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Producing green knowledge and innovation-A framework for Greening Universities.

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To achieve higher living standards and well-being, most countries operate on some fundamentals of neoclassical economic theory that determine the country's output level by the free-market forces of demand and supply. However, neo-classical economic theory does not recognize the importance of natural resources and sustainability/natural capital beyond the market forces. They believe that natural resources are finite, but a decrease in natural resources is offset by an increase of (economic) capital produced by the market in never-ending economic growth (Mulder & van den Bergh, 2008). This tenet operates antagonistically in the free market. It creates a division between the natural and economic capital, protecting economic capital by legal and ethical standards not to reduce it after it is employed, but at the cost of natural capital.

In contrast, natural capital is not strictly protected but is allowed to be protected merely by the neoclassical economic model's invisible hand (Storm, 2017). The invisible hand is an unseen or unobservable mechanism. It has looked at natural capital with a limited literal meaning but not the metaphorical sense of natural capital, God's hand since the first industrial revolution. As a result, the planet cannot be resilient to the distortions caused by anthropogenic developmental activities. Hence, the prudential anthropocentric view in the Knowledge-Based Economy (KBES) is accepted and respected to infuse human values (ethical human capital) to protect natural capital.

Hence, the endogenous factor, knowledge and innovation produced with ethical human capital in KBES enable to address global issues codified as 17 Sustainable Development Goals (SDGs). In this mission, universities as organizations, which are leaders, models, and catalysts in education and innovations (Clarke & Kouri, 2009; Moore, 2005), are expected to play a vital role leading by example in promoting sustainable development practices at their universities (Amaral et al., 2015). In this regard, universities possess a unique place for catalysts and leaders to foster global sustainability because of resources and their influences (Finlay & Massey, 2012). For example, China has more than 2198 universities and colleges with more than twenty-five million students (Yuan et al., 2013).

In the endeavor of producing knowledge and innovation needed for sustainable development called green knowledge and innovation, the quintuple helix innovation model (Carayannis & Campbell, 2010) is the best among other innovation models that enable universities to produce green knowledge and innovation needed for sustainable development in KBES. However, the knowledge and innovation produced by universities are not green currently. The root cause behind the unsustainability of universities relates to the conventional structure (Moremi et al., 2015) and their conventional disciplinary boundaries (Filho et al., 2018; Savelyeva et al., 2012).

As a result, the non-green conventional structure of universities slows the adoption of the Quintuple Helix innovation model. The incompatibility's root cause is that the quintuple helix innovation model has been designed to produce collaborative, interdisciplinary, and transdisciplinary green knowledge and innovation at the meso-level (or even macro-level). It does not focus on how a university at the micro-level enables the production of green knowledge and innovation with its existing and conventional structure/framework.

Hence, this study designed a blueprint for transforming unsustainable universities into green universities. The blueprint guides how to reconfigure eight processes and is integrated to produce green knowledge and innovation in the mainstream production process of universities (Liyanage & Netswera, 2021). Consequently, the quintuple helix Innovation Model enables universities to produce green knowledge and innovation with Mode 1, Mode 2, Mode 3, Triple Helix Innovation Model, and Quadruple Helix Innovation Model.

Biography

Shantha Indrajith Hikkaduwa Liyanage is a senior lecturer at Botho University in Botswana. He obtained his Ph.D. degree in Economic and Management Sciences from the North-West University, South Africa. His MBA post-graduate degree is from the University of Wales, United Kingdom. He obtained his LLB bachelor's degree from the University of Colombo, Sri Lanka. His experiences blend with academia and the industry in various capacities. They include practicing lawyer, corporate director, Municipal councilor & Manager, and currently a senior lecturer. He has authored four books for the Institute of Chartered Accountants of Sri Lanka (ICA-SL) & the Association of Accounting Technicians of Sri Lanka (AAT-SL). Springer Nature is taking final steps to print his book titled "Producing Green Knowledge and Innovation-A Framework for Greening Universities." He has presented twenty conference papers and published twelve research papers at international conferences and journals.