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Translating Green Intent into Sustainable Action: A PLS-SEM Analysis of Green Accounting Practices in Algerian Academic Entrepreneurship

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Abstract
This study examines the integration of green accounting within Algerian academic entrepreneurship, probing the cognitive and behavioral pathway from awareness to application. Utilizing a quantitative approach, data were collected via a trilingual survey from 286 students, faculty, and researchers across nine Algerian universities. Analysis through Partial Least Squares Structural Equation Modeling (PLS-SEM) reveals a potent cognitive sequence: awareness significantly enhances perceived usefulness, which in turn powerfully drives adoption intention. Although this intention significantly leads to application—which itself predicts a positive impact such as long-term success and reputational gains—the transition from intention to action is not strengthened by institutional support. Stated differently, the latter demonstrates no significant moderating effect, indicating that current mechanisms are insufficient to bridge intention with practice. The findings necessitate a strategic redesign of university support ecosystems to translate sustainable principles into tangible ventures, aligning academic entrepreneurship with both environmental imperatives and enduring economic value.

Keywords: Sustainability; Academic Entrepreneurship; Green Accounting; Algeria; PLS-SEM.
JEL classification: C38, I23, M41, O55, Q56.

1.Introduction

Universities now occupy a cardinal role within national innovation ecosystems, transcending their conventional educational mandate to actively shape entrepreneurial and sustainable development trajectories (Guerrero et al., 2016). This evolution is embodied by academic entrepreneurship, which captures the capacity of universities, researchers, and students to deliberately translate scientific knowledge into market-oriented products, services, or ventures, thereby generating both economic prosperity and broader societal value (Abreu and Grinevich, 2013; Hayter et al., 2017). Academic entrepreneurship acts as a strategic conduit, translating research into market solutions that energize regional innovation ecosystems and cultivate the entrepreneurial mindset necessary to tackle pressing sustainability imperatives (Cantu-Ortiz et al., 2017; Guindalini et al., 2021). In parallel, the global urgency surrounding environmental degradation and climate change has elevated sustainability to a pivotal concern within modern business education and contemporary entrepreneurial paradigms. In the same vein, green accounting has arisen as a critical framework for quantifying and managing environmental costs, impacts, and performance (Schaltegger and Burritt, 2017). Its integration into academic curricula equips a new generation of entrepreneurs with the necessary financial acuity and ecological stewardship to pioneer ventures that reconcile economic objectives with environmental imperatives (Hassan et al., 2022; Mambali et al., 2024).

The convergence of green accounting and academic entrepreneurship creates a vital framework for advancing responsible innovation and sustainable development. Contemporary research positions universities as crucial incubators for sustainability-oriented ventures, furnishing the foundational infrastructure and intellectual capital for environmentally conscious innovation (Sieg et al., 2023; Gaspar Pacheco et al., 2024). Specifically, university incubators fulfill a pivotal function by translating academic ideas into viable enterprises through comprehensive support, including mentorship, funding, and access to sustainability-focused networks (Stal et al., 2016). Moreover, integrating sustainability principles into entrepreneurship education fosters green entrepreneurial self-efficacy, thereby strengthening student commitment to launching environmentally responsible ventures (Mambali et al., 2024). This synergy directly advances key United Nations Sustainable Development Goals, fostering responsible patterns of consumption and production alongside targeted climate action.

At the intersection of these two domains, accounting transcends its traditional role as a mere financial reporting instrument, evolving into a strategic mechanism for instilling environmental accountability within venture creation (Spanò et al., 2022; Chrisman et al., 2025). Academic entrepreneurs equipped with green accounting knowledge can thus more effectively integrate ecological externalities, architect sustainable business models, and guarantee rigorous environmental disclosure. The inclusion of green accounting practices in entrepreneurial education can thus foster a culture of accountability and sustainability that propagates beyond academic settings, reshaping both local and global ecosystems. Ozen et al. (2023) and Toledano and Gonzalez-Sanz (2024) contend that academic entrepreneurship must evolve beyond profit-oriented motives to embrace ethical imperatives, prioritizing environmental and societal well-being.

Although previous studies have separately explored the individual roles of academic entrepreneurship (e.g., Guerrero et al., 2016; Hayter et al., 2017) and green accounting (Schaltegger and Burritt, 2017; Hassan et al., 2022) in advancing sustainability, few have examined their intersection as mutually reinforcing drivers of responsible innovation. The existing corpus of research remains overwhelmingly focused on developed economies, largely overlooking the distinct institutional and market conditions that characterize emerging nations. This scholarly gap renders an examination of specific national frameworks, such as Algeria's recent legislative drive to formalize academic entrepreneurship, particularly instructive. Of notable relevance is Algeria’s Ministerial Decree No. 1275 (promulgated on September 27, 2022, and subsequently amended by Ministerial Decree No. 008 of February 23, 2025), which establishes a robust legal framework to cultivate academic entrepreneurship. This legislation actively promotes the conversion of student graduation projects into viable startups, thereby fostering a dynamic university-based innovation ecosystem. A central mechanism of Law No. 1275 lies in the awarding of official "Startup" or "Patent" certificates to students, a policy designed to galvanize venture creation, stimulate job generation, and contribute to economic enrichment (Haddouche, 2025). The law further strengthens the role of university incubators by mandating awareness campaigns, tailored training, and assistance in securing funding, thus structurally embedding a culture of entrepreneurialism within the academic landscape (Khoualed et al. 2024).

Amid Algeria’s expanding university-led entrepreneurship initiatives (Haddouche, 2025), the integration of green accounting presents a strategic imperative. This addresses the nation’s dual

challenge of fostering economic competitiveness while simultaneously fulfilling pressing sustainability objectives. In fact, empirical research examining the interplay between academic entrepreneurship and green accounting in Algeria remains scarce. Therefore, this study addresses a critical scholarly void by launching a pioneering empirical inquiry into the integration of green accounting within Algerian academic entrepreneurship. It represents a seminal effort to analyze how this nexus can nurture sustainability-oriented entrepreneurial ecosystems within higher education institutions; a domain scarcely explored in both national and global contexts. Stated differently, this research undertaking examines whether universities can cultivate a generation of entrepreneurs committed to both economic value and environmental stewardship through the integration of green accounting within academic entrepreneurship.

Specifically, this study aims first to evaluate the awareness of green accounting among university stakeholders; second, to analyze how perceptions of its usefulness influence entrepreneurial intentions and behaviors; third, to explore the moderating role of institutional support in promoting the adoption of green accounting practices; and finally, to assess the potential impact of such integration on sustainable entrepreneurial success, innovation, and institutional reputation.

Fundamentally, our research contributes to academic and policy discourse by establishing an empirical cornerstone for integrating green accounting into academic entrepreneurship, elucidating how universities can foster environmentally conscious venture creation through the dynamic interplay of awareness, perceived utility, and institutional backing. The findings aim to inform the development of higher education strategies and strategic initiatives that reconcile profitability with sustainability. By focusing on Algeria, the study provides a critical perspective from a developing economy, thereby broadening the global relevance and transferability of its conclusions.

The pursuit of these objectives necessitates a robust empirical strategy. Accordingly, this study employs a quantitative approach to examine the integration of green accounting within academic entrepreneurship across 9 Algerian universities (Oran 2 University, Ain Temouchent University, Tlemcen University, Adrar University, Algiers 3 University, Constantine 2 University, Annaba University, Biskra University, and Ouargla University). Data were gathered via a trilingual survey administered to students, faculty members, and researchers between May and September 2025. A compiled contact list yielded an initial pool of 322 respondents, providing a robust foundation for analysis. Upholding stringent standards for data quality, the analytical process incorporated a rigorous refinement protocol. This involved the application of an attention-check filter, which honed the initial sample to a final cohort of 286 high-fidelity responses. The survey examined key aspects of green accounting practices in the context of academic entrepreneurship, including awareness, perceived utility, adoption intentions, institutional support, actual application, and expected outcomes. Each construct was measured using Likert-scale items designed to capture respondents' perceptions and behavioral intentions. This research paper employs Partial Least Squares Structural Equation Modeling (PLS-SEM) to investigate the hypothesized relationships. This method is particularly suited for predictive research in emerging fields and complex models (Hair et al., 2019). Its application ensures a robust analysis of the proposed framework (Ringle et al., 2020; Sarstedt et al., 2017), which aligns with the study's exploratory nature within the Algerian context.

This research undertaking bridges a critical theoretical divide between green accounting and academic entrepreneurship, illuminating the role of universities as engines of responsible innovation.

Its practical contribution lies in offering university leaders an actionable roadmap for integrating environmental stewardship into entrepreneurship curricula, thereby furnishing a strategic framework for advancing institutional commitments to the United Nations Sustainable Development Goals.

The rest of this paper is structured as follows: Section 2 outlines the study's hypotheses and theoretical background. Section 3 elucidates the methodology. Section 4 presents and discusses the empirical results. Section 5 concludes with some recommendations.

2. The study's hypotheses and theoretical background

Scholarly understanding of academic entrepreneurship has evolved in tandem with its institutionalization. This process was propelled by the U.S. Bayh-Dole Act of 1980, which served as a pivotal catalyst, prompting universities to institutionalize technology transfer through formal offices dedicated to patenting and licensing academic research. This legislative shift galvanized a focus on academic entrepreneurship, a domain also referenced as university entrepreneurship (Grimaldi et al., 2011; Schmitz et al., 2017).

To strengthen the theoretical grounding of this study, we integrate the Triple Helix model and the Natural Resource-Based View (NRBV) to explain the role of universities in fostering green awareness and sustainable entrepreneurship. The Triple Helix model conceptualizes universities as proactive institutional actors that collaborate with industry and government to co-create innovation ecosystems (Etzkowitz and Leydesdorff, 2000; Zhou, 2021). Within this framework, universities act as key agents in shaping cognitive factors such as awareness and perceptions, thereby directly influencing entrepreneurial intentions and behaviors. Complementarily, the NRBV posits that competitive advantage stems from the development of environmentally oriented capabilities (Hart and Dowell, 2011), providing a theoretical basis for linking green accounting awareness and perceived usefulness to entrepreneurial action. Stated differently, by embedding green accounting into the academic entrepreneurial process, universities facilitate the development of these strategic capabilities, enabling student-led ventures to reconcile economic performance with ecological stewardship (Ahmad et al., 2025; Martínez-Falcó et al., 2025). Together, these perspectives offer a coherent explanation of how universities not only generate green awareness but also facilitate its translation into sustainable entrepreneurial practices, thereby supporting the proposed conceptual relationships.

The conceptualization of this phenomenon, as defined by Doutriaux (1987), Louis et al. (1989), and Hayter et al. (2018), centers on the creation of new ventures by academic constituents based on university technology. Conversely, a broader conceptualization describes it as any innovative, risk-oriented activity that transcends traditional teaching and research roles, undertaken with the expectation of direct or indirect financial gain for the individual or institution (Klofsten and Jones-Evans, 2000; Abreu and Grinevich, 2013).

Rothaermel et al. (2007), in a seminal literature review, conceptualize university entrepreneurship as an umbrella term encompassing all entrepreneurial engagements a university might pursue. This includes patenting, licensing, new venture creation, and fostering regional economic development via incubators and science parks. Complementing this, scholars such as Grimaldi et al. (2011) posit that the domain extends to further commercial pathways. These mechanisms include collaborative research, practitioner networking, and personnel exchanges, representing a broader spectrum of knowledge diffusion beyond formal technology transfer, often through external engagement and tacit knowledge flows. Nevertheless, the field exhibits conceptual fluidity, with a lack of consensus on the

characterization of activities, stakeholder roles, and the nature of research-based enterprises. These ventures extend beyond profit-oriented foundations to encompass diverse forms of knowledge transfer and value creation, including those measured by social impact.

This study therefore seeks to illuminate the interconnected dynamics of innovation and commercialization, a crucial scholarly endeavor. In this research undertaking, academic entrepreneurship specifically denotes the engagement of academic personnel, researchers, students, and staff in transferring scientific knowledge to the market. This transfer is realized through defined commercialization mechanisms, including patenting, licensing, and the establishment of start-ups and spin-offs, thereby translating research outcomes into tangible market applications.

2.1. Green awareness as the cognitive foundation for sustainable entrepreneurial decision-making

Universities now serve as vital incubators of environmental stewardship, cultivating an understanding of green accounting. In fact, green accounting awareness—defined as the comprehension of how environmental considerations are integrated into financial and managerial decision-making—constitutes the cognitive bedrock for sustainable entrepreneurship (Hassan et al., 2022). Within Algeria's academic sphere, this very awareness is pivotal (Demdoum et al., 2021), shaping how scholars and students apprehend the value of weaving sustainability into the fabric of their entrepreneurial initiatives.

Chrisman et al. (2025) posit that merging accounting with entrepreneurship furnishes a dual perspective, facilitating decisions that are both economically sound and socially conscious. Green accounting awareness thus transforms ledgers into a strategic compass for sustainable innovation. This cognitive foundation is vital, as Li et al. (2025) contend that awareness and education are central to shaping motivation and interest in innovation-oriented learning environments. Stated differently, embedding green accounting principles empowers aspiring entrepreneurs to discern and pursue ventures aligned with environmental stewardship (Hassan et al., 2022).

Mambali et al. (2024) reveal that environmental awareness and self-efficacy significantly influence green entrepreneurial intentions. This relationship implies that awareness of green accounting—both conceptually and through exposure to academic discourse—heightens its perceived utility by clarifying the symbiosis between environmental and financial performance. Further reinforcing this, Sieg et al. (2023) conceptualize academic entrepreneurship as a conduit for sustainable innovation, where environmentally informed entrepreneurs are best positioned to devise ventures that harmonize sustainability with profitability.

Awareness functions as an interpretative lens, allowing individuals to assess the practical and principled merits of sustainability-driven accounting. It acts as a conceptual gateway to perceived usefulness because it allows individuals to recognize the practical relevance of integrating environmental metrics into business models and decision-making systems. This theoretical logic finds resonance in the Technology Acceptance Model (TAM), which posits that awareness and perceived ease of understanding often precede perceived usefulness (Davis, 1989). A deepening awareness of green accounting naturally enhances its perceived usefulness in entrepreneurial decision-making (Hassan et al., 2022). Grounded in the Triple Helix model, universities play a central role in shaping cognitive foundations by promoting sustainability awareness through education and collaboration (Etzkowitz and Leydesdorff, 2000; Zhou, 2021). This increased awareness enhances individuals'

ability to recognize the practical value of green accounting. Consequently, awareness positively influences the perceived usefulness of such practices. This gives rise to the following first hypothesis:
H1: Awareness of green accounting positively affects its perceived usefulness for entrepreneurial decision-making.

2.2. Perceived usefulness as a catalyst for green accounting adoption intentions

The concept of perceived usefulness occupies a central role in behavioral and adoption theories, particularly in the context of innovative practices such as green accounting. In the Theory of Planned Behavior (Ajzen, 1991) and Technology Acceptance Model (Davis, 1989), perceived usefulness reflects the degree to which individuals believe that using a certain practice enhances their performance or outcomes. In the realm of academic entrepreneurship, perceived usefulness represents the cognitive appraisal that green accounting contributes to effective decision-making, transparency, and long-term viability (Ajzen, 1991; Davis, 1989).

Chrisman et al. (2025) emphasize that bridging accounting with entrepreneurship fosters a more holistic decision-making environment that values both financial and social dimensions. When deemed useful, green accounting transmutes from a theoretical concept into a tangible strategic asset for entrepreneurial ventures. Similarly, Spanò et al. (2022) reveal how accounting systems in hybrid academic entities serve as mechanisms to balance innovation and social responsibility, underscoring that perceived usefulness legitimizes these environmental accounting practices among academic entrepreneurs.

In the same vein, Duval-Couetil et al. (2025) discuss the "intention-behavior gap" in academic entrepreneurship, observing that training and exposure can shift perceptions of usefulness into concrete behavioral intentions. Thus, for green accounting adoption, the perceived utility serves as both a psychological motivator and a rational justification for behavioral intention formation. Echoing this, Mambali et al. (2024) confirmed that student environmental awareness and the perceived value of green entrepreneurship education directly predicted their intent to pursue sustainable business practices.

In essence, perceived usefulness acts as the cognitive bridge, translating abstract awareness into a deliberate commitment to act (Hassan et al., 2022). Within Algeria's developing academic entrepreneurial ecosystems, highlighting green accounting's practical advantages may effectively convert sustainability cognizance into actionable entrepreneurial intentions. According to the Natural Resource-Based View (NRBV), environmentally oriented practices are more likely to be adopted when they are perceived as valuable for improving performance and sustainability outcomes (Hart and Dowell, 2011). When individuals perceive green accounting as useful, they are more inclined to integrate it into their entrepreneurial activities. This relationship is further supported by recent empirical findings in sustainable entrepreneurship (Ahmad et al., 2025; Martínez-Falcó et al., 2025). Therefore, the second hypothesis emerges logically:
H2: The perceived usefulness of green accounting positively affects the intention to adopt it in future entrepreneurial projects.

2.3. From intention to action: Translating green accounting intentions into entrepreneurial practice

The passage from entrepreneurial intention to concrete action is one of the most studied yet challenging transitions in the psychology of entrepreneurship. While the Theory of Planned Behavior

establishes intention as the primary antecedent to behavior, this relationship is mediated by contextual and individual contingencies (Ajzen, 1991). Within academic entrepreneurship, Duval-Couetil et al. (2025) identify resource access, institutional support, and self-efficacy as critical factors bridging this intention-behavior gap in academia. For green accounting, adoption intention signifies a committed readiness to weave environmental stewardship into the very fabric of entrepreneurial strategy (Chen et al., 2020).

Hayter et al. (2017) underscore that the entrepreneurial conduct of academics, particularly graduates, is shaped by pivotal determinants like opportunity recognition and institutional incentives. Translating intention into practice thus depends on both internal motivation and external facilitation. Li et al. (2025) further affirm the indispensable role of educators and mentors in converting scholarly motivation into concrete initiatives. For Algerian universities, where environmental accounting is still in developmental stages, the strength of entrepreneurial intention becomes crucial to drive actual adoption in projects (Demdoum et al., 2021).

Furthermore, Sieg et al. (2023) conceptualize academic entrepreneurship as a source of innovation contributing to sustainable development, implying that behavioral realization of green intentions is a key driver of innovation outcomes. Similarly, Abreu and Grinevich (2013) identify entrepreneurial activities beyond traditional commercialization—such as consulting and sustainability initiatives—that depend on individuals acting upon their entrepreneurial intentions. Consequently, within Algeria, the intention to adopt green accounting is expected to materialize through conscious project design, financial reporting, and operational decisions.

Grounded in established behavioral theory and empirical research, a stronger expressed intention to adopt green accounting is expected to correlate with a greater propensity for its actual application within academic entrepreneurial ventures. Within the Triple Helix framework, universities foster entrepreneurial intentions that are expected to materialize into concrete actions within innovation ecosystems (Etzkowitz and Leydesdorff, 2000; Zhou, 2021). Behavioral intention is widely recognized as a strong predictor of actual behavior, particularly in structured academic environments. Therefore, the intention to adopt green accounting is expected to lead to its practical application. This forms the basis for the third hypothesis.

H3: The intention to adopt green accounting positively affects its actual application in university-led entrepreneurial projects.

2.4. Institutional support as a moderator of the intention–application relationship

Institutional support serves as a decisive factor in converting entrepreneurial intentions into concrete venture creation. Within universities, this support may take the form of university incubators, policy incentives, training, mentorship, and funding opportunities (Stal et al., 2016; Gaspar Pacheco et al., 2024). For green accounting specifically, such backing is indispensable, as merging environmental metrics with business strategy demands both specialized expertise and a supportive ecosystem to thrive.

Peláez-Higuera and Calderón-Higuera (2025) contend that activating sustainable academic entrepreneurship requires a concerted institutional strategy encompassing cultural, administrative, and infrastructural mechanisms. This perspective aligns with the view of Cantu-Ortiz et al. (2017), who highlight that the diffusion of academic entrepreneurship depends on universities' ability to create enabling ecosystems. Institutional support provides not only resources but also legitimacy,

helping to normalize green accounting as part of entrepreneurial practice rather than a peripheral activity.

The work of Guindalini et al. (2021) maps how academic entrepreneurship ecosystems function through the coordination of various stakeholders. Universities that offer incubation, training, and mentorship produce higher rates of innovation and technology transfer. In a study of similar scope, Ozen et al. (2023) further established institutional engagement as a powerful predictor of entrepreneurial commitment. Within Algeria's academic setting, such structured encouragement is poised to critically intensify the translation of intention into tangible venture creation. Of singular importance is Ministerial Decree No. 1275, enacted on September 27, 2022, and later refined by Ministerial Decree No. 008 of February 23, 2025, which institutionalizes a comprehensive legal architecture to nurture academic entrepreneurship. This pivotal legislation specifically encourages the transformation of student capstone projects into operational startups, thereby cultivating a vibrant ecosystem of innovation within the university sphere. A cornerstone of this regulatory framework is the formal conferral of "Startup" or "Patent" certifications upon students—a strategic initiative intended to propel new venture formation, invigorate employment opportunities, and enhance broader economic prosperity (Haddouche, 2025). Furthermore, the decree fortifies the function of university incubators by obliging the dissemination of awareness initiatives, the provision of specialized training, and support in procuring financial resources, thereby systematically inculcating an entrepreneurial ethos throughout the academic environment (Khoualed et al. 2024).

By actively cultivating sustainability-oriented entrepreneurship via institutional infrastructure, policy, and pedagogy, universities can significantly enhance the translation of green accounting intentions into applied practice (Duval-Couetil et al., 2025; Sieg et al., 2023). The Triple Helix model emphasizes the importance of institutional support mechanisms—such as training, mentorship, and infrastructure—in enabling innovation and entrepreneurial implementation (Etzkowitz and Leydesdorff, 2000; Zhou, 2021). Such support enhances individuals' capacity to translate intentions into action by reducing structural and knowledge-related barriers. Hence, institutional support strengthens the relationship between intention and application. Accordingly, the following hypothesis is proposed:

H4: Institutional support from the university strengthens the relationship between the intention to adopt green accounting and its actual application.

2.5. Integrating green accounting into academic entrepreneurship: A pathway to sustainable venture outcomes

The theoretical framework culminates in the projected dividends of integrating green accounting into academic entrepreneurial ventures. This integration is posited to deliver strategic advantages such as sustained venture viability, elevated institutional standing, and the advancement of responsible innovation. According to Sieg et al. (2023), academic entrepreneurship fuels sustainable development when innovations converge with ecological and social goals. Green accounting operationalizes this convergence by systematically embedding sustainability indicators into performance measurement (Hassan et al., 2022).

In the same vein, Chrisman et al. (2025) indicate that ventures grounded in robust accounting and finance principles are uniquely equipped to generate balanced value, harmonizing economic and social returns. This dual emphasis on economic and social returns resonates with the objectives of

sustainable academic entrepreneurship outlined by Peláez-Higuera and Calderón-Hernández (2025), who argue that embedding green accounting within academic entrepreneurial ventures yields strategic advantages—enhancing transparency, securing stakeholder confidence, and improving funding access—all critical determinants of enduring success.

The cultivation of institutional reputation represents a critical outcome. Toledano and Gonzalez-Sanz (2024) posit that the ethical and relational conduct within academic entrepreneurship profoundly influences public perception. Adopting green accounting demonstrates a tangible commitment to sustainability, thereby bolstering a university's social legitimacy and reputation. This is corroborated by Spanò et al. (2022), who identify robust accountability practices as foundational to the credibility that attracts essential partnerships and investment.

In Algeria's evolving academic landscape, where societal contribution is increasingly paramount, green accounting allows universities to establish a leadership posture in responsible innovation (Demdoum et al., 2021). Stated differently, integrating green accounting practices not only supports environmental objectives but also fortifies institutional reputation and long-term venture viability (Peláez-Higuera and Calderón-Hernández, 2025). From the NRBV perspective, the implementation of environmentally oriented practices contributes to sustainable competitive advantage and long-term value creation (Hart and Dowell, 2011). The application of green accounting enables ventures to improve environmental performance while enhancing legitimacy and innovation outcomes. This relationship is also supported by recent studies highlighting the benefits of sustainability-oriented practices in entrepreneurship (Ahmad et al., 2025; Martínez-Falcó et al., 2025). This theoretical reasoning leads to the final hypothesis:

H5: The application of green accounting in academic entrepreneurship is positively associated with expected long-term project success, enhanced university reputation, and responsible innovation.

To sum up, this study proposes a conceptual framework elucidating the integration of green accounting within Algerian academic entrepreneurship. It posits that Awareness of Green Accounting (AGA) serves as the foundational cognitive element, positively influencing the Perceived Usefulness (PU) of green accounting for entrepreneurial decision-making (H1). Subsequently, this perceived usefulness acts as a catalyst, fostering a strong Intention to Adopt (ITA) green accounting in future entrepreneurial projects (H2). The framework further hypothesizes that this intention translates into the Actual Application (AAGAE) of green accounting in university-led entrepreneurial ventures (H3). Crucially, Institutional Support (IS) from the university is anticipated to strengthen the relationship between intention and actual application (H4). Ultimately, the successful application of green accounting is expected to yield a positive Expected Impact (EI), encompassing long-term project success, enhanced university reputation, and responsible innovation (H5). This model provides a comprehensive understanding of the cognitive, behavioral, and contextual factors driving sustainable entrepreneurial practices.

3. Methodology

3.1. Research philosophy and design

This study is fundamentally guided by a post-positivist research philosophy, which acknowledges the existence of an objective reality while recognizing the inherent limitations and fallibility of human perception and measurement in fully apprehending it (Creswell, 2003; Panhwar et al., 2017). This philosophical stance aligns robustly with the application of quantitative methodologies, particularly

Partial Least Squares Structural Equation Modeling (PLS-SEM), a technique highly suitable for theory development, prediction, and exploring complex relationships in emerging research contexts (Sarstedt et al., 2014, 2021). Consistent with this post-positivist perspective, a deductive research design was employed. This approach involved the formulation of specific hypotheses derived from established theoretical frameworks, such as the Triple Helix model and the Natural Resource-Based View, which were then empirically tested using survey data. This design facilitates a systematic and rigorous examination of the cognitive and behavioral mechanisms influencing green accounting integration within Algerian academic entrepreneurship, providing a robust framework for generating evidence-based insights prior to the detailed measurement phase.

3.2. Measurements

This study employs a structured research model to evaluate the role of Algerian universities in enhancing sustainable development through the integration of green accounting principles into academic entrepreneurship. The analytical framework incorporates six principal constructs—Awareness of Green Accounting (AGA), Perceived Usefulness (PU), Intention to Adopt (ITA), Actual Application (AAGAE), Institutional Support (IS), and Expected Impact (EI)—which are adapted from the foundational and contemporary works of Davis (1989), Ajzen (1991), Stal et al. (2016), Hassan et al. (2022), Sieg et al. (2023), Mambali et al. (2024), Gaspar Pacheco et al. (2024), Duval-Couetil et al. (2025), Peláez-Higuera and Calderón-Hernández (2025), Chrisman et al. (2025), Etzkowitz and Leydesdorff (2000), Zhou (2021), Hart and Dowell (2011), Ahmad et al. (2025), and Martínez-Falcó et al. (2025). Each construct was quantitatively measured utilizing a five-point Likert scale, ranging from 1 (totally disagree) to 5 (totally agree). A comprehensive summary of the measurement items corresponding to each construct is systematically presented in Table 1.

Table 1. Constructs, measurement variables, and sources

Constructs	Measurement Variables	Sources
Awareness of Green Accounting (AGA)	**(1)** I am familiar with the concept and principles of green accounting. **(2)** I can distinguish between traditional accounting and green accounting. **(3)** I am aware of key green accounting terms, such as environmental costs, carbon accounting, or sustainability reporting.	Adapted from Hassan et al. (2022); Mambali et al. (2024); Etzkowitz and Leydesdorff (2000); Zhou (2021); Ahmad et al. (2025).
Perceived Usefulness (PU)	**(1)** Green accounting provides information that is useful for entrepreneurial decision-making. **(2)** Adopting green accounting increases the credibility and transparency of start-ups. **(3)** Green accounting helps entrepreneurial projects align with Sustainable Development Goals (SDGs).	Adapted from Davis (1989); Hassan et al. (2022); Hart and Dowell (2011); Ahmad et al. (2025); Martínez-Falcó et al. (2025).

Intention to Adopt (ITA)	**(1)** I intend to use the principles of green accounting in my future entrepreneurial projects. **(2)** I plan to learn more about the applications of green accounting. **(3)** I will recommend the integration of green accounting practices to my colleagues and peers.	Adapted from Ajzen (1991); Duval-Couetil et al. (2025); Zhou (2021); Ahmad et al. (2025).
Actual Application (AAGAE)	**(1)** In our entrepreneurial project, we have identified and measured environmental costs (e.g., energy consumption, waste management). **(2)** We use green accounting data to make decisions aimed at reducing the environmental impact of our project. **(3)** We have integrated environmental performance indicators (EPIs) into the regular performance monitoring of our project.	Adapted from Sieg et al. (2023); Mambali et al. (2024); Peláez-Higuera and Calderón-Hernández (2025); Etzkowitz and Leydesdorff (2000); Martínez-Falcó et al. (2025).
Institutional Support (IS)	**(1)** My university offers sufficient support and resources for sustainable entrepreneurship. **(2)** My university provides specific resources (e.g., software, tools, consultancy) to support the integration of green accounting practices in entrepreneurial projects. **(3)** My university offers financial incentives, grants, or dedicated funding opportunities for entrepreneurial projects that incorporate green accounting and sustainability measures.	Adapted from Gaspar Pacheco et al. (2024); Stal et al. (2016); Peláez-Higuera and Calderón-Hernández (2025); Haddouche (2025); Khoualed et al. (2024); Etzkowitz and Leydesdorff (2000); Zhou (2021).
Expected Impact (EI)	**(1)** I believe integrating green accounting in entrepreneurship contributes to the long-term success of projects. **(2)** Universities that adopt green accounting improve their societal reputation. **(3)** Green accounting in academic entrepreneurship promotes responsible and sustainable innovation.	Adapted from Sieg et al. (2023); Peláez-Higuera and Calderón-Hernández (2025); Chrisman et al. (2025); Hart and Dowell (2011); Ahmad et al.

		(2025); Martínez-Falcó et al. (2025).

Notes: All constructs were measured using multiple items on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The measurement items were adapted from established scales in the literature, as indicated in the sources, and contextualized for the setting of Algerian academic entrepreneurship.

Source: Adapted from prior literature as cited in the table (Davis, 1989; Ajzen, 1991; Hassan et al., 2022; Sieg et al., 2023; Mambali et al., 2024; Gaspar Pacheco et al., 2024; Duval-Couetil et al., 2025; Peláez-Higuera and Calderón-Hernández, 2025; Chrisman et al., 2025; Etzkowitz and Leydesdorff, 2000; Zhou, 2021; Hart and Dowell, 2011; Ahmad et al., 2025; Martínez-Falcó et al., 2025).

3.3. Sample and data

Upon receiving approval from the Research Ethics Committee, the survey was administered via Google Form to the academic constituents—including students, faculty members of all ranks, researchers, and administrative staff—of 9 Algerian universities (Oran 2 University, Ain Temouchent University, Tlemcen University, Adrar University, Algiers 3 University, Constantine 2 University, Annaba University, Biskra University, and Ouargla University). The multi-university approach encompassing nine geographically dispersed universities, spanning from Adrar in the south to Annaba in the north, substantially strengthens the representativeness of our sample. This multi-institutional strategy notably enhances the generalizability of the findings across the Algerian academic landscape, a scope unattainable through a single-university investigation.

A purposive, non-probability sampling technique was adopted to target respondents with direct relevance to the study objectives, namely academic stakeholders involved in entrepreneurship-related activities across Algerian universities. This approach is justified by the exploratory nature of the research and the need to capture informed perceptions of green accounting practices within academic entrepreneurship. Furthermore, access-based elements were incorporated through institutional contact lists and online distribution, ensuring feasibility while maintaining diversity across nine universities and enhancing the contextual richness and analytical relevance of the data collected.

Targeting a diverse university family, the survey remained active from May 1, 2025, to September 1, 2025. A compiled contact list yielded a geographically representative sample of 322 respondents from the respective regions. The analytical process employed a rigorous data refinement protocol, where an initial pool of 322 responses was refined to a final sample of 286 following an attention-check filter. This procedure, resulting in an 88.8% retention rate, prioritizes data integrity by ensuring the analysis is founded on attentive respondents rather than a larger but potentially unreliable dataset. The resultant sample of 286 is methodologically robust for Partial Least Squares Structural Equation Modeling (PLS-SEM), as it comfortably surpasses the established "10-times rule" heuristic for minimum sample size requirements (Hair et al., 2019).

Stated differently, the study population comprises academic stakeholders within Algerian universities, including students, faculty members, researchers, and administrative staff actively engaged in entrepreneurship-related activities. A multi-stage sampling approach was employed across nine geographically diverse universities to enhance representativeness. The sample size was initially determined by accessibility and institutional reach, yielding 322 responses, and refined to

286 valid cases after quality screening. This final sample exceeds the recommended thresholds for PLS-SEM, ensuring adequate statistical power for hypothesis testing.

As detailed in Table 2, the study cohort of 286 respondents was predominantly aged under 25 years, representing approximately 42% of the sample, with female participants constituting 63.29%. In terms of university role, the sample was largely composed of students, who accounted for nearly half (48.95%) of all respondents, followed closely by faculty and researchers at 43.01%. Administrative staff represented a more modest yet notable segment at 6.29%, while academic entrepreneurs constituted a small but emerging segment of the cohort at 1.75%.

Table 2. Sample characteristics

		N	%
Age	Under 25 years	120	41.96
	25–34 years	42	14.69
	35–44 years	54	18.88
	45 years and above	70	24.47
Gender	Female	181	63.29
	Male	105	36.71
Respondent's University Role	Student	140	48.95
	Faculty /Researcher	123	43.01
	Administrative Staff	18	6.29
	Academic Entrepreneur (Incubator/University Startup)	5	1.75

Note: The total sample size is N = 286. The data were collected from nine Algerian universities. The initial pool of 322 responses was refined to this final sample after applying an attention-check filter.
Source: Authors owns elaboration based on survey data.

3.4. Data analysis

To empirically validate our hypotheses, we employed a structural equation model (SEM), estimated via the partial least squares approach (PLS), a well-established analytical framework in the behavioral sciences (Hair et al., 2020).

To affirm the instrument's factorial structure, we first ascertained the reliability and validity of its indicators. Construct validity reflects the degree to which items faithfully capture the intended theoretical concept, while reliability denotes the measurement's consistency and reproducibility across applications (Sarstedt et al., 2019; Hair et al., 2019, 2020).

The study assessed construct validity through four complementary approaches commonly used in PLS-SEM. First, composite reliability (CR) was calculated to ensure internal consistency, considering values above 0.70 as acceptable, as CR is less sensitive to the number of indicators per construct compared to Cronbach's Alpha. Second, Cronbach's Alpha was examined as a traditional reliability measure, with values exceeding 0.70 indicating adequate internal consistency. Third, convergent validity was verified through the Average Variance Extracted (AVE), assuming satisfactory convergence when AVE values were greater than 0.50. Finally, discriminant validity was tested using

both the Fornell-Larcker criterion, which requires that the square root of each construct's AVE exceed its correlations with other constructs, and the Heterotrait-Monotrait (HTMT) ratio, which should remain below 0.85. These indicators collectively ensured the validity and reliability of the measurement model prior to structural model estimation.

For the structural model's evaluation, the study examined the path coefficient estimates, their statistical significance, the effect size (f^2), and the coefficient of determination (R^2) to assess the model's predictive power (Sarstedt et al., 2017; Hair et al., 2019). The statistical significance of the estimated relationships was verified through a bootstrapping procedure with 2000 resamples, enabling the calculation of t-values and p-values. All structural equation modeling computations were conducted using SmartPLS version 4.0 and IBM SPSS Statistics 28, two widely used programs for confirmatory and exploratory variance-based SEM analysis.

4. Results and discussion

Before assessing the structural model (the hypotheses), it is crucial to validate the measurement model to ensure that the constructs are reliable and distinct.

Reliability: As presented in Table 3, both Composite Reliability (CR) and Cronbach's Alpha (α) for all constructs are well above the recommended threshold of 0.7. This indicates a high level of internal consistency, meaning the survey items used to measure each construct are consistently capturing the same underlying concept.

Convergent Validity: The Average Variance Extracted (AVE) for each construct exceeds the 0.50 benchmark. This confirms that more than half of the variance in the indicator variables is captured by the construct itself, demonstrating good convergent validity. In other words, survey items are effectively capturing their intended constructs and not random noise.

Discriminant Validity: The Fornell-Larcker criterion was passed, meaning the square root of each construct's AVE is greater than its correlations with all other constructs. Moreover, to further verify discriminant validity—ensuring the constructs are distinct from one another—the Heterotrait-Monotrait (HTMT) ratio was examined. The maximum HTMT values for all constructs were below the conservative threshold of 0.90, with the exception of a high correlation between Perceived Usefulness (PU) and Expected Impact (EI). This elevated correlation is conceptually justifiable, as individuals who perceive green accounting as useful would logically also expect it to yield a strong positive impact. More importantly, the HTMT ratio between the core constructs of Intention to Adopt (ITA) and Actual Application (AAGAE) was low (0.506), confirming their distinctiveness.

Therefore, the measurement model demonstrates satisfactory reliability, convergent validity, and discriminant validity, providing a solid foundation for evaluating the structural model and hypotheses. Stated differently, the robustness of the measurement model gives us high confidence in the data collected from 9 Algerian universities. It confirms that the survey successfully operationalized complex concepts like "Institutional Support" and "Expected Impact" into measurable and reliable indicators. This means the subsequent analysis of the relationships between these constructs is based on a solid and valid foundation, reflecting the real perceptions and intentions of students, academics, and administrators.

Table 3. Assessment of constructs' validity

Construct	Composite Reliability (CR)	Cronbach's Alpha (α)	Average Variance Extracted (AVE)	Fornell-Larcker Criterion (Square Root of AVE)	Heterotrait-Monotrait (HTMT) Ratio (Max Off-Diagonal)
Awareness of Green Accounting (AGA)	0.873	0.781	0.696	0.834	0.859
Perceived Usefulness (PU)	0.859	0.753	0.67	0.819	0.972
Intention to Adopt (ITA)	0.892	0.819	0.734	0.857	0.889
Actual Application (AAGAE)	0.899	0.832	0.748	0.865	0.506
Institutional Support (IS)	0.894	0.821	0.737	0.858	0.701
Expected Impact (EI)	0.878	0.79	0.706	0.84	0.933

Note: While both Composite Reliability (CR) and Cronbach's Alpha (α) exceed the acceptable limit of 0.7, CR is prioritized for assessing internal consistency reliability in this PLS-SEM analysis. This is because CR accounts for the actual factor loadings of the indicators and is a less biased estimate, whereas Cronbach's Alpha assumes all indicators are equally important (tau-equivalence), which is often an unrealistic assumption.

Source: Authors' own calculations using SmartPLS 4.0 and IBM SPSS Statistics 28.

According to the results shown in Table 4, the structural model estimation reveals a statistically significant and substantively impactful pathway from Awareness of Green Accounting (AGA) to its Perceived Usefulness (PU) (β = 0.511, p= 0.000), thereby strongly supporting Hypothesis H1. From an econometric perspective, the high t-value of 10.867 and the substantial effect size (f^2 = 0.392) confirm that this relationship is not a statistical artifact but a powerful predictive pathway within the model, accounting for a notable portion of the variance in perceived usefulness (R^2 = 0.282). From

an economic perspective, this finding elucidates a fundamental cognitive mechanism: knowledge of green accounting principles effectively recalibrates entrepreneurial judgment, transmuting it from an abstract concept into an instrumentally valuable framework for strategic entrepreneurial decision-making. This alignment of awareness with pragmatic utility is essential for fostering a culture of sustainable venture creation, as it provides the rational foundation for subsequent adoption behaviors. This empirical corroboration resonates with the foundational Technology Acceptance Model (Davis, 1989), which posits cognitive antecedents to usefulness, and aligns with contemporary scholarship by Hassan et al. (2022) and Mambali et al. (2024), which affirms green awareness as a cognitive foundation for sustainable entrepreneurial decision-making. Furthermore, this result directly supports the Triple Helix model's assertion that universities provide the cognitive infrastructure for "green awareness" (Etzkowitz and Leydesdorff, 2000; Zhou, 2021). This finding demonstrates that when academic institutions effectively disseminate knowledge about green accounting, they successfully frame environmental considerations as instrumentally valuable for entrepreneurial endeavors, thereby transforming abstract environmental challenges into concrete entrepreneurial opportunities.

The findings shown in Table 4 demonstrate that Perceived Usefulness exerts the most potent influence within the conceptual framework, with a substantial and highly significant path coefficient ($\beta = 0.655$, p= 0.000) confirming Hypothesis H2. Econometrically, the exceptional t-value of 13.912 and the very large effect size underscore Perceived Usefulness's role as the dominant predictor of behavioral intention, explaining a considerable portion of its variance ($R^2 = 0.418$). This robust statistical relationship translates to a critical economic insight that the perceived utility of green accounting serves as a central driver motivating aspiring entrepreneurs to form a strong intention to adopt it. In fact, the perception of tangible benefits for venture performance and sustainability directly catalyzes the formation of a strong intention to adopt green accounting, transforming abstract awareness into a deliberate commitment to act. More interestingly, the pivotal role of perceived usefulness as a catalyst for adoption intentions finds its theoretical grounding in the Theory of Planned Behavior (Ajzen, 1991), wherein attitudes toward a behavior fundamentally drive intention. This relationship also receives empirical corroboration from contemporary studies in sustainable entrepreneurship (Hassan et al., 2022; Duval-Couetil et al., 2025), affirming that recognized utility is a primary antecedent to behavioral intention. Furthermore, this finding reinforces the NRBV's premise that competitive advantage is derived from environmentally oriented capabilities (Hart and Dowell, 2011). The strong intention to adopt green accounting, driven by its perceived utility, indicates that student-led ventures recognize the strategic value of managing natural resource constraints and integrating ecological stewardship into their business models. This aligns with the NRBV by showing that the academic entrepreneurial process, facilitated by universities, cultivates the mindset necessary to develop these critical capabilities.

Furthermore, the analysis confirms a statistically significant yet modest pathway from Intention to Adopt (ITA) to actual application of green accounting in university-led entrepreneurial projects (AAGAE) ($\beta = 0.159$, p= 0.000), supporting Hypothesis H3. While the t-value of 3.794 confirms the relationship's reliability, the low explanatory power ($R^2 = 0.096$) and small effect size reflect the nascent stage of green accounting implementation within Algerian academic entrepreneurship, a contextual reality noted by Demdoum et al. (2021). Economically, this suggests that intention, though a necessary precursor, encounters substantial translational friction in this environment. The

conversion of deliberate plans into tangible practices remains challenging, likely hindered by infrastructural and resource constraints (Demdoum et al., 2021). Nevertheless, the affirmed positive impact aligns with established findings that behavioral intention is a fundamental, though not solitary, driver of sustainable practice adoption (Sieg et al., 2023; Mambali et al., 2024; Peláez-Higuera and Calderón-Hernández; 2025), indicating a foundational, though not yet fully realized, progression toward principled venture creation. Stated differently, the statistically significant, albeit modest, pathway from Intention to Adopt to Actual Application of Green Accounting in Academic Entrepreneurship signifies the initial translation of university-fostered intent into tangible action. This partial realization of green accounting practices within academic ventures represents a foundational step towards the co-creation of sustainable innovation ecosystems envisioned by the Triple Helix model (Etzkowitz and Leydesdorff, 2000; Zhou, 2021), where universities actively contribute to the development of environmentally conscious enterprises.

As can be readily seen in Table 4, the statistical evidence does not support Hypothesis H4, as Institutional Support demonstrates no significant moderating effect on the intention-application relationship. This econometric outcome, reflected in an insignificant p-value and a minimal coefficient, reveals a critical implementation gap. While Algerian universities are actively promoting green accounting principles and entrepreneurial intention among students, this supportive institutional discourse has not yet materialized into the successful launch of tangible ventures that would apply these very principles. The provided support, though existent, remains insufficient to overcome the practical barriers that prevent academic projects from evolving beyond intention into realized application. This finding resonates with the characterization of a nascent ecosystem described by Demdoum et al. (2021), wherein institutional mechanisms have yet to form a reliable bridge between fostered intention and realized application. Furthermore, this result highlights a crucial gap in the practical implementation of the Triple Helix model's ideal (Etzkowitz and Leydesdorff, 2000; Zhou, 2021). While universities are providing the cognitive groundwork for green awareness and fostering entrepreneurial intentions, the existing institutional support mechanisms are not yet effectively bridging the translational friction between intent and actual application. This suggests that while the theoretical framework positions universities as proactive institutional entrepreneurs, the practical efficacy of their support structures needs enhancement to fully realize the co-creation of sustainable innovation ecosystems.

The results delineated in Table 4 affirm a statistically significant positive relationship between the application of green accounting and its expected impact (β = 0.453, p= 0.000), thereby supporting Hypothesis H5. This compelling association, evidenced by a robust t-value, substantiates the theoretical proposition that integrating environmental accounting into academic ventures is positively linked to anticipated long-term success and responsible innovation. The identified pathway aligns with contemporary empirical research, which confirms that sustainable accounting practices serve as a critical lever for enhancing projected venture performance and institutional legitimacy (Sieg et al., 2023; Chrisman et al., 2025). However, the model's modest explanatory power (R^2 = 0.054) reflects a contextual reality where the application of green accounting within actual university-led ventures remains profoundly limited. The scarcity of realized projects that transition from concept to operational reality, as noted within the nascent Algerian ecosystem (Demdoum et al., 2021), inherently restricts the observable variance in impactful outcomes. Consequently, while the positive

influence is clear, its full manifestation in measurable impact awaits the maturation and tangible proliferation of academic entrepreneurial projects that successfully implement these principles. From an NRBV standpoint, this result confirms that the integration of environmentally oriented capabilities, such as green accounting, is perceived to enhance competitive advantage, leading to anticipated long-term success and responsible innovation (Hart and Dowell, 2011). Concurrently, this finding aligns with the Triple Helix model by demonstrating that the successful application of green accounting within academic entrepreneurship contributes to broader societal value and the development of a sustainable innovation ecosystem, where economic performance is reconciled with ecological stewardship (Etzkowitz and Leydesdorff, 2000; Zhou, 2021).

In fact, the empirical evidence from Table 4 provides a comprehensive understanding of how the university's role, as conceptualized by the Triple Helix model and NRBV, unfolds in fostering sustainable entrepreneurship. While universities effectively build cognitive infrastructure and drive entrepreneurial intent, the findings also underscore the necessity for more robust and effective institutional support to fully translate these intentions into widespread practical application, thereby strengthening the co-creation of truly sustainable innovation ecosystems.

While the "Expected Impact" construct captures respondents' perceptions rather than objective longitudinal outcomes, this operationalization is both theoretically grounded and contextually appropriate. In the nascent stage of Algeria's academic entrepreneurship ecosystem—catalyzed by recent legislative reforms like Decree 1275—many ventures are in their early phases, making the measurement of actual long-term success premature. Consequently, "Expected Impact" serves as a proxy for the perceived strategic value and legitimacy of green accounting, which are critical psychological drivers for its sustained institutionalization. This approach aligns with behavioral theories where the anticipation of positive outcomes is a fundamental determinant of continued behavioral engagement. By measuring these beliefs, the study captures the "perceived efficacy" of green accounting as a strategic tool, which is a necessary precursor to its eventual objective impact. Future research could supplement these perceptual measures with longitudinal data as these ventures mature to validate the link between expected and actual performance.

The structural model estimation unveils a clear and potent cognitive pathway driving the adoption of green accounting principles within the academic entrepreneurial ecosystem (see Figure 1). Specifically, the Awareness of Green Accounting (AGA) robustly shapes perceived usefulness, which, in turn, powerfully governs adoption intention. While this intention significantly predicts actual application, the relationship is tempered by a pronounced translation gap, a finding further underscored by the insignificant moderating role of institutional support. Stated differently, this latter currently lacks the necessary translational power to moderate the intention-to-application relationship. Nevertheless, the successful application of green accounting principles is affirmed to positively correlate with the Expected Impact (EI) (expected long-term success, better university reputation, and responsible innovation), underscoring the necessity of overcoming current infrastructural barriers to fully realize the strategic and sustainable benefits of green accounting in nascent academic entrepreneurial ventures

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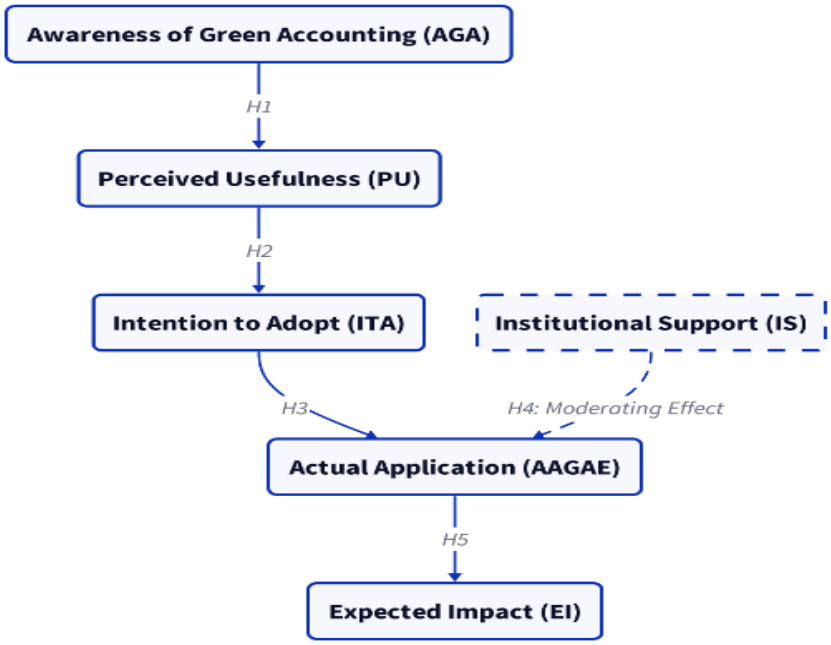
Table 4. PLS-SEM estimation results

Hypothesis: Path	Coefficient β	t-value	p-value	Effect Size (f^2)	R-squared
H1: AGA → PU	0.511	10.867	0.000***	0.392	0.282
H2: PU → ITA	0.655	13.912	0.000***	0.717	0.418
H3: ITA → AAGAE	0.159	3.794	0.000***	0.107	0.096
H4: IS×ITA → AAGAE	0.030	0.996	0.319	0.005	0.078
H5: AAGAE → EI	0.453	3.814	0.000***	0.057	0.054

Notes: Path coefficients (β) and their significance were determined using a bootstrapping procedure with 2000 subsamples. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The results support hypotheses H1, H2, H3, and H5, while H4 is not supported. Effect sizes (f^2) are assessed as small (0.02), medium (0.15), and large (0.35). R^2 values represent the proportion of variance explained in the endogenous constructs.

Source: Authors' own calculations using SmartPLS 4.0.

Figure 1: A diagram of the structural relationships and hypothesized paths



Source: Authors' own elaboration.

5. Conclusion

This study set out to explore the intricate nexus between academic entrepreneurship and green accounting within Algerian universities, focusing on how awareness, perceived usefulness, intention to adopt, actual application, institutional support, and expected impact interrelate to cultivate a

vanguard of principled academic entrepreneurs who transcend mere profit motives. Grounded in the frameworks of the Technology Acceptance Model (Davis, 1989) and the Theory of Planned Behavior (Ajzen, 1991), this research investigates whether Algerian universities can foster entrepreneurial leaders who harmonize profitability with enduring environmental stewardship through green accounting.

The empirical results derived from the Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis substantiate four of the five proposed hypotheses, thereby largely validating the conceptual framework. The findings delineate a coherent cognitive and behavioral sequence where awareness cultivates perceived usefulness, which powerfully shapes adoption intention. Although the intention to adopt significantly leads to application—which itself predicts a positive impact—the transition from intention to action is not strengthened by institutional support, highlighting a disconnect between promotional discourse and practical facilitation.

First, our analysis established that awareness of green accounting significantly and positively influences its perceived usefulness as far as entrepreneurial decision-making is concerned. This finding validates the idea that cognitive understanding forms the cornerstone of environmental behavior (Hassan et al., 2022). Within Algerian universities, this implies that sustainability-focused pedagogy is pivotal for academics to genuinely value these principles for their practical application. Second, perceived usefulness was found to significantly affect the intention to adopt green accounting in future academic entrepreneurial projects. This aligns with the Technology Acceptance Model's core tenet, wherein perceived utility drives behavioral intention. When academic entrepreneurs recognize green accounting's capacity to improve decisions and ensure long-term viability, they become decidedly more inclined to integrate these practices into their future entrepreneurial ventures. Third, the study further demonstrates a statistically significant yet modest pathway from intention to tangible practice, confirming that the resolve to employ green accounting principles reliably translates into their actual application within university entrepreneurial ventures. This finding corroborates a fundamental premise of behavioral theory while signaling an evolved academic entrepreneurial culture, one distinguished by a clear readiness to implement sustainable frameworks. Fourth, the analysis reveals that while universities are actively fostering intention, their institutional support has not yet evolved into the tangible scaffolding necessary to effectively bridge the gap between intention and practice. The current mechanisms, though present, prove insufficient to catalyze the transition from intended adoption to realized application of green accounting. This identified implementation gap underscores that universities must progress beyond promotional discourse to establish more concrete ecosystems—through dedicated incubators, robust funding streams, and integrated sustainability policies—to truly architect the pathway from sustainable principles to entrepreneurial ventures. Ultimately, the application of green accounting proves to be a cornerstone of impactful academic entrepreneurship, directly fostering project longevity, burnishing institutional reputation, and advancing responsible innovation. This evidence firmly corroborates earlier theoretical frameworks positing that a commitment to environmental accountability enhances both economic resilience and ethical integrity (Sieg et al., 2023; Chrisman et al., 2025). For Algerian universities, embedding green accounting principles represents a transformative step toward aligning academic entrepreneurship with both ethical imperatives and enduring economic success. Stated differently, this strategic alignment promises to forge a more sustainable economic future, one where academic

ingenuity and environmental stewardship are inextricably linked in a mutually reinforcing cycle of progress and responsibility.

5.1. Actionable recommendations

Collectively, these findings yield actionable recommendations for Algerian policymakers, the university community, and entrepreneurs.

• To cultivate a sustainability ethos, Algerian universities must integrate green accounting into core curricula through hands-on pedagogical methods. This integration should move beyond theoretical instruction to include project-based learning, case studies, and simulations that link financial performance with environmental impact. Such experiential approaches will enable students to deeply internalize the principles necessary for responsible innovation and long-term value creation.

• The findings indicate that the current institutional support mechanisms, such as incubators and grant systems, lack the necessary translational power to convert intention into application. Consequently, universities must engage in a deliberate and fundamental redesign of these support frameworks to provide more concrete, hands-on resources. This strategic overhaul is essential to effectively bridge the intention-application gap and solidify the synergy between academic innovation and environmental stewardship. Such a redesign can be operationalized by cultivating dedicated sustainability-oriented incubators, allocating more substantial seed funding for green ventures, and establishing proactive sustainability offices that effectively bridge academic knowledge with industry practice.

• To profoundly embed sustainability, Algerian universities must mobilize their educators beyond pedagogy. While specialized training is crucial, faculty support must also be channeled into creating tangible, application-focused opportunities, such as supervising student-led green ventures and forging connections with industry partners, thereby accelerating the translation of sustainable principles into practice.

• Strategic communication campaigns, conferences, and public forums can illuminate green accounting's role in achieving broader sustainability objectives. Stated more lucidly, engaging alumni entrepreneurs and local industry leaders can effectively show real-world applications of sustainable accounting, translating abstract principles into tangible practices.

• The demonstrable link between green accounting applications and enhanced university reputation positions sustainability reporting as a powerful instrument for strategic branding. By deliberately disseminating annual sustainability reports on the impact of their entrepreneurial ventures, Algerian universities can solidify their legitimacy and foster strategic alliances with governmental and non-governmental organizations.

5.2. Implications

The study yields important implications. **Managerially**, university leaders should redesign support mechanisms by prioritizing hands-on training, funding, and incubator services to bridge the intention–application gap identified in the findings. **Theoretically**, the research extends the integration of the Technology Acceptance Model and NRBV by empirically validating a cognitive–behavioral pathway from awareness to sustainable entrepreneurial outcomes in a developing context. **Socially**, embedding green accounting in curricula fosters environmentally responsible entrepreneurs who align economic goals with societal well-being. **Practically**, policymakers and educators should institutionalize

experiential learning and sustainability-driven projects to translate positive intentions into tangible green ventures and measurable impact.

5.3. Study limitations and future research avenues

Notwithstanding the confirmation of four out of five hypotheses, the following limitations must be acknowledged.

• This research is anchored within the distinct institutional landscape and socioeconomic realities of Algerian academia. This specific context means that the resulting insights into academic entrepreneurship may not be wholly transferable to the markedly different environments of Latin or Asian higher education systems.

• Our study relies primarily on self-reported questionnaire data, which is inherently susceptible to social desirability bias or overestimation of positive behaviors.

• While PLS-SEM offers robust analytical capabilities for testing complex models, it remains limited in capturing dynamic, longitudinal changes. The evolving interplay between awareness, intention, and behavior, particularly within Algeria's shifting academic policy landscape, necessitates future longitudinal research to truly capture this dynamic progression.

This investigation illuminates the fertile ground for future scholarly inquiry. First, a particularly compelling direction would be a comparative international study, examining how policy differences and distinct institutional and cultural configurations across regions shape the critical symbiosis between academic entrepreneurship and green accounting practices. Such research would greatly enhance our understanding of this nexus. Second, future research could complement survey data with qualitative interviews to capture deeper behavioral insights. Last but by no means least, longitudinal studies would be valuable to trace the evolution of awareness, perceived usefulness, and adoption behavior over time.

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Declaration of competing interest

The author declares that she has no conflict of interest.

Availability of data

Data and material will be made available upon request.

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