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Entrepreneurial Engagement as a Catalyst for Human Empowerment: A Transdisciplinary Graduate Model

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Abstract

This conceptual paper proposes a transdisciplinary framework to facilitate the transformation from knowledge to enterprise among social science and pure science graduates by positioning entrepreneurial engagement as a strategic pathway for human empowerment and progressive societal development. While grounded in the Malaysian higher education context, the framework is conceptualized to be adaptable across diverse national and institutional settings. Anchored in the Theory of Planned Behavior that explains how entrepreneurial intention and subsequent engagement are shaped by attitude, subjective norms, and perceived behavioral control. These psychological foundations are further strengthened through curriculum innovation, institutional support mechanisms, mentorship initiatives, and systematic exposure to entrepreneurial ecosystems. The framework responds to persistent global challenges surrounding graduate employability, skills mismatch, and the underutilization of scientific and social knowledge. By integrating transdisciplinary learning with established behavioral theory, the paper advances conceptual scholarship by extending the application of the Theory of Planned Behavior into a transdisciplinary entrepreneurial engagement domain. It highlights the importance of coordinated educational and institutional arrangements in nurturing empowered graduates capable of translating knowledge into meaningful enterprise. The paper concludes by outlining practical implications for higher education stakeholders and directions for future empirical validation.

Keywords: Entrepreneurial engagement; Employability; Human empowerment; Transdisciplinary model.

Introduction

In Malaysia, a persistent issue in higher education is the difficulty graduates face in translating academic knowledge into meaningful economic or social enterprises. Despite high enrolment in tertiary institutions, the rapid increase in graduate output has not been matched by a proportional growth in high-skilled job opportunities, resulting in an oversupply of graduates in semi-skilled or low-skilled roles that underutilize their qualifications and exacerbate skill mismatch with empirical evidence suggesting that over 80% of graduates experience skill-related underemployment [1]. This phenomenon reflects the broader challenge of aligning academic curricula with industry needs, which contributes to underemployment and limits the productive application of social and scientific knowledge. Importantly, this issue is not unique to Malaysia, but mirrors a global trend in which graduates often struggle to translate academic knowledge into meaningful employment or entrepreneurial opportunities [2]. These persistent gaps underscore the need for systemic reforms in

[1] Kok Meng Ng and others, 'The Hidden Drivers of Youth Unemployment', *International Journal of Asian Business and Information Management*, 16.1 (2025), 1–19 <https://doi.org/10.4018/IJABIM.388564>.

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curriculum design, enhanced institutional support, and greater exposure to entrepreneurial ecosystems to strengthen graduate employability, human empowerment, and societal development.

Social sciences graduate often demonstrate strong competencies in critical thinking, communication, and social analysis, yet they may lack specialized technical skills that are increasingly demanded in the labor market [3]. This skills gap aligns with employers' concerns regarding the shortage of key employability skills among Malaysian graduates, particularly in areas such as communication, problem-solving, teamwork, and adaptability [4]. Meanwhile, those from pure science and STEM backgrounds often possess strong technical and analytical competencies but may lack broader business acumen and other transferable skills that are increasingly demanded in the contemporary labor market, as employers report significant gaps not only in communication and problem solving but also in business awareness and management related competencies among technically trained graduate [5]. The Fourth Industrial Revolution (IR4.0) has further complicated this issue by reshaping industries and creating a demand for graduates equipped with digital competencies, creativity, and innovative thinking [6]. As a result, universities increasingly face pressure to ensure that academic programs are not only theoretically sound but also practically relevant to industry needs, requiring continuous curriculum updates, close industry engagement, and integration of real world skills to better prepare graduates for evolving workforce demands[7]. This disciplinary divide constrains the capacity of graduates to initiate ventures or convert knowledge into enterprise.

To bridge this gap, a transdisciplinary model is needed one that brings together strengths from both sides (social and pure sciences) and embeds entrepreneurial orientation throughout educational and institutional systems. The Theory of Planned Behavior (TPB) offers a useful psychological foundation to understand how intention leads to behavior [8]. This paper aims to conceptualize a model in which TPB's attitudinal, normative, and control beliefs are shaped and moderated by transdisciplinary enablers to foster graduate entrepreneurial behavior.

This paper aims to present a TPB-based conceptual model of graduate entrepreneurial engagement, highlight key enablers that reinforce its antecedents in a transdisciplinary context, and offer actionable recommendations for practice and future empirical validation.

Graduate employability remains a critical challenge in Malaysia, as research highlights persistent gaps between higher education outcomes and labour market expectations, and confirms that employability continues to be a major concern for stakeholders including employers, policymakers, and graduates themselves[9]. Many graduates struggle to secure job placements commensurate with their qualifications. According to the Department of Statistics Malaysia (2023), the graduate unemployment rate stands at approximately 3.7%, with many graduates not working in roles below their qualification level. The phenomenon of underemployment and mismatch of skills which is soft skills, digital literacy and entrepreneurial mindset is well documented. Several studies internationally

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[6] Carlos Guzmán Sánchez-Mejorada and others, 'Industry 4.0 Skills Assessment: A Case Study of Students' Perceptions in Computer Science Postgraduate Programs', *Sustainability*, 17.11 (2025), 4974 <https://doi.org/10.3390/su17114974>.

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and in Malaysia suggest that one remedy to persistent graduate employability challenges is to foster graduate entrepreneurship, enabling graduates to create their own ventures or engage in knowledge commercialization. Research shows that entrepreneurship education, including courses, competitions, and supportive policies, significantly enhances graduate employability and prepares students to generate employment opportunities for themselves [10]. In the Malaysian context, initiatives to encourage graduates to engage in entrepreneurial activities have been found to shift graduates from job seekers to job creators, thereby offering alternative career pathways beyond traditional employment [11]. Moreover, empirical research indicates that participation in venture creation programs equips graduates with practical entrepreneurial competencies applicable across self-employment and intrapreneurial career roles [12].

In this regard, the Theory of Planned Behavior (TPB), provides a useful framework for understanding behavior related to graduate employability. TPB posits that an individual's intention to perform a particular behavior is influenced by three main determinants: attitudes toward the behavior, subjective norms, and perceived behavioral control. Applied to graduate employability, TPB suggests that graduates' intentions to seek employment, engage in skill development, or pursue entrepreneurial endeavors are shaped by their personal beliefs about employability, perceived social expectations, and perceived ability to achieve those goals [13]. The TPB posits that behavioral intention is predicted by three key belief-based constructs:

Attitude refers to the extent to which an individual evaluates a particular behavior positively or negatively. It reflects a person's favorable or unfavorable appraisal, which can influence their intention to engage in the behavior. Subjective norms pertain to the perceived social pressure from significant others, such as family, peers, or colleagues, regarding whether one should or should not perform a given behavior. These norms shape the individual's behavioral intentions by signaling social expectations. Perceived behavioral control refers to an individual's perception of the ease or difficulty of performing a behavior, closely related to the concept of self-efficacy. It reflects the degree of control one believes they have over executed the behavior, influencing both intention and actual performance [14]. Multiple meta-analyses and empirical studies affirm that attitude, subjective norms and perceived behavioral control are significant predictors of entrepreneurial intention, with variations in strength depending on context.

TPB constructs in Malaysia context on educational support, personality traits and motivational factors was found relate positively to entrepreneurial intention [15]. Similarly, study in Malaysian context highlights how attitude, norms, and control variables influence entrepreneurial intention [16]. Meanwhile, there were also study that found that attitude, opportunity recognition, social support, and risk-taking propensity become the key factors influencing students' entrepreneurial intentions [17].

[10] Yangjie Huang and others, 'From Classroom to Workplace: How Entrepreneurship Education Influences University Students' Employability', *Humanities and Social Sciences Communications*, 12.1 (2025), 1108 <https://doi.org/10.1057/s41599-025-05316-7>.

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Additionally, in the wider discipline, the role of entrepreneurial alertness in cognitive capability has been shown to influence intention grounded in TPB among Malaysian students [18].

However, challenges in TPB application include "intention-behavior gap" in which not all intentions materialize into action. Recent research continues to highlight the persistence of the intention–behavior gap, emphasizing that even when individuals form strong intentions, these do not always translate into actual behavior due to various cognitive, contextual, and motivational factors [19]. Therefore, recent research addresses this by introducing mediators or moderators namely self-efficacy, enablers, resources [20]. This study seeks to conceptualize how these constructs contribute to strengthening the intention and action link in entrepreneurial decision making among university students, particularly within technology driven learning environments.

Transdisciplinary education involves transcending traditional disciplinary boundaries to integrate multiple domains of knowledge and skills in response to real-world, complex problems, fostering cohesive learning that connects academic theory with practical application across disciplinary lines [21]. In entrepreneurship education, this approach encourages students to draw simultaneously from technical, social, economic, and ethical perspectives. Transdisciplinary entrepreneurship education transcends traditional disciplinary boundaries by integrating knowledge, skills, and perspectives from multiple fields to promote creativity, innovation, and problem-solving in complex real-world contexts [22]. Through transdisciplinary entrepreneurship education, students are exposed to experiential learning, cross-disciplinary collaboration, and entrepreneurial thinking, which collectively enhance their adaptability and employability. Applying transdisciplinary entrepreneurship education principles in higher education can complement the behavioral insights of TPB by fostering positive attitudes, stronger behavioral control, and proactive employability behaviors among graduates.

Studies have argued for combining entrepreneurial education, experiential learning, and cross-faculty exposure to better prepare students through the combination of STEM with business, policy, design thinking. Some conceptual models in sustainable entrepreneurship domain have used TPB to integrate domain-specific values that related to climate awareness [23]. Given this, a model for graduate enterprise engagement should embed transdisciplinary enablers so that the TPB constructs are not isolated psychological variables but are influenced by educational, institutional, and ecosystem factors.

Method

This study adopts a conceptual research design aimed at constructing a transdisciplinary framework for enhancing graduate entrepreneurial engagement. The development of the model is grounded in the Theory of Planned Behavior (TPB) and informed by scholarly discussions on graduate employability, entrepreneurial intention, and transdisciplinary entrepreneurship education. Rather than relying on primary data collection, the study systematically integrates theoretical constructs and prior empirical findings to formulate a structured conceptual model. Through this analytical synthesis, key behavioral determinants and contextual enablers are linked to generate

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research propositions that may serve as a basis for future empirical validation within higher education contexts.

Results and Discussions

Conceptual Model And Proposition

Core TPB-based Structure consist oft three core model namely attitude, subjective norm and perceived behavioral control. Attitude refers to the individual's positive or negative evaluation of performing entrepreneurial behavior, reflecting beliefs about the potential benefits, challenges, and personal value of engaging in entrepreneurial activities. In the context of graduates, a favorable attitude toward entrepreneurship increases motivation to translate knowledge into viable business or social ventures. Subjective norm denotes the perceived social pressure from significant others such as peers, family, mentors, or academic institutions to engage or not engage in entrepreneurial behavior. Graduates who perceive supportive social expectations are more likely to consider entrepreneurship as an acceptable and desirable career pathway. Perceived behavioral control reflects an individual's confidence in their ability to perform entrepreneurial tasks, considering both internal capabilities and external constraints. Higher perceived control among graduates enhances their likelihood to initiate entrepreneurial actions and overcome barriers in starting ventures. Entrepreneurial intention represents the conscious plan or commitment of graduates to start a new venture or engage in entrepreneurial activities. It is shaped by attitude, subjective norm, and perceived behavioral control, serving as the immediate predictor of subsequent entrepreneurial engagement. Entrepreneurial engagement is the actual enactment of entrepreneurial behavior, including starting ventures, developing business ideas, participating in incubators, or commercializing knowledge. It reflects the translation of entrepreneurial intention into tangible actions that generate economic or social impact.

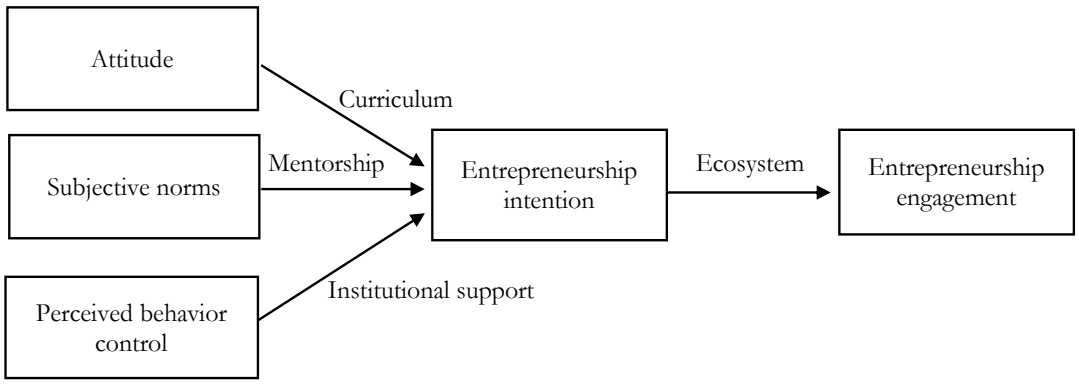
Therefore, this paper proposes four key enablers in the transdisciplinary framework consist of curricular innovation, institutional support and infrastructure, mentorship and role models and ecosystem exposure and engagement. Curricular innovation, through cross-disciplinary project assignments and entrepreneurship courses co-taught by multiple faculties, integrates real-world problem-solving, business model development, prototyping, and market research, thereby enhancing students' entrepreneurial capabilities and practical competencies. University incubators, seed funding, labs, maker spaces. Administrative support, grants, commercialization offices, technology transfer. Policies that reward interdisciplinary initiatives and knowledge commercialization.

Mentorship involves guidance from industry professionals, alumni, and social entrepreneurs, complemented by peer networks, start-up clubs, and structured mentorship programs designed to bridge social and technical knowledge, thereby supporting students' entrepreneurial development.

Ecosystem exposure and engagement include internships in start-ups or industry, participation in business competitions, networking events, and partnerships with enterprises, social enterprises, and government agencies. Such enablers can enhance entrepreneurial attitudes by demonstrating potential benefits, shape subjective norms through visible role models and networks, increase perceived behavioral control by alleviating barriers via resource access, and facilitate the translation of entrepreneurial intentions into active engagement by providing support and scaffolding.

P1: Attitude towards entrepreneurship, subjective norms and PBC positively influence entrepreneurial intention consistent with the Theory of Planned Behavior. P2: Curricular innovation positively moderates the relationship between attitude toward entrepreneurship and entrepreneurial intention such that the effect of attitude on entrepreneurial intention is stronger when the curriculum provides supportive entrepreneurial experiences. P3: Institutional support positively moderates the relationship between perceived behavioral control and entrepreneurial intention such that the effect of PBC on entrepreneurship intention is stronger when institutional support is high. P4: Mentorship positively influences subjective norms and perceived behavioral control thereby indirectly enhancing entrepreneurial intention. P5: Ecosystem exposure positively moderates the relationship between entrepreneurial intention and entrepreneurial engagement such that the translation of intention into behavior is stronger when individuals have greater exposure to entrepreneurial ecosystems. P6: The combined influence of enablers reduces the intention and behavior gap, increasing realized entrepreneurial engagement.

Table 1. Comparison of Agricultural Zakat Regulations



The conceptual framework in Figure 1 grounded in the Theory of Planned Behavior (TPB), wherein attitude, subjective norms, and perceived behavioral control serve as core antecedents of entrepreneurial intention. To enhance these TPB constructs within the context of graduate entrepreneurship, the model incorporates curriculum, mentorship, and institutional support as key enablers that strengthen students' intentions to pursue entrepreneurial activities. Furthermore, ecosystem factors are proposed as critical determinants that translate entrepreneurial intention into entrepreneurial engagement, ensuring that graduates can effectively operationalize their knowledge and skills in real-world ventures. This framework thus integrates theoretical constructs with contextual educational and environmental enablers, offering a transdisciplinary model for fostering graduate entrepreneurship and promoting actionable engagement in both economic and social domains.

Relevance to Social Science & Pure Science Graduates

The findings and theoretical perspectives of this study hold important implications for both Social Science and Pure Science graduates within Malaysia's evolving graduate employment landscape. Although these graduates differ in disciplinary orientation, international evidence consistently shows that graduates across fields encounter comparable structural challenges in transitioning from academia to industry, particularly in translating disciplinary knowledge into labor-market-relevant competencies. Large-scale reviews report persistent misalignment between higher education outcomes and employer needs, with employability problems observed across disciplinary clusters rather than confined to specific fields [24] . In Malaysia and comparable developing knowledge economies, this misalignment has been linked to graduate underemployment, skills mismatch, and weak integration between academic training and economic participation.

Anchored in the Theory of Planned Behavior and transdisciplinary entrepreneurship education, this study advances a behavioral interpretation of employability by highlighting that graduates' career outcomes are not only a function of skill possession, but are also shaped by attitudes, subjective norms, and perceived behavioral control. Recent empirical studies confirm that these psychological determinants significantly predict entrepreneurial intention, proactive employability behavior, and graduate career adaptability across disciplines[25].This reinforces the relevance of TPB as a robust

[24] Andreas Eimer and Carla Bohndick, "Employability Models for Higher Education: A Systematic Literature Review and Analysis," *Social Sciences Humanities Open* 8, no. 1 (2023): 100588, https://doi.org/10.1016/j.ssaho.2023.100588; Tushar and Sooraksa, "Global Employability Skills in the 21st Century Workplace: A Semi-Systematic Literature Review."

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explanatory framework for understanding why similarly trained graduates may exhibit divergent employability trajectories.

This model recognizes that graduates across disciplines bring differentiated capability profiles. For Social Science graduates, employability challenges are frequently associated with limited access to technical, digital, and industry-specific competencies. Despite these students' group has possess demonstrated strengths in communication, ethical reasoning, critical thinking, and social awareness. Social Science and Humanities graduates often experience higher risks of underemployment, largely due to employers perceptions of insufficient job-specific and applied skills [26]. However, the same studies affirm that these graduates possess strong foundations in stakeholder engagement, societal problem analysis, and contextual reasoning capabilities that lead to high value in innovation driven and service-oriented economies.

Within the TPB framework, these characteristics suggest that Social Science graduates may already demonstrate relatively favorable attitudes and subjective norms toward socially oriented entrepreneurship, but experience weaker perceived behavioral control, particularly in domains of technology application, market mechanisms, and venture execution. Empirical findings show that low entrepreneurial self-efficacy and limited exposure to applied entrepreneurial environments significantly constrain the translation of intention into behavior among non-technical graduates [27].

Here, transdisciplinary entrepreneurship education is positioned as a transformative pedagogical mechanism. Project-based learning, community innovation platforms, and social enterprise collaborations significantly enhance entrepreneurial self-efficacy, opportunity recognition, and behavioral control among non-business and non-technical students [28]. By embedding entrepreneurial experiences within Social Science curricula, graduates become better equipped to operationalize theoretical knowledge into applied problem-solving, social innovation initiatives, and enterprise development, thereby strengthening all three TPB antecedents in an integrated manner.

Meanwhile, Pure Science graduates are typically characterized by strong analytical and technical competencies, yet often display limited exposure to entrepreneurial, interdisciplinary, or market-oriented contexts. Science graduates frequently lack business acumen, market literacy, and commercialization awareness, which constrains the socio-economic translation of scientific knowledge [29]. While these graduates often possess high technical self-efficacy, their perceived behavioral control in entrepreneurial and commercial domains remains comparatively underdeveloped. From a TPB perspective, this imbalance manifests as strong task competence but weaker entrepreneurial attitudes, normative support, and perceived feasibility of venture creation. Studies confirm that scientists' entrepreneurial engagement increases significantly when educational environments enhance behavioral control through experiential commercialization activities, mentorship, and exposure to entrepreneurial ecosystems. Transdisciplinary entrepreneurship education addresses this gap by embedding scientific training within collaborative ecosystems where business, societal, and technological perspectives intersect.

Through participation in transdisciplinary projects integrating science, technology, and social problem domains, Pure Science students develop creativity, adaptability, and innovation-oriented mindsets. ScienceDirect research demonstrates that such interdisciplinary engagement significantly

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increases scientists' likelihood of participating in start-ups, pursuing technology transfer, and initiating research-based ventures [30]. This behavioral shift is essential for cultivating scientists who not only generate knowledge, but systematically translate it into economic and social value. The model further suggests that transdisciplinary enablers function as balancing mechanisms across disciplines, fostering synergy between complementary graduate strengths. Collaborative learning structures such as Social Science and Pure Science students co-developing socio-technical solutions mirror the conditions under which interdisciplinary innovation ecosystems flourish. These findings extend to curriculum design and higher education policy. Recent studies emphasize that employability-oriented curriculum reform must priorities experiential learning, cross-faculty integration, and reflective practice to effectively reshape graduate behavioral orientations. For policymakers, this implies that employability strategies should move beyond generic skills training toward psychologically informed, discipline-sensitive interventions that target attitudinal change, normative reinforcement, and behavioral capacity development.

Theoretical implications

Theoretically, integrating TPB with transdisciplinary entrepreneurship education offers a holistic employability framework that bridges psychological intention formation with educational structures. TPB elucidates the behavioral mechanisms driving graduates employability and entrepreneurial engagement, while transdisciplinary education operationalizes the learning environments through which these mechanisms are activated and strengthened. This synthesis responds to recent calls in literature for models that link individual agency with institutional design in employability research [31].

Strategies to Enhance Transdisciplinary Entrepreneurship Education

Higher education institutions can play a pivotal role in fostering transdisciplinary entrepreneurship by incentivizing cross-faculty collaboration. This can be achieved through the development of joint modules, the allocation of dedicated funding for interdisciplinary entrepreneurial education, and the integration of outcome metrics that track the number of start-ups, patents, and social enterprises generated. Curriculum designers should embed entrepreneurship experiences within disciplinary courses, incorporating project-based learning, market validation exercises, and partnerships with industry to provide students with practical and applied knowledge. Government bodies and funding agencies can further support these initiatives by offering grants targeted specifically at interdisciplinary graduate start-ups. This support can include competitions, bridging programs, and seed funding, with potential matching contributions from universities. Mentorship programs should prioritize the recruitment of diverse mentors who possess expertise across both social and technical domains, ensuring comprehensive guidance for aspiring entrepreneurs. Finally, universities should strengthen ecosystem linkages by connecting students and ventures to industry clusters, accelerators, and social enterprise networks. Such connections provide graduates with real-world exposure, facilitate experiential learning, and enhance the likelihood of successful venture creation.

Challenges and Mitigation Strategies in Implementing Transdisciplinary Entrepreneurship Education

Despite the growing empirical support for transdisciplinary entrepreneurship education, several structural, behavioral, and cultural challenges continue to constrain its effective implementation within higher education institutions. One major challenge lies in disciplinary fragmentation and faculty resistance, which often impede cross-faculty collaboration and the integration of entrepreneurship across non-business curricula [32]. Traditional academic silos, differing pedagogical norms, and misaligned incentive systems further complicate coordinated program development. To

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mitigate these barriers, institutions should adopt phased implementation strategies, initiate pilot transdisciplinary modules, provide institutional incentives, appoint champion faculty members, and establish cross-disciplinary task forces to foster organizational readiness and shared ownership.

Resource constraints constitute a second critical barrier. Limited funding, insufficient entrepreneurial infrastructure, and a lack of collaborative learning spaces restrict the scalability and sustainability of interdisciplinary initiatives. Strategic partnerships with industry, innovation agencies, and local entrepreneurial ecosystems can partially offset these limitations by providing access to expertise, facilities, and venture development platforms. Meanwhile, universities can further mitigate resource pressures through phased rollouts, shared facilities across faculties, and integration of existing laboratories and innovation hubs into entrepreneurship program.

A third challenge concerns the persistent intention–behavior gap. Although many graduates demonstrate positive entrepreneurial attitudes and strong intentions, these do not consistently translate into venture creation or sustained entrepreneurial engagement [33]. Short-term curricular interventions may enhance perceived behavioral control, but without continued structural support, early entrepreneurial efforts often dissipate. Longitudinal enablers such as incubation program, venture follow-up mechanisms, and extended mentorship have been empirically shown to strengthen behavioral persistence and reduce early-stage venture attrition [34]

Cultural norms and risk aversion further shape graduates' entrepreneurial behavior by influencing subjective norms within the TPB framework. In many Asian and emerging-economy contexts, social expectations frequently priorities employment stability over entrepreneurial risk-taking [35]. To address this, universities should institutionalize mentorship schemes, systematically expose students to entrepreneurial role models, and embed narratives of socially responsible and knowledge-based entrepreneurship across curricula to normalize entrepreneurial career pathways.

Finally, the measurement and evaluation of transdisciplinary entrepreneurship initiatives present additional challenges, particularly in assessing long-term outcomes such as venture sustainability, innovation impact, and graduate career trajectories. Developing robust monitoring systems, structured evaluation frameworks, and longitudinal graduate tracking mechanisms is therefore essential for informing continuous program refinement and evidence-based policy development [36].

Directions for Empirical Validation

As a conceptual contribution, this study necessitates systematic empirical validation to substantiate the proposed relationships between TPB constructs, transdisciplinary enablers, and entrepreneurial engagement outcomes. In line with recent methodological recommendations, future studies should employ Structural Equation Modelling (SEM) to test causal pathways between attitudes, subjective norms, perceived behavioral control, enabling mechanisms, entrepreneurial intention, and entrepreneurial engagement [37]. Such analyses would allow researchers to assess both direct and mediating effects within the proposed framework. Comparative disciplinary studies represent a second important research direction. Examining differences between Social Science and Pure Science graduates across institutions and national contexts would deepen understanding of how disciplinary cultures, competence profiles, and normative environments condition entrepreneurial

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pathways. Multi-institutional and cross-national designs would further enhance the external validity and global applicability of the proposed model.

Longitudinal research designs are particularly critical for capturing the evolution from entrepreneurial intention to sustained entrepreneurial behavior. Tracking students from final year through the post-graduation period would enable researchers to examine behavioral persistence, venture survival, and the long-term influence of curricular and ecosystem interventions, thereby directly addressing the intention–behavior gap documented in entrepreneurship research [38]. In addition, future studies should integrate mixed-methods approaches, combining large-scale surveys with qualitative case studies of graduate entrepreneurs operating across disciplinary boundaries. Such designs would provide deeper insights into contextual enablers, experiential learning processes, and institutional conditions that shape transdisciplinary entrepreneurial engagement. Finally, future research should incorporate robust impact-evaluation frameworks to assess outcomes beyond start-up formation, including innovation diffusion, social value creation, and knowledge commercialization. These efforts are essential to refine theoretical models, strengthen empirical grounding, and position transdisciplinary entrepreneurship education as a globally relevant, evidence-based strategy for addressing graduate employability challenges [39].

Conclusion

This paper presents a conceptual transdisciplinary model to promote graduate entrepreneurial engagement, grounded in the Theory of Planned Behavior and enriched with curriculum, institutional, mentorship, and ecosystem enablers. While the model is contextualized within the Malaysian higher education environment, it is intentionally structured to be transferable to other national and institutional settings where graduates across disciplines face persistent challenges in converting academic knowledge into entrepreneurial and socio-economic value. Academically, this study contributes to the international literature by advancing an integrative framework that bridges behavioral theory and transdisciplinary pedagogy, offering a theoretically anchored yet educationally actionable model for understanding how entrepreneurial engagement can be cultivated across disciplinary boundaries. Therefore, it extends prevailing employability and entrepreneurship scholarship beyond business-centric perspectives and provides a cross-disciplinary lens applicable to diverse higher education systems globally.

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