

Exploring the Practice-Research Nexus in Entrepreneurship Skills Development: A Critical Realist Study

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Abstract: “Human society has not developed in accordance with a prearranged plan, but empirically, in the course of a long, complicated and contradictory struggle” (Trotsky, 1986, pp.24) This paper engages the power of transcendentalism by applying the social realist explanatory program as anchored on the critical realist philosophy. At the core of the claims is the main argument that what can easily become the mainstreamed ways of thinking-making-doing about the social world tend to stem from the de-ontologised positions and their self-referential explanations, which always derive from the default positions and the faulty consciousness about the idea of “being”. Methodology, the study thus questioned what could be the dialectical relationship of entrepreneurship skills development as the field of practice and of research. As such, this reflective practice project was anchored on the transcendental argument/question, “What is it that must have allowed for the management and leadership of entrepreneurship skills development projects to be managed in the way that were in the four cases of faculties and the coordinating unit at a selected university of technology in South Africa?”. By such a question, the paper argues for the matters of “space” and thus business and management functions, “beyond” the physical in terms of what can be argued as the de-ontologised positions and their self-referential explanations, which always derive from the default positions and the faulty consciousness about the idea of “being”. The “becoming”, as the new realms of possibilities, which must be anchored on deep change, which is stratified, causally efficacious, and emergent. The findings therefore is a proposed conceptual framework that draws on transcendentalism about the business and management practices, per the cited cases, but also the practical implications about engagement and transformation of higher education as most institutions are starting their first year of the institutional strategic plans towards vision 2030. As such, value addition about the paper is its scholarly contribution about the United Nations Sustainable Development Goals, especially Goal 4 on Quality Enhancement and Goal 17 on International Partnerships. In that way, the value of scholarship about entrepreneurship skills development is potentially in terms of the theory-methodology-practical program chain.

Keywords: Transcendentalism, Critical Realism, Social Realism, Entrepreneurship, RREEIS Modelling

1. Introduction

1.1 The Challenge of Entrepreneurship Skills Development in Higher Education

Universities of technology/applied sciences in South Africa occupy a unique position at the intersection of higher education, industry, and socio-economic development. Tasked with producing graduates who are both employable and capable of generating employment, these institutions have invested heavily in entrepreneurship skills development programs over the past decade. Yet the evidence suggests a persistent disjuncture between program design and outcomes. Graduates continue to report low self-efficacy in venture creation, industry partners cite a mismatch between graduate competencies and market needs, and internal evaluations reveal fragmented coordination between faculties and central entrepreneurship units.

This disjuncture is not unique to South Africa. Globally, higher education institutions struggle to move beyond “event-based” delivery of entrepreneurship education that treats skills development as a technical add-on rather than an integrated field of practice and research. As institutions enter the first year of implementing strategic plans aligned with Vision 2030, the need for a more coherent and theoretically grounded approach has become urgent.

1.2 Contribution and Structure

Following this preview about the topic, the paper develops a conceptual framework that repositions entrepreneurship skills development as a field constituted through the dialectical interplay between practice and research, anchored in transcendental and realist philosophy.

- a. Section 2 outlines a brief literature review in three parts upon which a philosophical grounding emerges as a frame of reference for the subsequent sections.
- b. Section 3 describes the case study context and dialectical relations observed.
- c. Section 4 proposes the conceptual framework.
- d. Section 5 discusses practical implications and concludes.

2. Entrepreneurship Education That Draws From a Critical Realist Perspective

As I argue elsewhere (for example, in Dwayi, 2023), any social phenomenon, like entrepreneurship skills development, need to be a subject of a critical realist critique from the three ontological positions,

- a. The structural system of roles, functions and responsibilities is not always the proxy for the actual results. This is so, because,
- b. The cultural system (norms, values and standards) thereof is always contested in power relations and in materialist interests, and
- c. The deciding factor in both dimensions is always the human system, as the choices and none choices about each system, as the exercise of agency.

Entrepreneurship skills development practices, therefore, as the evidenced by research advancements, surface the inadequacies which call for deep understanding and advanced explanations especially in contexts of historical and structural disadvantage. Thinking of theory-methodology-practical program chain therefore allows for advanced explanations when in consideration of the current practices as the basis for what must be the research frontiers, and hence the need for a conceptual framework. As a preview, this paper thus drew from the critical realist perspective in the following three ways,

- a. That, in the ecosystem-based systems, entrepreneurship education policies and strategies, while necessary, remain inadequate when the current practices remain not socially embedded within higher education system beyond the seemingly privileged ways of thinking-making-doing.
- b. That, entrepreneurship education at the dimension of values, norms and standards call for the adoption surface the limitations of the higher education system as a structure and thus calls for experiential learning as the enhanced value system, and the limitations of HET as a structure
- c. That, progressive choices and socially reconstructive and emancipatory projects about the latter two points therefore call for entrepreneurial competences as the embodied knowledge.

Thus, the knowledge gap in ESD derive from what seems to be preoccupation with current practices which results in more of surface than deep change. This paper therefore argues that to understand why entrepreneurship skills development projects unfold as they do, we must ask a transcendental question,

What must have been the case for the management and leadership of entrepreneurship skills development projects to be managed in the way that they were across four faculties and the coordinating unit at a selected South African university of technology?

This question shifts attention from what was done to the underlying conditions, structures, and mechanisms that enabled or constrained action.

2.1 Philosophical Grounding: Transcendentalism and Critical Realism

Transcendental questions seek to identify the necessary conditions that make social practices possible (Bhaskar, 1998). Applied to entrepreneurship skills development, this approach shifts focus from “what managers did” to “what had to exist for their actions to make sense.” The transcendental question would seek to unravel the silences and superficialities about the ESD practices, the stagnation state, in the following way, for example,

“What is it that must have allowed for the management and leadership of entrepreneurship skills development projects to be managed in the way that were in the four cases of faculties and the coordinating unit at a selected university of technology in South Africa?”

A core problem lies in how the management and leadership of entrepreneurship projects are understood. Dominant accounts operate at the empirical level, relying on de-ontologised positions that treat organizational actions as self-referential and self-explanatory, what Bhaskar (2008) terms the “epistemic fallacy.” This obscures the deeper structures, mechanisms, and conditions that make actions possible. Towards the transcendental argument, an ESD researcher and practitioner would focus on the social realist account for what might be the state of conditions about ESD beyond what seems to be surface and superficial change. Thus, in consideration of what would have to be the Theory-Methodology-Program Chain, answering the question would entail thinking of the first part of the chain, Critical Realism: Stratified Ontology and Causal Mechanisms.

2.2 Critical Realism: Stratified Ontology and Causal Mechanisms

Critical realism distinguishes the Real, the Actual, and the Empirical, and insists that causal mechanisms operate independently of our knowledge of them (Bhaskar, 2008; Fleetwood & Ackroyd, 2004). It allows analysis of how structures such as departmental hierarchies and epistemic norms exert causal influence on practice.

Table 1: the reality domains, A layered reality (Bhaskar, 1978:13)

	Real	Domain of the Actual	Domain of the Empirical
Mechanisms	X		
Events and Processes	X	X	
Observations and Experiences	X	X	X

Philosophically, reality on the realm of realist domain is either transitive or intransitive. The transitive objects, nature determine whether they can be actualised and further observed and experienced. The intransitive objects need not be actualised and experienced as they remain dormant at the domain of the real. From ESD practices, Diagram 1, all the three forms of articulation (horizontal, vertical and diagonal), and drawing from critical realism, thus surface the two faces of change. The first, of events and processes, and of the observations and experiences (surface change). A recognition of yet another domain of reality, of the mechanisms (deep change) and how such mechanisms tend to generate the surface change, or the inability of surface thinking to identify the generative mechanisms in the deep structure. In this way, critical realism becomes quite instructive about the understanding and explanation about the ESD practices as the theory-practice nexus, policy-implementation nexus, research and development nexus. But how does this play out in the theory in the last two elements of methodology-program chain?

2.3 Social Realism and the Morphogenetic Approach

From diagram 1, implied, deep ontology, stratification about ESD practices. This section, how of deep ontology, stratification, causal efficacy and emergence and thus new ways of ESD.

Archer's (1995, 2003) social realism models social change through the interplay of structural conditioning, social interaction, and structural elaboration. This framework treats practice and research as dialectically related moments in a process of "becoming."

Table 2: The domains and social reality of Entrepreneurship Skills Development as adapted from Dwayi, 2022).

Domains of reality from a critical realist stance, (Roy Bhaskar, 1998; 2008)	A map of Entrepreneurship Skills Development from a social realist stance (Margaret Archer, 1996; 2007)
Empirical Level: Powers are perceived and experienced	Entrepreneurship Skills Development is experienced and observed in particular ways which constitute the idea of university education as the public and common good and how such goods are experienced and observed.
Actual Level: powers, though actualized (and thus experienced and observed at level above), may not be felt	Entrepreneurship Skills Development takes place as events, processes and the emergent patterns and trends thereof

Real Level: generative powers are possessed, may not be actualized (as events and processes, and further as experienced and observed)	<u>Structural Arrangements:</u> Entrepreneurship Skills Development roles, duties and responsibilities as regulated by the establishment of University Councils	<u>Cultural Registers:</u> Entrepreneurship Skills Development ideas, beliefs, values, and norms, namely, discourses of social justice and equity, or of economic rationality and neoliberal thinking, and/or the variations of each	<u>Human Systems:</u> Enactment of both the structural arrangement and per the cultural registers: Actors goals, intentions; choices and projects/decision making; interests; desires about Entrepreneurship Skills Development
	STRUCTURAL EMERGENT POWERS/PROPERTIES (SEPs): powers & tendencies to determine causal powers	CULTURAL EMERGENT POWERS/PROPERTIES (CEPs): discourses (as representations of attitudes and values which permeate everyday life)	AGENCY/PERSONAL EMERGENT POWERS/PROPERTIES (PEPs): (reflexivity & autonomy of council members as individuals, actors and corporate)

Diagram 2 suggests that ESD, as both a field of study and of practice, can be understood and explained as open and complex social system. Such systems take the three main elements of structure, culture, and agency. Drawing on the critical realist philosophy, as the under labourer, and the social realism theory, as the explanatory program, allows both for the understanding and the ESD explanations as the interplay of systems at a particular point in time and space. The people inherit the conditions which aren't of their own making. As such, the present is always constituted from historical and social relations. For the future to possibly change for the better, that takes place through reflexivity and human action. Therefore, so surmise social realist-oriented scholars, problem solving should entail the ability to engage the present in reflexive-dialectical processes which can allow for transformative agency to emerge.

2.4 Implications for the Study

Therefore, on the basis of the latter three descriptive points about the need for a philosophical grounding the ideal conceptual framework is anchored on the following three methodological imperatives,

- Explanation through mechanisms (Diagram 1). While ESD values, norms and standards existed in the domain of the real, such values couldn't be adequately be actualised and thus be observed and experienced,
- Treating structure, culture, and agency as analytically distinct but related (Diagram 2). In this way, thinking of ESD practices as the interplays of roles, with values, and with how such values can be enacted allows for deepening the conversations and expanding the dialogues so required of the open and complex social systems, and
- Acknowledging the ontological significance of "becoming" in any case study that seeks to be anchored on transcendentalism (the account for the objects which might be real but remain dormant in the domain of the real and thus remain intransitive).

3. Case Study Context and Dialectical Relations in Practice

3.1 The Institutional Setting

In one case of a close study in a university of technology/applied sciences in South Africa, the study examines a South African university of technology where four faculties run discrete entrepreneurship initiatives coordinated by a central Unit for Entrepreneurship and Innovation. Internal evaluations revealed fragmentation, with faculties operating in isolation and the Coordinating Unit lacking direct authority over faculty decisions. The Annual Report (CUT, 2026) by the institutional technology transfer unit shed more light on the status of entrepreneurship education (Diagram 1), as indicated in the following extract,

"CUT significantly strengthened CUT's intellectual property (IP) pipeline. A total of 14 NIPMO-actionable intellectual property (IP) disclosures were recorded, exceeding the annual target of 10. These disclosures spanned diverse domains including medical devices, environmental analytics, agri-biotechnology, energy systems, digital platforms, and design-driven innovations. While predominantly early-stage in nature, the portfolio reflects improved disclosure quality, clearer protection pathways, and stronger alignment with real-world needs"

However, the same report moaned about some forms of resistance, whereby the faculty complained about the laborious nature of ESD practices as required for the institutional strategic plan 2026-2026.

3.2 Dialectical Relations Between Practice and Research

Analysis using Archer's (1995) morphogenetic approach identified structural conditioning through funding models and epistemic norms, social interaction through reflexive deliberations among staff, and partial structural elaboration where hybrid practices emerged in some faculties but not others. While both the Centre Enterprise and Entrepreneurial Studies (CEES) and Technology Transfer Unit (TTU) seemed to be responsible for semi- and central coordination, respectively, that approach remained peripheral to other issues per the analysis about how SDGs still indicated some enduring inconsistencies and glaring lacks. The two SDGs alluded to (about Land and Water) indicate the potential for ESD for creative economies, from the periphery to the center of academic identities (beliefs, norms and standards).

3.3 Toward a Conceptualization of "Becoming"

In a critical realist oriented study/practice, moments of transformation are characterized by stratified interventions, causal efficacy, and emergence, suggesting that explicit engagement of the practice-research dialectic can enable generative change. In the social world of critical realism as a philosophy (Diagram 2) and the social realism as an explanatory program (Diagram 3), such would be a long and sometimes a contradictory process in open and complex social system. For example, the Annual Report by the Technology Transfer Unit (CUT, 2026) recommended that there is a need for this Office to work closely with the Product Development Technology Station, especially in the Disability Portfolio, by upscaling the efforts for inclusive innovation. Such a commitment means developing of social order, whereby leadership, management and governance systems challenge their ideological positions about the academic project (Section 5 discusses this point as practical implications about the Framework).

3.4 Methodology

Research Design: A qualitative, single-case study design informed by critical realism and the morphogenetic approach of social realism was adopted. Critical realism allows explanation through causal mechanisms in stratified, open, and emergent social reality (Bhaskar, 2008; Archer, 1995) (ref point ABC above).

Data Collection: Data were collected between 2022 and 2025 through documentary analysis of strategic plans and reports, 24 semi-structured interviews with faculty deans, program managers, academics, and coordinating unit staff, and observational data from cross-faculty meetings and workshops. Ethical approval and informed consent were obtained, and data were anonymized.

Data Analysis: Analysis followed a retroductive logic. Data were coded descriptively, decomposed into structure, culture, and agency using Archer's (1995) framework, and retroductively analysed to hypothesize underlying mechanisms. NVivo 14 was used for coding and memo writing. Triangulation and member checking enhanced validity.

Positionality and Reflexivity: The researcher maintained an external, non-managerial position and used reflexive journaling to monitor theoretical influence on interpretation.

Limitations: The single-case design limits statistical generalizability but supports theoretical generalization. Reliance on self-reported data was mitigated through triangulation.

4. A Conceptual Framework for the Dialectical Relations of Entrepreneurship Skills Development

Emergent from the sections on philosophical grounding: transcendentalism and critical realism, and also per diagrams 1 & 1, a conceptual framework would therefore reflect the constituent elements which are anchored on the critical realist perspective, not only as a practice but also as potential research frontiers. Such a framework needs to reflect not only what is practised as the ESD ecosystem at the dimensions of structural system, and further of cultural system (experiential learning) and of human system (entrepreneurial competences) but also what remains inadequately accounted for as research frontiers.

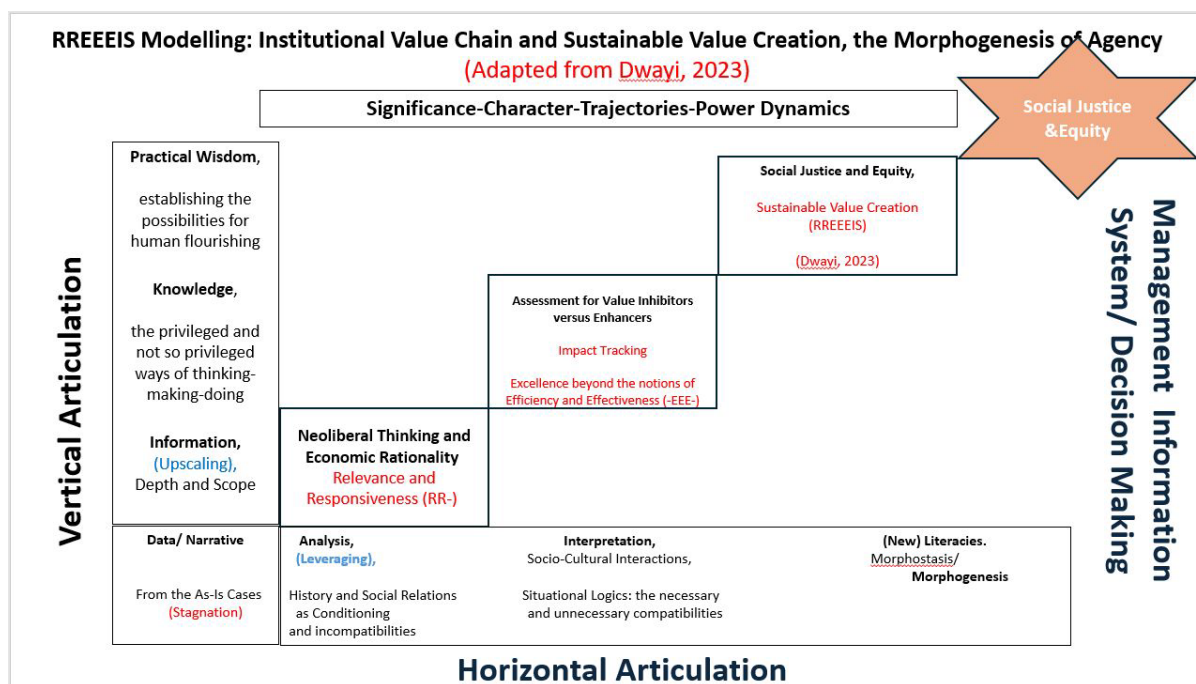


Figure 1: RREEIS Modelling, adapted from Dwayi, 2023, Reimagining Corporate Social Responsibility in the idea of university).

Drawing on RREEIS modelling (Diagram 3) allows for thinking about ESD practices as the field of both study and of research in multi-dimensional ways:

- Horizontal articulation (top side) reflects what could be ESD practices, and thus, research frontiers, as the point of significance where the ESD field can be understood as the enabling system for higher education transformation. Such significance, while necessary, seems to be constrained at the point of the character, for example, the academic project (teaching and learning, research and innovation, and community engagement), and thus frustrating the efforts which should allow for new trajectories about human resource development. At the centre of these constraints are power dynamics whose complexity call for understanding and explanation in contemporary perspectives. The flip side to the latter, still at horizontal articulation (bottom side) is that very narratives that conceptualise an entrepreneurial university may have to be problematised by critiquing the mainstreamed forms of interpretation, and thus calling for contemporary analysis that must lead to new literacies the field both as a terrain of study/research and of practice.
- Vertical articulation (left side), both the significance and the narratives (horizontal articulation) call for deepening the ESD practices in two ways. Firstly as the forms of data sets about ESD practices, further to how such data is constituted as information, understood as knowledge and further can be acted upon as practical wisdom where ESD is the enabling mechanism for human resource development. Critical about the latter will thus be the role of actors (academic leadership, management systems and governance structures) in engaging data as management information systems for effective decision making (right side).
- However, both the horizontal and vertical articulation points, while necessary, don't go far enough to explain the complexity of open and social systems about ESD practices, hence the need to refocus on the diagonal articulation (how this dimensions finally allows for ESD as the research frontiers).

Engaging ESD practices in the diagonal domain allows for a progressive step in unlocking what could be the stagnation points; in what should ideally be the institutional value chain, where value inhibitions can be translated into enhancers. Value enhancement therefore requires the identification of the points of leveraging and upscaling in flexible and dynamic ways, further to both the breadth and depth about the subject. Hence, the need for a conceptual framework that draws on transcendentalism/critical humanistic perspectives, Sections 2 and 3 of this article) about the business and management practices. Such a framework would have to be quite explicit about the practical implications of the transformation project in higher education in South Africa, in

particular, since most institutions are embarking on their first year of the institutional strategic plans towards Vision 2030.

4.1 RREEIS Modelling Allows for Understanding the Core Components

The narrative element in the RREEIS model (bottom side in Diagram 3) indicated challenging cases of stagnation and the need for moments of leveraging and upscaling. Institutional narratives relied on surface explanations such as “leadership commitment” or “lack of resources,” obscuring deeper mechanisms like misaligned incentives and epistemic hierarchies. Therefore, for such contexts, a dynamic and viable framework would comprise of the following four interdependent domains:

- a. **Ontological Conditions:** As indicated in Diagram 3, the top side about horizontal articulation would call for a conceptual shift (new ways of thinking-making-doing) about ESD as areas of practice and of research if the transformative outcomes remain the idea. These shifts could be from static “being” to the (re)generative mechanisms about “becoming,” incorporating indigenous knowledge and creative economies, for example. Such shifts should not only entail the breadth about ESD practices, but the deepening of ESD practices as scholarship by engaging the nexus of theory and practice in more structured and systemic ways.
- b. **Structural-Cultural Conditions:** The systemic and structural ways would refer not only about the ESD practices at the point of academic leadership (research about ESD practices), but the requisite management systems (policies and strategies) and governance structures (monitoring and oversight functions at institutional levels. The latter would entail a kind of research that critiques the incentives, epistemic hierarchies, and reflexive spaces that enable or constrain practice.
- c. **Agential Processes:** The deepening of academic leadership about ESD practices could entail such aspects as the identity and significance dimensions about Agency and further in terms of professionalism about the fields, for example, an analysis of reflexive agency as exercised by managers, academics, students, etc.
- d. **Dialectical Interface (emergence per Diagram 1, and as diagonal articulation):** This is the dimension which would finally make RREEIS Modelling to come alive but in dynamic ways typical of open and complex social systems. The ongoing, the implicit assumptions of structure, culture and agency in the ESD field as the areas of study/research and of practice. This would entails what the ESD practices are, can be and cannot be, and how to potentially resolve the disjuncture and discrepancies as the dialectical relationship about entrepreneurship with science, technology and innovation. That approach then presents the opportunities for the integration of practice and research through retroduction, reflexive feedback, and co-production in more pronounced and explicit ways.

4.2 Propositions: RR-EEE-I-S Modelling

Therefore, RR-EEE-I-S modelling as the platform/conceptual framework for ESD practices and research allows for internal coherence in four ways,

- a. According to the Relevance and Responsiveness dimensions, effectiveness increases when practices shift from a static “being” to a generative “becoming.” Both the practice and research domains (diagrams 1 and 2) allow for the two questions: Relevance to What (knowledge) and Responsiveness to Whom (beneficiaries)? The answer to the two questions then allow for the kinds of ESD practices which can accommodate both not only historical disadvantage but the new realms of possibilities as research frontiers. RR-
- b. Thinking of the Excellence dimension as the practice-research imperative then allows for the ESD interventions beyond both the Effective (doing the right things) and Efficient (doing them in the right ways) dimensions, only when aligned with structural-cultural conditions (read point 4.1. above) RR-EEE-
- c. Further to what can be claimed as the outputs-process-outcomes dimensions, impact as a theory of change/transformation requires reflexive agency at multiple levels of data-information-knowledge-practical wisdom (the left side) and further as management information systems for effective decision making (MISDM) (right side). RR-EEE-I-
- d. As emergent from the first three major steps, sustained improvement therefore depends on an active practice-research interface. RR-EEE-I-S.

4.3 Operationalization

As a major conceptual shift from the shortcomings of surface ontology and its default position and faulty consciousness about ESD practices, the framework, therefore, can be applied in three dynamic ways,

- a. Diagnostic mapping (horizontal articulation),
- b. Mechanism-oriented design (vertical articulation), and
- c. Evaluative retroduction (diagonal articulation).

In that way, aligning with critical realist evaluation methods (Pawson & Tilley, 1997) becomes the better way to test out the framework in practice.

5. The Practical Implications and Conclusion

The paper demonstrates that the gap between aspirations and outcome/reality in entrepreneurship skills development stems from de-ontologised positions and their usual self-referential explanations. As it were, ESD need to be critiqued at three points. Firstly, as a structural system, which is not always the proxy for the actual results. Secondly, at the emerging point about the latter as a cultural system (the domain of values, norms and standards, which will always be contested in power relations and materialist interests). Thirdly, and most importantly, at the dimension of human system, as the progressive choices and the socially reconstructive and emancipatory projects, or the absence of, about the first two dimensions. The practical alternative would thus entail deep ontology with its requisite multi causal, efficacious and emergent properties of structure, culture and agency. Through the lens of critical realism, this paper suggests RREEIS modelling as the alternative framework for understanding entrepreneurship education as a generative, reflexive, and ethically grounded practice that contributes to Vision 2030 and the Sustainable Developmental Goals 4 on quality enhancement and 17 international partnerships. Such a critical realist perspective approach about entrepreneurship practice and research seeks to ensure the value of scholarship in the theory-methodology-practical program chain.

Therefore, thinking in critical realist ways in both the study/research about, and the practice of, entrepreneurship potentially provides an answer to a transcendental question (Section 1). A research project thereof would be about a social realist account about the deep change, which needs to be explained more about the domain of the real (stratification, multi causation, efficacy and emergency) through the interplays of structure, culture and agency (diagram 2. Against the backdrop of the transformation imperatives which can be reflected as a structural system (Strategic Plan 2030, Section 3), and the need for the integrated quality management systems, as a cultural system (the ESD narratives/practices, Section 3), human agency would therefore emerge as the interaction with the latter two social elements in more systematic and structured ways. The human agency would therefore take the practice architecture in the following three dynamic ways, albeit not in a linear order,

- a. Academic Leadership, as the 1st layer of responsibility, the integrated approach about ESD implementation as part of the academic project.
- b. Management Systems, as the 2nd layer of accountability, the Heads of Departments and Deans responsibility, while anchored on the ESD as practice-research, by ensuring that the implementation models per department and faculty are responsive to the institutional policies and strategies. In that way, decision making processes and events, as anchored on data-driven, evidence-based and impact-oriented management information system (vertical articulation on the right side of Diagram 3), are not only efficient and effective, but anchored on notions of excellence in ways that are context-specific and actor-driven.
- c. Governance Structure, as the 2nd layer of fiduciary functions, in relation to the terms of reference by the Technology Transfer Unit and the ESD practices which must be regulated per institutional policies and strategies. It is at this point of power dynamics that a powerful conceptual framework (Diagram 3) then emerges about ESD practices as the practical wisdom about the idea of university education as impactful and sustainable.

5.1 Implications for Institutional Practice

Institutions should redesign their governance structures in order to create cross-faculty reflexive forums, align incentives with generative mechanisms, integrate indigenous knowledge as core practice, and build reflexive agency through professional development.

5.2 Implications for Policy and the SDGs

The framework supports SDG 4 by grounding quality in reflexive capacity and SDG 17 by clarifying the conditions for effective partnerships. It offers an alternative to isomorphic mimicry in higher education transformation.

5.3 Limitations and Future Research

This was a close up study focusing on a single university type in South Africa, a University of Technology/Applied Sciences. As briefly alluded to in Section 3 on institutional setting, studies that seem to refer on the institutional challenges where the researcher is writing from insider perspective will always pose the risk of ethical and methodological challenges. Such challenges, normally entail how to negotiate access, manage competing data sources, and interrogate one's own positionality.

The framework itself is yet to be subjected to some iterative cycles in more context-specific and actor-driven ways. Such ways are already made significant by means of systematic reviews and meta-analysis studies to which RREEIS modelling could add value. For example, when the left side about the leadership, management and governance roles can be deepened in the form of the data-information-knowledge-practical wisdom dimensions, adopting digital technologies as part of the right side of management information systems for effective decision making would allow for more expanded research terrains and subsequent developmental practices, especially in the context of reimagining the global south epistemologies. For example, the study of the indigenous knowledge systems for creative economies remains an uncharted terrain against the advent of digital technologies for an academic project which might have to be based on an elaborative logic and for a more socially embedded university of technology/applied sciences. by the left side, a critique of the ESD cases in DIKPW dimensions as scholarship advancement. Further research is also needed to test the framework across institutional types and to develop instruments for diagnosing the four domains. As discussed in this paper by drawing from a critical realist perspective, longitudinal studies using the morphogenetic approach are recommended.

Ethics Declaration

The project followed the Ethical Clearance procedures including the institutional performance system which articulates about the author's annual performance plans where research output is a key performance indicator.

AI Declaration

I can confirm that AI tools were used to generate the broad outline of the paper to understand the main aspects about the topic before the write up could be broadened from relevant literatures for advancement of scholarship.

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