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CENTROALGORITMI

Collaborative networks evaluation model to support a Sustainable business partner integration

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Today, companies face major challenges brought by increasing globalization. One of the important factors associated with the challenges that companies face at the moment is portrayed in sustainability. Corporate sustainability is the ability of a company to guide its functions and activities, thus creating long-term value, while creating social and environmental benefits for its customers. At present, it is clear that the success of a business is not just based on its ability to conceive profits without thinking about the impacts of its activity. Sustainability is a reality at a social, business and governmental level. It can be said that collaborative networks are an important means to help companies in this process. It should be noted that collaborative networks (CN) are important as a foundation for the interconnection between entities and tools for the realization of competitive benefits.

Currently, in the nowadays extremely exigent I4.0 oriented context, more robust and profound transformative changes are needed to foster a serious and deeper integration and interrelation between Companies and stakeholders, which tend to be increasingly more distributed and correlated in extended networks and distributed manufacturing systems. Therefore, due to variations on demand, and sometimes individualized demands requested, along with remaining exigencies and requisites currently imposed by I4.0, Companies face big challenges nowadays. These challenges are related to varying set of issues, for instance related to production capacity limits, along with other relevant problems to be overcome, while needing to respond adequately to the customers need, since they are designed for a certain limited level of production and flexibility, with closely-defined, strict or limited production innovation potential. Thus, Companies are requiring to further extend its capabilities, which can be ensured by joining together in CN to enable to improve its innovative level, by sharing resources, approaches, technologies, challenges, and business opportunities, based on appropriate business models, to meet the currently challenges underlying I4.0 [1].

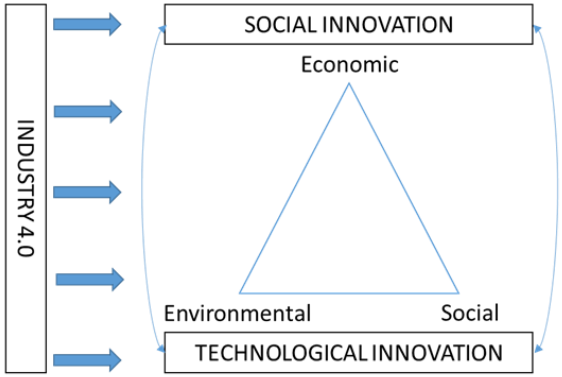
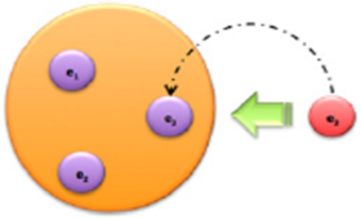


Fig. 1 Sustainable structure applicable to Industry 4 (Morrar, R. and Husam Arman, H. (2017)) [4]

The World Commission on Environment Development defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs [2]. Putnik and Ávila in their special issue of governance and sustainability [3] reinforce the importance of the theme and even give the character of ubiquity in the word 'sustainability'. In [4] Varela et al do further reinforce the importance of Sustainability in the context of I4.0 for organizations.



(a) Single enterprise affiliation decision

This work aims at the development of a model for evaluating the potential benefits that can arise, at different levels, and based on a widened set of characteristics and corresponding criteria, for evaluating benefits, along with difficulties that Companies may face when intending a CN, at the same time sustainability, and I4.0 issues are considered.

References: **[1]** World Commissionon Environmentand Development (WCED). (1987) Our Common Future; The Brundtland Report;Oxford University Press: Oxford, UK.; **[2]** Putnik, G.; Ávila, P. (2016) Governance and Sustainability (Special Issue Editorial). Int. J. Ind. Syst. Eng. 24,137–143. ; **[3]** Varela, L., Araújo, A., Ávila, P., Castro, H., & Putnik, G. (2019). Evaluation of the Relation between Lean Manufacturing, Industry 4.0, and Sustainability. Sustainability, 11(5), 1439. MDPI.; **[4]** Morrar, R., Arman, H. and Mousa, S. (2017). The Fourth Industrial Revolution (Industry 4.0): A Social Innovation Perspective. Technology Innovation Management Review.