing direct water conservation and reuse.

Addressing emissions from commuting and travel is a significant environmental outcome, leading to investments in alternative transport infrastructure and policies. Anglo-American universities such as U1, U2, and U4 pursued electric vehicle infrastructure, bike hubs, and campus shuttle systems. For instance, the parking and transit group from U1 focused on getting "more electric vehicles as well as carpooling, bike riding, walking, and that kind of stuff" (U1). Similarly, the participant from U2 reported that "the infrastructure and campus we have electric charging stations. We have designated shuttle on campus" (U2). U7 in Australia also installed a "Dobson Road Bike Hub" which was the "first major delivery of the Sustainable Transport Strategy and precursor to many more bike hubs across various campuses" (U7).

4.2. Social Sustainability Outcomes

Social sustainability emerged as a vital and multidimensional component of the universities' sustainability outcomes, although with varying approaches and degrees of explicit measurement. Universities in both Anglo-American and emerging regions embedded social sustainability in institutional responsibility and framed its outcomes through the lenses of social justice, equity, diversity, and inclusion, health and well-being, and community engagement.

Institutions in emerging regions often find themselves at the heart of community revitalization, cultural preservation, and community engagement. In Taiwan, U9 illustrated a faculty-led project that revitalized an abandoned railway station in collaboration with the township government. The project transformed the station into a vibrant community hub: "Faculty from our arts department painted the statue back to original color... created exhibition space... and worked with local students and elders" (U9). The station became a venue for weekly community dinners, youth entrepreneurship, and local cultural exhibitions, fostering what was described as an "echo chamber" of mutual support and social cohesion.

In the USA, a significant commitment to marginalized communities was observed, where U6 made "big commitments to the more marginalized community, with the west side of [our city] is where a lot of poverty and people of color, red lines store" (U6). This included establishing low-cost or free dental clinics and supporting local public schools through targeted educational programs. These initiatives showcased a long-term, systemic approach to addressing historical inequities and directly improving the social determinants of health and education within specific underserved areas.

The well-being of both campus populations and surrounding communities was a central component of social sustainability. In Ecuador, U10 launched a health initiative during the COVID-19 pandemic to address gaps in healthcare access. Students developed "a program of visiting women in vulnerable conditions, or poor communities in the city to have quick methods of evaluating their health, so that they could track their pregnancy" (U10). Similarly, in the UAE, U12 promoted a strong emphasis on mental health support: "We have fantastic mental health support on campus. We have free mental health services, we have free psychologists. We have two on campus for students, staff, and faculty. Actually, three now for students, staff and faculty" (U12).

Anglo-American regions also prioritized health. In the USA, U5 highlighted that "We also have a sustainable health theme in our strategic plan. We actually have three medical schools. We have lots of affiliations with hospitals here, so a lot of that is looking at... how we're supporting health and well-being for our campus population." (U5). U6 also

invested in a dental school located in a low-income area of the city, where students can gain practical experience while providing low- or no-cost medical services to the community: "We're going to invest our research dollars there. . . a dental school location where students learn their industry and practice for low or no costs to the residents of the West End."

Addressing food insecurity on campus and within the broader community was a practical and impactful social outcome for both Anglo-American and emerging regions. In Taiwan, a participant explicitly linked food sourcing to social justice, stating, "in the issue of food. We need to get the food not from the big company, but from local farmers. That creates a crucial concern about the justice" (U8). In the USA, institutions are leveraging existing infrastructure to combat food insecurity. For instance, U2 implemented innovative programs such as a dining center access card for students experiencing food insecurity and a text alert system that redistributed surplus food from catered campus events: "We have a text alert system. Now after those events, people in the text alert system get a heads up of like hey in the ballroom, there's salad bar leftovers you can come pick up food from this time to this time." (U2).

Commitments to diversity, equity, and inclusion (DEI) are explicitly stated and implemented across institutions. In the USA, U6 reported that "There's a lot of attention to diversity, equity, and inclusion on campus. There's a lot of resources that go into that. Whether it's capacity building around that with the people we have, or recruiting and retaining diverse students and the workforce, and making our campus a welcoming place for people of all backgrounds" (U6). In Mexico, U11 emphasized that a massive infrastructure shift occurred to improve accessibility, including ramps for wheelchair users and Braille in new buildings to guide visually impaired individuals. In Ecuador, the participant from U10 stated that "We do have a pretty strong office of diversity on campus. So, they take on more role of social sustainability," such as supporting multicultural students, ensuring campus accessibility for indigenous groups, and promoting sexual diversity, and psychological diversity.

A powerful example of addressing historical inequities and social justice came from the USA, where U2 commemorated its 150-year anniversary by working "with local indigenous people and some of the tribes that the land was taken from and wrote on land acknowledgement. So, it was a big process, and now the land acknowledgement is read at the beginning of all major events at the university." Additionally, the university demonstrated a deep commitment to rectifying historical injustices and fostering genuine inclusion by hiring an Assistant Vice President for Indigenous Affairs to guide equitable initiatives.

Lastly, ensuring education is accessible and affordable for diverse populations is a significant social outcome. In the USA, the commitment to affordability is evident through programs that provide federal grants and institutional support for low-income students, including "full tuition covered through these programs" (U2). Similarly, in the UAE, the strategic plan emphasized "making education accessible and affordable for different populations. And so, we work really hard to do a lot of scholarships and a lot of need-based grants for students." (U12).

4.3. Economic Sustainability Outcomes

Universities in both Anglo-American and emerging regions reported a variety of economic sustainability outcomes. While environmental initiatives were often more visible, economic sustainability was less defined and manifested in more indirect, nuanced ways within institutional operations. These outcomes ranged from cost savings to enhanced graduate employability, strengthened local economies, and contributions to national development.

One recurring theme across universities was the emphasis on cost savings through resource efficiency and financial viability as an economic outcome. In Anglo-American

universities, this was often linked to the adoption of energy-saving technologies and infrastructure. For instance, U3 implemented motion sensors and automatic timers to reduce energy consumption: "So, when people leave the room automatically, they turn off in 5 or 10 min." U5 linked its solar carport investment to substantial long-term financial benefits: "If there hadn't been a clear case that solar carports were probably going to save the institution money, leadership probably wouldn't have bought into it at the time." These resource efficiency measures translated into operating cost reductions that supported broader institutional sustainability.

Institutions in both regions with significant buying power leveraged their economic influence to drive sustainability throughout their supply chains. In Australia, U11 initiated procurement clauses focused on sustainability standards, marking the start of more systematic integration of economic sustainability principles into supply chains. In the USA, a participant from U2 noted, "We have an environmentally and socially responsible purchasing policy. And we're actually rewriting it right now. We want to make it stronger" (U2). Similarly, U12 in the UAE leveraged its "buying power to work with enough vendors and to be important enough to vendors that they start to think about these things and integrate sustainability into their purchasing and in their procurement" (U12). In Canada, U4 became a member of a sustainable procurement group supporting indigenous businesses and ensuring contracts meet specified criteria. Similarly, U6 in the USA focused on supporting minority-owned and cooperative businesses through an online supplier database.

Responsible investment emerged primarily among Anglo-American universities as a growing dimension of economic sustainability, with institutions moving beyond traditional financial returns to incorporate environmental, social, and governance (ESG) factors. In Canada, the participant from U4 noted, "We started a responsible investment committee, and I think it started just late 2019, early 2020. And we started by looking at all U15 universities," as a first step toward aligning investments with ESG principles. Similarly, in Australia, U7 formally adopted the United Nations Principles for Responsible Investment to guide its institutional assets. In the USA, U6 explored using ESG ratings to set measurable, politically neutral thresholds for investment decisions, aiming to integrate sustainability into financial practices while addressing potential sensitivities.

Economic sustainability was also reflected in outcomes that contributed to national and regional economic development. In Taiwan, universities benefited from stable government funding, which shaped their economic sustainability strategies. An interviewee from U8 explained, "In Taiwan, the national universities are funded by the government. So, it is not an issue for the university to think about earning money from the education." Instead, universities focused on their indirect contribution to economic sustainability by enhancing educational quality and preparing graduates to drive economic development. As the participant from U8 stated, "The university is kind of a force to educate your students to become competitive. And that is good for economic growth." U9 also emphasized how embedding ESG knowledge in education had strengthened graduates' employment prospects: "Many companies are looking for people who already have a very good understanding of ESG... I'm hoping they are able to become leaders in corresponding companies or organizations."

Partnerships and external engagement were another key economic strategy, particularly in emerging regions. In the UAE, U12 worked proactively to position its graduates as desirable candidates in the sustainability job market: "We do a lot with external partners... trying to make sure that industries and corporations in the UAE know that if they're looking for an employee with sustainability credentials, that [U12] is a university that they should be coming to." Similarly, U10 in Ecuador connected economic sustainability to academic programs by promoting entrepreneurship and innovation: "Our faculty of

economics talks a lot about how to foster entrepreneurship and innovation, and how that can drive economic prosperity through the generation of new business models."

Fair living wages, although still an ongoing issue, represented an inspirational economic sustainability outcome for many participating universities across both regions. In Mexico, an interviewee mentioned "One of our proposals was to assess how much money is needed to live in the city... but that hasn't happened, because it would require too much effort in the mindset of the higher administration." (U7). A similar sentiment is echoed in the USA, where a participant from U6 expressed, "We've not made larger commitment in living wages... there's still a lot of issues with our contract workers... it's really hard to have any say [in] the wages.", particularly for contract workers whose wages are dictated by multinational corporations.

Innovation in fostering circular economies also emerged as part of economic sustainability. U9 described a peer-to-peer book-sharing initiative that emphasized reuse over profit: "So, when we actually build a service right now, we use a peer-to-peer system... So, it is about a circular economy, and it's about a business. We are not looking for money. But this circle can really demonstrate sustainability." Such initiatives, while modest in direct economic impact, signaled a shift in values toward sustainable consumption and social entrepreneurship.

Across both regions, economic sustainability was not only about cost savings but also about creating value for the wider community and ensuring the university's purchasing, employment, and educational practices contributed positively to local and global economies. Anglo-American institutions often focused on supply chain ethics and local economic empowerment, while universities in emerging regions concentrated on contributing to national economic development through education, workforce preparation, and cost–benefit alignment of sustainable operational practices.

4.4. Internal Factors

4.4.1. Institutional Size

Institutional size and physical scale were repeatedly referenced by interviewees as shaping the internal conditions under which sustainability initiatives unfolded. The Anglo-American universities varied widely in student and staff population and land area, with several participants describing size as a structural constraint on coordination. An interviewee from U4 referred to the difficulty of navigating a large campus and workforce, stating that "We're definitely missing a good chunk of staff and faculty. Still a mystery on how we get to them consistently." In emerging-region universities, smaller student populations and campus sizes were less frequently described as barriers, with participants emphasizing formal leadership channels rather than scale-related challenges.

4.4.2. Governance Structure

Governance structure emerged as a prominent internal factor influencing sustainability implementation, particularly for environmental initiatives that require coordination across operational units. Universities, especially large Anglo-American universities, tended to adopt a decentralized structure, partly due to their size and pre-existing norms. An interviewee from a large Anglo-American university stated that "We're so big, we're so decentralized. But it's just learning like who's who, and I think, especially on the academic side again. That's a little bit bigger of a challenge, because we are just so large, I mean 17 colleges." (U5).

Another interviewee commented that the university followed a decentralized structure with various work groups implementing sustainability in the university. The interviewee stated, "So yeah we are a little bit complicated because we have a decentralized model

where we have multiple teams embedded within colleges and divisions to work on sustainability. And each has slightly different goals and focus." (U2).

By contrast, universities in emerging regions more frequently reported centralized governance arrangements. In Taiwan, U9 has implemented a leadership structure at both the school and executive office levels. Deans appointed Associate Deans as Chief Sustainability Officers (CSOs), and administration personnel were given administrative positions to support campaign promotion and data collection efforts. Similarly, U11 in Mexico used a centralized implementation structure to integrate sustainability into the curriculum, mandating that every course incorporate at least one SDG or link to two of the TBL outcomes. The interviewee explained that "It's more of a mandatory thing. So, a month ago, we worked with the engineering school, and it was no option. Everyone should include the SGDs in their syllabus. And it's mandatory. So, you don't get the say on that." (U11).

4.4.3. Institutional Capacity

Institutional capacity, particularly staffing and financial resources, was associated with the scale and continuity of sustainability outcomes. Participants from emerging-region universities consistently described dedicated sustainability offices as formal institutional functions responsible for coordinating sustainability-related efforts and outcomes. In contrast, some institutions in the Anglo-American region operated without a dedicated sustainability office (e.g., U2 and U7), while U6 relied heavily on a single individual. At U6, the participant explained, "A lot of schools our size would have an approved sustainability office, with probably on average, three or four staff... I don't have any of that. It's just me". Even at universities with sustainability offices, staffing levels were described as modest given the campus scale. Student volunteers were frequently mentioned as a source of additional capacity, particularly for maintaining momentum around environmental initiatives and awareness campaigns.

In Anglo-American universities, participants described relatively greater access to internal funding and formal incentive mechanisms to support sustainability-related activities, particularly in teaching and research. One interviewee explained that faculty participation in sustainability curriculum development was supported through modest stipends, "For some faculty members, what they want is time. So, the grant buys out one of their courses for the semester, and they use that extra time to develop the curriculum." (U6). These grants were described as supporting both environmental and social sustainability outcomes by enabling curriculum innovation and applied research.

In emerging-region universities, participants described more limited funding availability and fewer formal incentive mechanisms. Sustainability work was often reported as relying on voluntary contributions from academic and administrative staff, with limited recognition in formal evaluation or compensation systems. At U10, the participant explained that sustainability projects were frequently delayed due to competing workload pressures, "When you're working day to day with a lot of work for which you are graded or paid for... that's where your focus is going to go... our projects tended to be delayed." Participants also reported the absence of formal incentives for faculty engagement in sustainability teaching. In Mexico, the interviewee described unsuccessful attempts to introduce incentives aligned with international frameworks: "When I went to the administration about this, they told me that they don't give incentives to faculty" (U11).

4.4.4. Institutional Culture and Resistance

Institutional culture and forms of resistance were associated with uneven social and environmental sustainability outcomes, particularly in teaching, engagement, and everyday practices. Across Anglo-American universities, participants described strong disciplinary

autonomy and siloed organizational structures that made cross-departmental sustainability work difficult. In Canada, the interviewee from U4 noted that "universities are notoriously siloed, so it's very difficult to work because we're in administrative units." Resistance was especially evident in relation to curriculum-related social outcomes, where proposals for required sustainability courses faced pushback due to credit constraints and governance complexities, "It's hard to get a required course put together. . . and students only get so many credit hours" (U2).

Participants also highlighted cultural hierarchies and trust issues that shaped sustainability engagement. Cultural divides between academic and professional staff were described as undermining cooperation, with one participant observing that "folks with PhDs kind of frown upon people at facilities" (U5). In addition, participants reported skepticism toward central administration, noting that faculty and students often "distrust whatever central administration is doing" (U4). Campus diversity and high turnover further complicated the development of shared sustainability norms, particularly in institutions with large international student populations, where "We have international students from roughly about 90 to 100 countries. . . different languages, different cultures, different habits" affecting sustainability-related behaviors (U3).

In emerging-region universities, institutional culture similarly shaped sustainability outcomes, though in different ways. In Taiwan, disciplinary focus and professional identity were described as limiting engagement with sustainability beyond core fields of expertise: "Our professors ignore the concept of sustainability, because they have their focus. . . they believe their field is the most important" (U8). Cultural and economic orientations were also described as influencing cooperation and social sustainability outcomes. One participant noted that cooperation was not strongly valued in a competitive, market-oriented context: "It is a very capitalist society. . . cooperation is not so much recognized in our daily practice" (U9), while in Mexico, cost-driven procurement practices prioritized price over environmental or social considerations: "If it's cheaper, it's the option" (U11).

4.5. External Factors

4.5.1. External Funding

External factors significantly influenced the implementation of sustainability initiatives in universities across both Anglo-American and emerging regions, with funding and financial incentives as the primary drivers. In the USA, the importance of grants was highlighted by an interviewee, "Most of the collaboration with industry is through like grants" (U2), highlighting the reliance on external funding for sustainable projects. Additionally, the use of state bonds was notable, as another interviewee mentioned, "With that guarantee, we were able to get a bond from the State Government. . . We ended up investing 50 million dollars" (U6). Conversely, in emerging regions, the approach to funding was intertwined with sustainability track records and reputation, as evidenced by the comment, "It's been easier to collaborate with industry partners that are definitely involved in sustainability", and the competitive advantage in securing research funds, "if the University has some sort of sustainability scheme" (U10).

4.5.2. Government Policies

Government and policy directives also played a critical role. In the Anglo-American regions, government influence was commonly articulated through reporting requirements, regulatory alignment, and alignment with broader provincial or state sustainability mandates, particularly on environmental outcomes. Local ambitions, such as a city's goal to be "the greenest city in the world," clearly influenced universities. For example, U3 in Canada described how environmental practices on campus were shaped by external accountability

measures, such as annual Climate Action Plan reports to the government, on "things like trying to get people to stop printing as much paper" (U3).

In emerging regions, responses to government policies were more direct and operational, requiring universities to implement specific sustainability actions. Participants from Taiwan highlighted the need to respond directly to government policy. The participant from U8 explained that "we need to respond to all the policies from the government," highlighting a directive from the Environmental Protection Administration to reduce single-use plastics. Government requirements also included measurable environmental targets, with the participant noting that universities were required "to reduce 2% every year for the energy consumption and water consumption" (U8).

Policy influence extended beyond environmental measures to social and educational initiatives. A participant from Ecuador described national legislation mandating student community service hours, stating that "there's a law that requires students to have a certain number of community service hours" aligned with the SDGs (U10). Similarly, a participant reported a Ministry of Education directive requiring "all students in higher education to have a class, at least one that general education required course on sustainability" (U12).

4.5.3. Global Trends and Standards

Broader social expectations and global sustainability standards also shaped how universities plan, structure, and implement sustainability across environmental, social, and economic dimensions. In Anglo-American regions, societal sustainability expectations diffused through reputational and legitimacy pressures from students, staff, and external stakeholders. One participant noted that sustainability had become "something students expect the university to be doing," even when not formally mandated (U1). Another interviewee explained that social pressure around climate responsibility and equity increasingly affected institutional reputation, stating that "universities are expected to show leadership on these issues, whether it's written into policy or not" (U2).

Alongside these societal expectations, global sustainability frameworks such as STARS were frequently used in institutional sustainability planning and implementation. One interviewee noted that the institutional sustainability plan was "designed with the STARS framework in mind and more or less laid out the same way as the STARS report" (U3). U4 and U6 also described how institutional goal-setting and prioritization were explicitly cross-checked against STARS frameworks, with sustainability goals being matched to the SDGs.

In emerging regions, broader global norms and societal expectations were more frequently translated into formal institutional requirements. In Taiwan, for example, gender equality was described not merely as a social value but as an institutional obligation, with universities required "to make sure the gender equality had been implemented in the University" (U9). Additionally, U10 in Ecuador noted a competitive pressure, "you have to be talking about sustainability and show sustainability, because if not, we're gonna be left behind" (U10).

Participants from emerging regions also described the influence of global sustainability standards and rankings. One participant noted that universities were increasingly expected to "engage in the process of the University ranking like the STARS or the THE" (U8). At the same time, participants stressed that these frameworks were largely developed within U.S. or Western contexts and were not always fully transferable. A participant from Mexico explained that "the STARS is really American-focused. So we mix it up and try to make it Mexican-relevant," particularly where indicators such as certified organic food, ESG investment, and certain landscaping were not feasible locally (U11).

Despite these limitations, participants described STARS as a useful reference point for structuring sustainability activity. The interviewee from Ecuador noted that STARS "has helped us a lot to develop indicators in terms of our sustainability classes offerings", including mapping research projects to the SDGs (U10). Another participant described that STARS reporting "allowed us to kind of come up with a baseline of data, kind of where we were," that supported institutional benchmarking and progress tracking (U12).

5. Discussion

This study illustrated the multifaceted journey of universities in interpreting, negotiating, and shaping sustainability transformation and explored how internal and external conditions shape differentiated TBL outcomes. Prior research often treats environmental, social, and economic sustainability as parallel or balanced dimensions (Elkington, 1998; Nica et al., 2025; Yong et al., 2025). However, our findings suggest that in these high-performing universities, TBL outcomes were unevenly produced and institutionalized, and structurally were conditioned by governance arrangements, capacity, culture, external regulations, and global trends.

Across both Anglo-American and emerging regions, environmental sustainability emerged as the most systematically pursued and conceptually mature TBL dimension. Historically, sustainability in higher education focused on environmental preservation and operational eco-efficiency (Cole, 2003; Leal Filho et al., 2020; Sharp, 2002). This emphasis appears to continue shaping institutional priorities, aligning with observations that sustainability efforts often begin with operational aspects such as recycling, carbon emissions reduction, energy efficiency, waste management, and water conservation (Avissar et al., 2018; Menon & Suresh, 2020; Tangwanichagapong et al., 2017). Recent reviews of sustainability practices in higher education similarly report a disproportionate emphasis on environmental indicators relative to social and economic dimensions (Basheer et al., 2025; Wardat & AlAli, 2025).

This dominance can be further expounded by the alignment between internal governance structures and external accountability mechanisms, which together favor outcomes that are measurable, operational, and infrastructure-based (Errida & Lotfi, 2021; Menon & Suresh, 2020; Trencher et al., 2014). Large, decentralized Anglo-American universities in our study demonstrated greater capacity for capital-intensive environmental investments, leveraging diverse external funding sources. For example, U3, U4, and U6, with decentralized governance and aging infrastructure, pursued extensive energy retrofits and renewable energy installations, allowing sustainability offices to act as coordinators rather than sole implementers. External factors such as annual energy reduction requirements, climate action reporting, and alignment with tools such as STARS translated abstract sustainability commitments into concrete performance expectations (Basheer et al., 2025; Doocy et al., 2021). However, decentralization posed internal coordination challenges, requiring distributed leadership for cohesive TBL goals (Aung & Hallinger, 2023; Avissar et al., 2018; Errida & Lotfi, 2021).

In centralized institutions in emerging regions, government-mandated environmental targets further reinforced top-down implementation, reducing resistance and accelerating adoption (Errida & Lotfi, 2021; Ritchie-Dunham et al., 2023; Ryan et al., 2010; Sari et al., 2024). For instance, smaller universities such as U8, U9, and U7 in emerging regions often use centralized governance to mandate environmental performance. Direct government directives, like Taiwan's 2% reduction every year for energy and water consumption, showcased top-down policy, accelerating consistent ecological stewardship (Mazon et al., 2020). This combination of internal operational fit and external pressure may explain why environmental outcomes were not only more prevalent but also more quantifiable and

institutionally embedded than social or economic outcomes (Basheer et al., 2025; Menon & Suresh, 2020; Trencher et al., 2014).

On the other hand, social sustainability emerged as a vital but less metric-driven dimension, dependent on institutional culture, disciplinary norms, and governance complexity, leading to uneven implementation and greater contextual variation. While caring for people and communities has long been central to universities' missions, these efforts are often less tangible and more narrative-driven than the environmental or economic outcomes they produce. Social initiatives focused on social justice, equity, diversity, inclusion, health and well-being, and community engagement reflected a growing shift toward universities recognizing broader societal responsibility (Edvardsson Björnberg et al., 2015; Purcell et al., 2019). However, the inherent complexity of defining and benchmarking social impacts has made this dimension less explicit and harder to standardize (Aung & Hallinger, 2023; Basheer et al., 2025).

In large, decentralized Anglo-American universities, the inter-departmental nature of social sustainability interacted with disciplinary silos and academic autonomy, making social sustainability more vulnerable to fragmentation (Alexio et al., 2018; Ulmer & Wydra, 2020). While environmental initiatives could be delegated to operational units and justified through efficiency or compliance narratives, social initiatives often relied on voluntary faculty engagement, student activism, or specialized offices, limiting scalability and consistency (Leal Filho et al., 2017; Menon & Suresh, 2020).

In contrast, smaller and more centralized universities in emerging regions enable stronger alignment between social sustainability and institutional missions, particularly where universities were positioned as agents of community development or cultural preservation (Hua et al., 2025), exemplified by U9's project transforming a railway station into a community hub (Farner, 2019; Menon & Suresh, 2020). Mandatory SDG integration into curricula, required community service hours, and institution-wide gender equity policies illustrate how centralized governance may accelerate social outcomes, even in resource-constrained contexts (Basheer et al., 2025; Fuchs et al., 2023). However, limited institutional capacity and the absence of formal incentives constrained the depth and scope of these initiatives (Leal Filho et al., 2017; Velazquez et al., 2005).

Economic sustainability remained the least developed TBL dimension within the higher education institutions in our study, reflecting deeper tensions between universities' public-good orientation and emerging expectations around financial responsibility, ethical procurement, and market engagement (Ceulemans et al., 2015; Phuangsuwan et al., 2023; Yong et al., 2025). In emerging regions, stable government funding reduced pressure to generate revenue but redirected economic sustainability toward national development goals, such as graduate employability and human capital formation (Asa et al., 2023; Sari et al., 2024).

However, a paradigmatic shift has emerged, recognizing the broader economic roles universities can play both internally and within their surrounding communities (Ramakrishna et al., 2020). This study highlighted that economic sustainability in participating universities now appears to encompass cost efficiency, graduate employability, ethical procurement, and contributions to local and national economies. Anglo-American universities such as U4 and U6 increasingly embraced responsible investment practices, incorporating ESG factors into endowment management, aligning financial assets with sustainability values (Robinson & Pedersen, 2021; Yong et al., 2025).

These findings suggest that TBL implementation in universities is not a balanced or linear process, but an uneven outcome shaped by the interaction between institutional structures and external pressures (Disterheft et al., 2015; Giesenbauer & Müller-Christ, 2020; James & Card, 2012). Where faculty engagement in sustainability teaching or community

work was not formally recognized through workload models, promotion criteria, or financial incentives, initiatives depended on individual champions and were prone to delay or discontinuation (Basheer et al., 2025). This dynamic was especially pronounced in emerging-region universities in our study, where sustainability work was often voluntary and secondary to graded or compensated responsibilities (Asa et al., 2023; Errida & Lotfi, 2021).

Strong disciplinary identities, academic autonomy, and hierarchical divides between academic and professional staff created resistance to cross-cutting sustainability initiatives, particularly those affecting curriculum, procurement, or labor practices (Purcell et al., 2019; Ritchie-Dunham et al., 2023; Ulmer & Wydra, 2020). Social sustainability outcomes, such as required sustainability courses and ethical procurement, were most likely to encounter resistance because they challenge entrenched norms around academic freedom and cost efficiency (Jolović, 2020; Rieg et al., 2021). In emerging regions, cultural orientations toward competition, cost minimization, and disciplinary prestige similarly constrained social and economic outcomes (Asa et al., 2023).

Where funding was linked to reputation, rankings, or ESG narratives, universities were incentivized to demonstrate visible sustainability credentials rather than address structurally complex issues such as living wages, labor conditions, or long-term community empowerment (Ceulemans et al., 2015; Ritchie-Dunham et al., 2023; Sari et al., 2024). This helps explain why economic sustainability outcomes often took the form of cost savings and procurement policies rather than redistributive or justice-oriented interventions among the participating universities. At the same time, participants from emerging regions emphasized the partial misalignment between Western-developed frameworks and local contexts (Asa et al., 2023; Doocy et al., 2021), particularly for economic indicators such as ESG investment or organic procurement. This led to selective adaptation rather than wholesale adoption, underscoring the contextual nature of TBL implementation.

To summarize, this study contributes to sustainability scholarship by demonstrating that TBL outcomes are not simply the result of institutional commitment, but are structurally produced through the interaction of governance, capacity, culture, and external accountability regimes (Aung & Hallinger, 2023; Nica et al., 2025; Ritchie-Dunham et al., 2023; Velazquez et al., 2005). Recognizing these combined effects shifts attention away from normative calls for 'balance' and toward more realistic, context-sensitive strategies for strengthening social and economic sustainability without undermining institutional coherence.

5.1. Implications

This study offered significant implications for both theory and practice in the field of higher education sustainability. The study deepened the understanding of TBL outcomes in a university context by demonstrating that these outcomes are not balanced by default but structurally shaped by institutional conditions and external pressures. While environmental sustainability remained the most mature dimension, reflecting its historical prominence (Aung & Hallinger, 2022; Dzombak & Davidson, 2004), social and economic aspects were increasingly recognized as integral to holistic sustainability, though more unevenly institutionalized. The qualitative data provided rich examples of how these dimensions were operationalized, moving beyond abstract definitions to concrete institutional practices.

For university leaders and sustainability practitioners, this study provided actionable insights. For large, decentralized institutions, strategies should focus on fostering distributed leadership, aligning incentives, and embedding sustainability responsibilities across faculties and administrative units to reduce fragmentation (Bien & Sassen, 2020; Ritchie-Dunham et al., 2023; Rieg et al., 2021; Umar et al., 2025). Effective communication structures, formal recognition mechanisms, and strategic internal resource allocation become critical for coordination across a complex organizational landscape (Shriberg & Harris,

2012). Conversely, for smaller, more centralized institutions, leveraging top-down directives could be highly effective for rapid and widespread implementation of sustainability initiatives, particularly in areas like curriculum integration (Brinkhurst et al., 2011; Mazon et al., 2020). However, such approaches should be complemented by capacity-building mechanisms to ensure long-term institutionalization beyond compliance (Umar et al., 2025).

The qualitative insights from this study also respond to calls for further research by clarifying how internal conditions and external pressures shape differentiated TBL outcomes. The findings suggest that internal conditions are closely related to governance arrangements, institutional culture, and organizational capacity, while external factors reflect regulatory expectations, rankings, frameworks, and resource dependencies (Bien & Sassen, 2020). Conceptually distinguishing these domains provides a preliminary framework for examining how their interaction influences Environmental, Social, and Economic Sustainability Outcomes. Future empirical studies, particularly those employing structural equation modeling (Creswell & Creswell, 2018), could build on this foundation to test the relationships among these constructs and assess potential mediating or moderating effects. This next phase of research would provide a more robust and generalizable understanding of sustainability integration processes in higher education.

5.2. Limitations

This study, while providing rich qualitative insights, was subject to several limitations. First, as a qualitative inquiry based on 12 semi-structured interviews, the findings were not intended for statistical generalization to the broader population of universities. Second, the data relied on self-reported perceptions and experiences of sustainability coordinators, which may have introduced social desirability bias or reflected individual interpretations rather than objective institutional realities. Third, the study focused on universities with high STARS ratings, meaning it primarily captured the experiences of institutions already advanced in their sustainability journey. This provides limited insights into the initial stages of sustainability adoption or the challenges faced by less engaged institutions. Finally, while the study explored internal and external factors, the complex, dynamic interplay of these elements over time could not be fully captured within a cross-sectional qualitative design. Future longitudinal studies or mixed-methods approaches could provide a more comprehensive understanding of these evolving relationships.

6. Conclusions

This study offered a nuanced exploration of how universities operationalized and achieved TBL sustainability outcomes, influenced by their unique internal contexts and a dynamic external landscape. It confirmed the continued prominence of environmental initiatives while highlighting the growing integration of social and economic dimensions, albeit with varying degrees of maturity. The findings illustrated that successful sustainability integration was not a universal blueprint. Instead, it is a contingent process, shaped by institutional size, governance arrangements, organizational resources, and forms of cultural resistance, as well as by external funding mechanisms, government mandates, and global sustainability frameworks (Bien & Sassen, 2020; Errida & Lotfi, 2021). By providing both practical implications for university leaders and a theoretical foundation for future quantitative research, this study contributed to a deeper, more integrated understanding of the complex journey towards a sustainable higher education sector.

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