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Green Entrepreneurship Education in TVET and Youth Employment: The Mediating Role of Entrepreneurial Intention and the Moderating Effect of Access to Finance

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Abstract

The global transition toward green economies has heightened the demand for workforce systems that integrate sustainability and entrepreneurship to mitigate youth unemployment, particularly in emerging economies such as Ghana. Technical and Vocational Education and Training is widely recognized as a principal mechanism for cultivating job-relevant skills; however, its role in fostering green entrepreneurship and employment remains conceptually underexplored. This study formulates a theoretical framework to elucidate how green entrepreneurship education within TVET contributes to youth employment outcomes.

Grounded in an integrated theoretical perspective, the framework delineates a moderated mediation model wherein entrepreneurial intention mediates the relationship between green entrepreneurship education and youth employment, while access to finance moderates the relationship between entrepreneurial intention and employment outcomes. Green entrepreneurship education cultivates sustainability-oriented competencies and shapes individuals' attitudes, perceived behavioural control, and subjective norms, thereby fortifying entrepreneurial intention. This intention constitutes a pivotal mechanism by which individuals transition to self-employment and green enterprise establishment.

Keywords: Green Entrepreneurship Education; Technical and Vocational Education and Training (TVET); Youth Employment; Entrepreneurial Intention; Access to Finance; Sustainable Development

Background

The accelerating global transition toward sustainable and low-carbon economies has significantly reshaped labour market dynamics, increasing the demand for green skills and environmentally sustainable business practices. International organizations such as the International Labour Organization and United Nations Educational, Scientific and Cultural Organization underscore the importance of green jobs in achieving inclusive growth and environmental sustainability (ILO, 2018; UNESCO, 2016). Within this evolving landscape, Technical and Vocational Education and Training (TVET) systems are expected to play a pivotal role in preparing a workforce that is not only technically competent but also environmentally conscious and entrepreneurial. However, despite ongoing reforms, many TVET systems continue to emphasize conventional technical skills with limited integration of sustainability and entrepreneurship, thereby constraining their relevance in emerging green economies (Pavlova, 2013; Okolie et al., 2020).

This limitation is particularly evident in developing countries such as Ghana, where youth unemployment and underemployment remain persistent despite increased access to education (Addo, 2018; Winful et al., 2023; Usman, 2026). While TVET has been positioned as a strategic tool for enhancing employability, its capacity to effectively transition graduates into meaningful employment—especially within the green economy—remains questionable. This raises a critical problem: the disconnect between TVET training outcomes and the evolving demands of green labour markets, particularly in terms of entrepreneurship-driven employment pathways. As formal job opportunities remain limited, the ability of TVET systems to foster self-employment through green entrepreneurship becomes increasingly important, yet insufficiently developed and theoretically underexplored.

In response, green entrepreneurship education has emerged as a promising approach that integrates environmental sustainability with entrepreneurial skill development. It enables learners to identify and exploit opportunities that generate both economic and environmental value (Gast et al., 2017). However, while existing literature acknowledges the importance of entrepreneurship education in enhancing employability, there is limited conceptual clarity on how green entrepreneurship education specifically translates into youth employment outcomes within TVET contexts. This reflects a significant research gap, particularly in emerging economies where institutional and structural constraints shape the effectiveness of such educational interventions.

A key theoretical pathway through which green entrepreneurship education may influence employment outcomes is entrepreneurial intention, defined as an individual's cognitive readiness to engage in entrepreneurial activity. Grounded in the Theory of Planned Behaviour by Icek Ajzen (1991), entrepreneurial intention is widely recognized as a primary predictor of entrepreneurial behaviour. Although prior studies have established that entrepreneurship education can influence entrepreneurial intention (Liñán & Chen, 2009; Nabi et al., 2017; Opuni et al., 2022; Ohene-Afriyie et Al., 2025), there remains a lack of integrated conceptual frameworks that position entrepreneurial intention as a mediating mechanism linking green entrepreneurship education and employment outcomes within TVET systems. This omission limits the theoretical understanding of how and why green entrepreneurship education contributes to workforce readiness.

Furthermore, the translation of entrepreneurial intention into actual business creation is often constrained by contextual factors, particularly access to finance. In many developing economies, including Ghana, young entrepreneurs face significant barriers such as limited collateral, high interest rates, and restricted access to credit facilities (Beck & Demirgüç-Kunt, 2006; Abor & Quartey, 2010). This creates an additional layer of complexity, as even

individuals with strong entrepreneurial intentions may be unable to operationalize their business ideas. Nevertheless, existing conceptual discussions rarely incorporate access to finance as a moderating factor that conditions the relationship between entrepreneurial intention and employment outcomes. This represents a critical gap in the literature, particularly in the context of green entrepreneurship where startup costs and risks may be higher.

Against this backdrop, this conceptual paper addresses the identified problem and research gaps by proposing an integrated framework that explains how green entrepreneurship education within TVET can enhance youth employment. Specifically, it positions entrepreneurial intention as a mediating mechanism through which green entrepreneurship education influences employment outcomes, while access to finance is conceptualized as a moderating factor that enables or constrains this relationship.

Literature Review

Green Entrepreneurship Education and Workforce Readiness

Green entrepreneurship education extends traditional entrepreneurship education by embedding sustainability principles into business creation processes (Gast et al., 2017). It equips learners with competencies related to environmental innovation, resource efficiency, and sustainable value creation. Studies suggest that such education enhances employability by preparing individuals for both wage employment and self-employment in green sectors (ILO, 2019; OECD, 2021).

This pedagogical approach is particularly vital in emerging economies, where green business initiatives are critical for addressing socio-environmental challenges and unemployment among young graduates (Elmoukhtar et al., 2022). Moreover, green entrepreneurship education in vocational education and training is crucial for building resilient,

green economies, emphasizing the development of entrepreneurship skills within this context (Michel & Förster, 2025).

Furthermore, integrating environmental, social, and governance factors into entrepreneurial training cultivates a holistic understanding of sustainable venture creation, aligning with global shifts toward responsible business practices (Mabkhot et al., 2024). This form of education also plays a pivotal role in enabling individuals to contribute to the green economy by equipping them with the necessary skills for environmentally-friendly industries and technologies (Ogur, 2023). It contributes to addressing pressing issues such as youth unemployment and environmental degradation, particularly in Sub-Saharan Africa, by fostering sustainable entrepreneurial intentions and capabilities (Adjimah et al., 2025; Chigudu, 2025).

Entrepreneur Intention

Green entrepreneurial intentions, specifically, are conceptualized as the conscious thought to start a new business venture that addresses environmental and social concerns (Irfan et al., 2025). These intentions serve as a crucial precursor to engaging in green entrepreneurial behavior and are influenced by a variety of individual and contextual factors (Amankwah & Şeşen, 2021; Sarvari et al., 2023). Studies indicate that entrepreneurship education enhances entrepreneurial intention by improving self-efficacy, opportunity recognition, and risk tolerance (Chiromo et al., 2024; Cocu et al., 2025). This educational paradigm not only instills a desire to create new ventures but also provides critical competencies such as creativity, tenacity, and the ability to mitigate risks, which are essential for navigating dynamic business environments.

Moreover, entrepreneurial education, especially when focused on sustainable business practices, is increasingly recognized as a vital component in equipping individuals with the

knowledge, skills, and attitudes necessary for green skills and sustainable development (Mahapatra & Ravichandran, 2023; Perez-Luyo et al., 2023). Therefore, cultivating an entrepreneurial mindset, characterized by self-efficacy, is instrumental in shaping both intentions and behaviors related to sustainable entrepreneurship (Khan et al., 2025).

Theoretical Framework

This study is firmly anchored in an integrated theoretical perspective that synthesizes insights from Human Capital Theory, the Theory of Planned Behavior, and Institutional Theory to robustly explain how green entrepreneurship education within TVET drives youth employment outcomes. At its core, the framework posits that education and training constitute essential investments in human capital, equipping individuals with knowledge, skills, and competencies that demonstrably boost their productivity and employability (Mahapatra & Ravichandran, 2023; Ogur, 2023). Within the context of green TVET, entrepreneurship education incorporating sustainability principles constitutes a specialized form of human capital development, empowering learners to seize emerging opportunities in green sectors such as renewable energy, sustainable agriculture, and circular economy enterprises (Elmoukhtar et al., 2022). However, while Human Capital Theory offers a solid foundation for understanding education's role in enhancing labour market outcomes, empirical evidence reveals its limitation in assuming a direct, linear link between skill acquisition and employment, thereby neglecting the cognitive and behavioural processes that mediate this pathway (Michel & Förster, 2025).

To address this, the framework incorporates the Theory of Planned Behavior developed by Icek Ajzen, which robustly elucidates how education translates into action (Eugénio et al., 2021). TPB asserts that behaviour is driven by intention, shaped by attitudes toward the behaviour, subjective norms, and perceived behavioural control (Eugénio et al., 2021). In this context, green entrepreneurship education demonstrably influences these antecedents by cultivating positive attitudes toward sustainable enterprise creation, bolstering individuals'

entrepreneurial self-efficacy and confidence, and amplifying perceptions of social support for entrepreneurship(Chiromo et al., 2024; Cocu et al., 2025; Khan et al., 2025). These cognitive and social transformations robustly foster entrepreneurial intention, serving as the pivotal mediating mechanism linking education to employment outcomes(Amankwah & Şeşen, 2021; Irfan et al., 2025). Thus, green skills do not automatically yield employment; rather, they must first crystallize into deliberate entrepreneurial intentions.

Nevertheless, translating entrepreneurial intention into tangible business creation and employment outcomes hinges not only on individual factors but also on broader institutional conditions, especially in developing economies like Ghana, where structural barriers routinely impede opportunities(Adjimah et al., 2025). Institutional Theory complements this by underscoring how formal structures, regulatory frameworks, and resource availability decisively shape behaviour(Sarvari et al., 2023). Access to finance emerges as a paramount institutional factor, dictating whether aspiring entrepreneurs can secure resources for green ventures(Chigudu, 2025). Limited credit access, exorbitant costs, and inadequate financial inclusion starkly impede entrepreneurial realization, particularly for youth(Adjimah et al., 2025; Chigudu, 2025). Thus, access to finance functions as a key moderator, conditioning the link between entrepreneurial intention and employment outcomes.

Integrating these theories yields a comprehensive, empirically grounded understanding of green entrepreneurship education's pathway to workforce readiness. Human Capital Theory elucidates competency development; TPB delineates the shift to entrepreneurial intention; and Institutional Theory illuminates enabling or constraining contexts. Collectively, they underpin a moderated mediation model wherein entrepreneurial intention mediates green entrepreneurship education's effect on youth employment, moderated by access to finance(Amankwah & Şeşen, 2021; Sarvari et al., 2023). This synthesis overcomes single-

theory shortcomings, delivering nuanced insights into how individual agency and structural factors interplay to forge green employment trajectories.

Propositions

Green Entrepreneurship Education and Youth Employment

This proposition posits that specialized educational interventions in green entrepreneurship within TVET programs significantly enhance the employability of young individuals by cultivating specific skills and fostering an entrepreneurial mindset tailored to the burgeoning green economy. This includes equipping them with the capacity for innovation and adaptability, crucial for navigating dynamic green sectors (Yang, 2024). Moreover, such education develops an understanding of sustainable business models and environmental stewardship, which are increasingly valued in the global marketplace. This enhancement of human capital directly contributes to higher rates of employment and self-employment within environmentally conscious industries (Chagi et al., 2025). Specifically, entrepreneurship education, through formal and informal pedagogical initiatives, fosters the mindset, skills, and practices necessary for launching new ventures with far-reaching societal and environmental benefits (Kouam, 2024).

This aligns with contemporary research underscoring how entrepreneurial education cultivates innovativeness, risk-taking, and proactiveness, which are crucial for navigating uncertainties and pursuing green entrepreneurial initiatives (Al-Mamary, 2025). The development of green entrepreneurial intentions and subsequent behavior is notably strengthened by entrepreneurship education, which cultivates economic and environmental knowledge, alongside self-efficacy, positioning it as a significant predictor of green

entrepreneurial success (Mawardi et al., 2025; Sobczak et al., 2025). Beyond individual entrepreneurial traits, external support mechanisms, such as university initiatives and governmental policies, significantly influence the promotion of green entrepreneurial inclinations (Sulaiman et al., 2023).

P1: *Green entrepreneurship education has a positive effect on youth employment within the TVET sector.*

Mediating Role of Entrepreneurial Intention

Drawing lessons from prior studies, this section elaborates on how green entrepreneurship education directly shapes the antecedents of entrepreneurial intention, thereby fostering a deliberate decision-making process towards sustainable venture creation among TVET graduates (Sivasubramanian et al., 2026). Specifically, participation in entrepreneurship education activities has been shown to intensify entrepreneurial self-efficacy and desirability, which are critical components influencing the intention to pursue entrepreneurial endeavors (Le et al., 2023). This is particularly salient in the context of green entrepreneurship, where heightened self-efficacy can directly correlate with a greater propensity to address complex environmental challenges through innovative business solutions (Perez-Luyo et al., 2023).

Moreover, entrepreneurial education within TVET frameworks positively influences the entrepreneurial intentions of students, enabling them to envision and pursue self-employment opportunities rather than solely seeking paid employment (Kahando & Mungai, 2018; Mack & Honig, 2023). This educational pathway promotes a "job provider" rather than "job seeker" mindset, which is crucial for economic development in emerging economies (Sulaiman et al., 2023). Evidence suggests that well-structured entrepreneurship education programs can significantly predict green entrepreneurial intentions, influencing students' attitudes, behavioral mindsets, and overall inclination towards green entrepreneurship (Mabkhot et al., 2024).

The mediating role of entrepreneur intention cannot be underestimated if green entrepreneurship within the TVET space can translate into creation of economy assets. the transformative power of entrepreneur intention can therefore be seen in its capacity to translate aspirational green entrepreneurial education into concrete action, driving the establishment of new ventures and contributing to a sustainable economy (Prabowo et al., 2022; Weng et al., 2022). Specifically, entrepreneurial intentions compel students toward business initiation, and past research has affirmed a significant positive relationship between entrepreneurship education and entrepreneurial intentions (Albatran & Atikbay, 2025; Bahaw et al., 2024; Irfan et al., 2025). This is consistent with the Theory of Planned Behavior, which highlights that attitudes, subjective norms, and perceived behavioral control, often cultivated through education, directly influence an individual's intentions to engage in entrepreneurial activities (Hanapiyah et al., 2024).

P2: Entrepreneurial intention mediates the relationship between green entrepreneurship education in TVET and youth employment.

Moderating Role of Access to Finance

Access to finance plays a critical moderating role by providing the necessary capital for transforming entrepreneurial intentions into concrete business ventures, thereby directly impacting youth employment outcomes (Alshebami et al., 2024). Without adequate financial resources, even the most robust entrepreneurial intentions, cultivated through green TVET programs, may fail to materialize into viable businesses capable of generating employment (Viswanathan et al., 2022). This is particularly pertinent in emerging economies where financial markets may be underdeveloped or inaccessible to young entrepreneurs, limiting their ability to invest in necessary infrastructure, technology, or working capital. Furthermore, the availability of seed funding, venture capital, and microloans directly influences the scalability

and sustainability of green startups, making financial accessibility a critical determinant in translating entrepreneurial intent into tangible job creation (Goswami et al., 2024). This financial accessibility, therefore, acts as a crucial moderator, enabling or inhibiting the translation of entrepreneurial intentions into actual green entrepreneurial activities and subsequent youth employment (Nuringsih et al., 2022; Perez-Luyo et al., 2023).

The intersection of entrepreneurial education, green cognition, and financial accessibility forms a complex interplay that ultimately determines the realization of green entrepreneurial intentions and their impact on employment (Mabkhot et al., 2024; Ramayah et al., 2019). This intricate relationship necessitates a deeper exploration into how these factors collectively facilitate the transition from educational preparedness to active participation in the green economy (Thao et al., 2025). This study posits that access to finance moderates the strength of this relationship between entrepreneur intention and youth employment by enabling the conversion of entrepreneurial aspirations into tangible ventures. Therefore, while entrepreneurial education can foster strong intentions, the actualization of these intentions into job-creating enterprises is critically dependent on the availability and accessibility of financial resources, particularly in environments where capital markets are nascent (Svotwa et al., 2022).

P3: Access to finance positively moderates the relationship between entrepreneurial intention and youth employment in the green TVET sector.

Conclusion

This paper proposes an integrated framework that elucidates how green entrepreneurship education in Technical and Vocational Education and Training enhances youth employment. It demonstrates that such education does not directly engender employment; rather, its effects are mediated by entrepreneurial intention, which propels self-employment and the establishment

of green enterprises. Furthermore, access to finance constitutes a pivotal enabling factor that determines whether these intentions translate into tangible employment outcomes.

The present study contributes to the literature by integrating Human Capital Theory, the Theory of Planned Behavior, and Institutional Theory into a unified model, thereby furnishing a more nuanced comprehension of workforce readiness in the green economy. Moreover, it emphasizes the necessity for TVET systems—particularly in contexts such as Ghana—to incorporate green entrepreneurship competencies and augment financial accessibility for youth.

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