Business Intelligent to a Decision Support Tool for Green Entrepreneurship: Meso and Macro Regions

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Abstract : The circular economy (CE) has gained increased awareness among academics, businesses, and decision-makers as it stimulates resource circularity in the production and consumption systems. A large epistemological study has explored the principles of CE, but scant attention eagerly focused on analysing how CE is evaluated, consented to, and enforced using economic metabolism data and business intelligent framework. Economic metabolism involves the ongoing exchange of materials and energy within and across socio-economic systems and requires the assessment of vast amounts of data to provide quantitative analysis related to effective resource management. Limited concern, the present work has focused on the regional flows pilot region from Portugal. By addressing this gap, this study aims to promote eco-innovation and sustainability in the regions of Intermunicipal Communities Região de Coimbra, Viseu Dão Lafões and Beiras e Serra da Estrela, using this data to find precise synergies in terms of material flows and give companies a competitive advantage in form of valuable waste destinations, access to new resources and new markets, cost reduction and risk sharing benefits. In our work, emphasis on applying artificial intelligence (AI) and, more specifically, on implementing state-of-the-art deep learning algorithms is placed, contributing to construction a business intelligent approach. With the emergence of new approaches generally highlighted under the sub-heading of AI and machine learning (ML), the methods for statistical analysis of complex and uncertain production systems are facing significant changes. Therefore, various definitions of AI and its differences from traditional statistics are presented, and furthermore, ML is introduced to identify its place in data science and the differences in topics such as big data analytics and in production problems that using AI and ML are identified. A lifecycle-based approach is then taken to analyse the use of different methods in each phase to identify the most useful technologies and unifying attributes of AI in manufacturing. Most of macroeconomic metabolisms models are mainly direct to contexts of large metropolis, neglecting rural territories, so within this project, a dynamic decision support model coupled with artificial intelligence tools and information platforms will be developed, focused on the reality of these transition zones between the rural and urban. Thus, a real decision support tool is under development, which will surpass the scientific developments carried out to date and will allow to overcome imitations related to the availability and reliability of data.