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Firm Model Design from the Perspective of Sustainable Circular Economy Paradigm

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Abstract: As well known the sustainable circular economy is a regenerative oriented paradigm for transforming the waste into a valuable resource. In this framework, the business model appears in the form of an network architecture design that relates product, service and information flows, various business actors and their roles directed to potential benefits and value meanings, taking into account the technology-push, market-pull and regulatory innovative drivers and the linear and non- linear approaches to emphasize the importance of the connections between intentions and consequences as well as the complexity of social relationships between firm, consumers, investors and public authorities.

Keywords: Sustainable Development; Circular Economy; Business Model Design

1. Introduction- The Perspective of Sustainable Circular Economy Paradigm

As well known, the sustainable development paradigm is related to the socio economic relationships determinism between natural environment, society and economy, meaning on one hand freedom and action on marketplace and its consequences (utility, efficiency profit but also greedy and environmental pollution) and on the other hand the social institutional construction defining the complex dynamics of human society system.

Thus, taking into account the Brundtland, Rio and Kyoto international conference documents, sustainable development requires a process of learning design based on a linear cost benefit as well as on a nonlinear multidisciplinary models at different society levels –public authorities and economic agents.

In the same time, from the perspective of some classical writers such as Georges Bataille, Kenneth E. Boulding, M. Braungart and W. Mc Donough the recent literature inspired by the Ellen Macarthur Foundation publications ,circular economy is an economic regeneration oriented paradigm for transforming the different categories of wastes(material, managerial, socio educational and spiritual) into a valuable resource taking into account three main characteristics- circularity, cascade effects, and the ideal of zero sum society. This is emphasized both through so called the Bio-Based Heliocentric

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Economy model and the Socio-Industrial Space Ship approach to Illustrate the importance of thinking about action spillovers consequences as well as to the behavioral nature of society habitus.

In this framework, the sustainable circular economy could be presented in the form of a possible conceptual network relationships model between economy, society and natural environment that relates some elements like **oikos** (techno-economic reality-utility, efficiency, profit, within the endogenous innovation black box model), **habitus**(official and non-official social norms within the adaptive complexity systemic approach), **paideia** (knowledge education and culture, within a continuous development process of human character and personality),and **noesis** (taking into account the psychological, philosophical and theological concepts of human being as an energetic center of character for the human personality (the Romanian psychologist Constantin Rădulescu Motru) a sincere searcher of truth (like in in the workings of Romanian philosopher Constantin Noica), to realize the importance of a deep ecology philosophic principle more important than the adaptive research principle "savoir c'est prevoir" (as stated the environmental Norwegian philosopher Arne Naess) and the last but not the least to consider the fundamental characteristic of nature and human being as an ex nihilo (from nothing) God's creation, within the Greek Byzantine Orthodox Church principle of Metanoia-a continuous immanent and transcendent restauration of human person's material somatic metabolism(soma meaning body), mind and conscience- within the Liturgy mystical path of katharsis- theoria and theosis as a way of respecting and working for a better understanding of relationships between different peoples and their economic, social and cultural specific pattern. (Bruce V. Foltz, 2014) (Gabriela Piciu, 2014).

On this basis, the sustainable circular economy takes a concrete form of 5 possible circles- natural-material, structural-economic, efficient-managerial, psyho-social and spiritual – emphasizing that the circle idea could be represented both as a successions of feedback flows- learning impulses between intentional rationality and their future consequences impact as well as a result of a repetition routine activities in the way of an social adaptive social learning process.

2. Firm Model Design

Thus the topic of the presentation is oriented to the specific managerial circle: to take care of so called managerial death wastes or to develop a business model design and its mission -to create the opportunities to transform a new idea in a marketable value, imagined as an "innovation flower" picture with concept, product organizational and marketing petals stimulated by the "water" of technology push, market pull and regulation stimulus.

This means a regeneration process of firm management in a complex network that implies relationships between various actors implied(employers, employees, investors, consumers, public authorities) their socio-economic roles, the potential of utility, efficiency ,financial benefits, and some cultural meanings, to create a new firm image - a professional brand product as well as a social actor picture implied into the triple bottom line or triple top line manifestation forms of global sustainable development strategy.

From this perspective the literature illustrates both conceptual and practical perspectives of model firm design related to the future development of firm, its tangible and intangible assets areas, taking into account both the quantitative cost benefit and qualitative socio cultural analysis, with the objective to stimulate mentality changing –to do better what the firm already knows, or doing what never did ever before.

In this framework from a theoretic point of view the business model design is centered on agent rationality but opened to social internal and external social cooperation networks as a necessity for surviving and development in a dynamic competition environment.

As mentioned by some researchers like Eric G. Olson (2010) or Hidde Statema (2011) the firm model design could mean a relation between creativity and a systematic work elements:

- analysis and documentation (collect, select and structure the most relevant information to deduct the possible direct or indirect implications but could appear failures due to a sub estimation of influence factors);

- genesis and modelling (meaning to create a radical or gradual mentality changing);

- synthesis, implementation and control (meaning a continuous improvement process of research and practical activities as well as the behavior internal rules).

From the practical point of view these aspects are illustrated in the linear model presented by Pahl and Beitz (1984) as well as in the social convergent synthesis activities model created by Roozenburg and Eekels (1998).

Based on this research, the business model illustrate in practice two different ways of classification.

On one hand is about the multiple forms of innovative methods related to the necessity of creativity and development of new products. In this framework as mentioned by A. Reinders, JC. Diehl; Han Brezet (2013) the business model developed some innovative methods such as:

- ***Platform-Driven Product Development*** with the main product platform characteristics of modularity, connecting interfaces, and common standards;

- ***Delft Innovation Model*** known as the innovation phase model, that combine the intrinsic value of technology with opportunities in the market within four phases: a strategy formulation stage, a design brief phase, a product development phase, and a product launch and use phase, as well as a matrix of internal strengths of technology and external opportunities related to the market subject or other stakeholders needs, dimension, segmentation, trends of atractivity;

- ***Technology Road Mapping*** as a correlation between identified market needs and trends with existing and emerging technologies for a specific industry sector to cover 3-10 years and are used in strategic product planning, research planning, and business planning (Deuten, Rip, & Jelsma,1997).

- ***Design and Styling of Future Products*** as an aesthetic measure of market tendencies;

- ***Constructive Technology Assessment*** as new related rules and standards, approved by authorities and must meet with acceptance from consumers;

- ***Journey Method of Analysis*** related to evaluate the potential of new products, new technologies, new situations as mentioned by A. Rip (2010);

- ***Risk-Diagnosing Methodology*** to identify and evaluate technological, organizational, and business risk in product innovation related to product family and brand positioning, technology, manufacturing, intellectual property, supply chain and sourcing, consumer acceptance, project management, public acceptance, screening and appraisal, trade customers, competitors, and commercial viability.

On the other hand is about the distinction between linear and nonlinear models, between deductive specialization and inductive multidisciplinary research. From this perspective it is to mention he difference between the linear Six Sigma model and multidimensional Triz method:

-in the ***Six Sigma model*** developed by Japan firm Toyota is important that the linear flow oriented to a zero waste ideal is based on the basic principle of Kaizen (mind changing) oriented to customer center of business activity and daily work improvement within a network algorithm relationships between so called DMAIC and DMADV matrixes (Define, Measure, Analysis, Improvement, and Control) versus (Define, Measure, Analysis, Design and Verification).

The Six Sigma model was lately applied to evaluation of environmental impact in so called Green Sigma to evaluate the firm performance potential from the perspective of environmental accounting flows related to so called direct , indirect, processual of environmental space characteristics oriented to apply the principle of traditional Six Sigma model in the environmental case - the transition from called LCV model (Listen to the Consumer's Voice) to the LEV(Listen to the Environment Voice) to expand the regeneration portfolio of natural resources or to diminish the sound pollution.

-***TRIZ Model*** or so called the theory of theory of inventive problem solving based on an inductive analysis of multiple situations as well as taking into account an specific algorithm classification based on discovering the matrix of physical, technical and administrative contradictions related to physical inputs, technical parameters, or the difference between administrative bureaucratic necessity and possibility.

In conclusion firm model design illustrates a complex network of connections between internal and external firm environment, in the form of a managerial circle of a sustainable circular economy perspective, taking into account other possible circles that define this approach of economic sustainable development (material, structural, socio-educational and spiritual).

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4. Bibliography

Altshuller, Genrich (1996). And Suddenly the Inventor Appeared - TRIZ, the Theory of Inventive Problem Solving", Translated By Lev Shulyak.

Azevedo, Garrido-Susana; Brandenburg, Marcus & others (2014). Eco-Innovation and the Development of Business Models-Lessons from Experience and New Frontiers in Theory and Practice. Greening of Industry Networks Studies Vol. 2, *Springer International Publishing Switzerland.*

Bermejo, Roberto (2014). *Handbook for a Sustainable Economy*. Springer Science+Business Media Dordrecht, pp. 269-289.

Boulding, Kenneth E (1966). *The Economics of the Coming Spaceship Earth.* In H. Jarrett (ed.) (1966). *Environmental Quality in a Growing Economy.* Baltimore, MD: Resources for the Future/Johns Hopkins University Press.

Braungart, M.; Mc Donough W. (2002). *Cradle-to-Cradle: Rethinking the Way to Make Things*. San Francisco: Ed. North Point Press.

Carlgren, Lisa (2013). *Design thinking as an Enabler of Innovation: Exploring the concept and its relation to building innovation capabilities*. Division of Innovation Engineering and Management, Department of Technology Management and Economics, Chalmers University of Technology, http://publications.lib.chalmers.se/records/fulltext/185362/185362.pdf.

Charonis, George-Konstantinos (2012). *Degrowth, steady state economics and the circular economy: three distinct increasingly converging alternative discourses to economic growth for achieving environmental sustainability and social equity*, http://sustainabilityconference2012.weaconferences.net/the-papers/

http://www.ub.edu/prometheus21/articulos/obsprometheus/BOULDING.pdf.

Deuten, J.; Rip, A. & Jelsma, J. (1997). Societal embedding and product creation management. *Technol. Anal. Strateg*., 9 (2), 131-148.

Elmoselhy, Salah A.M (2016). *Design for Profitability Guidelines to Cost Effectively Manage the Development Process of Complex Products*. CRC Press, Taylor & Francis Group, pp. 4-35.

Foltz, Bruce V. (2014). *The Poetics of Nature - Environmental Philosophy and the Holy Beauty of the Visible*. New York: Fordham University Press.

Statema, Hide & Eric, G. (2011). *Business Models in Eco-Innovations. An explorative study, master thesis*. file:///C:/Users/bubulac/AppData/Local/Temp/Statema,%20Hidde%20_276943_.pdf.

Mathison, Bevetly Lynn (2008). *Oikos, Habitus, Paideia: A Call to Ecological Mindedness in the Ec(h)o of Consumerism.* Alberta: University Of Calgary Calgary.

http://www.collectionscanada.gc.ca/obj/thesescanada/vol2/002/NR44357.PDF.

Noica, Constantin (1995). *Schiţă pentru Istoria Cum e cu Putinţă Ceva Nou/A sketch for the history as it is with a little something new.* Bucharest: Humanitas.
http://monoskop.org/images/1/1e/Noica_Constantin_Schita_pentru_istoria_lui_Cum_e_cu_putinta_ceva_nou_1995.pdf.

Orloff, Michael A. (2012). *Modern TRIZ A Practical Course with Easy TRIZ Technology*. Berlin Heidelberg: Springer-Verlag

Olson, Eric G. (2010). *Handbook for Environmentally Responsible and Profitable Business Practices*. New Jersey: Wharton School Publishing, Upper Saddle River, pp. 85-107.

Popa, Mihai (2012). *Fiinţa Istorică si Conceptul De Circularitate in Filosofia Românească Interbelică, Studii De Teoria Categoriilor/The History Being and concept circulating in the Philosophy of interwar Romania, Studies of the category theory,* Volume IV. Bucharest: Editura Academiei Române. http://www.institutuldefilosofie.ro/e107_files/downloads/Studii%20de%20teoria%20categoriilor/Mihai%20POPA%20-%20Fiinta%20istorica%20si%20conceptul%20de%20circularitate.pdf.

Piciu, Gabriela & Manolescu, Gheorghe (coord.) (2011). Economics and Environment-A Strategic, Integrative and Convergent Approach of Financial Flows for an Industrial Regnerative Economics. *Financial Studies No. 1*, Research Centre of Financial and Monetary Related Problems, Bucharest, ftp://www.ipe.ro/RePEc/vls/vls_pdf/vol15i1p210-241.pdf.

Pahl, G. & Beitz, W. (1984). *Engineering Design*. London: Design Council.

Piciu, Gabriela (coord.) (2014). *The impact of Circular Economy Theory on Natural Resources Efficiency in the Context of Romania's Sustainable Development and Natural Environment Protection Strategy*. Research Center of Financial and Monetary Research Problems, Victor Slăvescu.

Rădulescu, Motru Constantin (1930). *Puterea Sufletească/The power of the soul.* Bucharest: Editura Casa Şcoalelor. file:///C:/Users/bubulac/AppData/Local/Temp/BCUCLUJ_FP_192906_1908_003_001.pdf.

Reinders, Angele Diehl & Jan. Carel Brezet, Han (2013). *The Power of Design Product Innovation in Sustainable Energy Technologies*. N.Y.: John Wiley & Sons Ltd.

Rip, A. (2010). Processes of technological innovation in context - and their modulation. *Relational Practices, Participative Organizing (Advanced Series in Management, Volume 7)* (ed. C. Steyaert and B. Van Looy). Bingley, UK: Emerald Group Publishing Limited, pp. 199-217.

Roozenburg, N.F.M. & Eekels, J. (1998). *Productontwerpen, Structuur en Methoden/Product Design, Structure and Methods*. Utrecht: Lemma.

Zerfass, Ansgar & Huck, Simone (2009). *Inovaţie, comunicare şi leadership: noi evoluţii în comunicarea strategică/Innovation, Communication and Leadership: New Developments in Strategic Communication,* http://www.pr-romania.ro/articole/comunicarea-inovatiei/113-inovatie-comunicare-si-leadership-noi-evolutii-in-comunicarea-strategica.html.

Zwier**,** Jochem Blok and others (2015). The Ideal of a Zero-Waste Humanity: Philosophical Reflections on the Demand for a Bio-Based Economy. *Journal of Agricultural and Environmental Ethics*, 2015, Volume 28, Issue 2, pp. 353-374 http://download.springer.com/static/pdf/392/.

Ellen Macarthur, *Foundation towards the Circular Economy*, Vol. 1, 2, 3, http://www.ellenmacarthurfoundation.org/publications.

European Commission (2014). *Towards a circular economy: A zero waste programme for Europe*, http://ec.europa.eu/environment/circular-economy/pdf/circular-economy-communication.pdf.

Tipuri de gandire, Psihologie/Types of thinking, psychology, http://www.scritub.com/sociologie/psihologie/Tipuri-de-gandire22654.php.

The Europe 2020 Competitiveness Report Building a More Competitive Europe, 2014 Edition, http://www3.weforum.org/docs/WEF_Europe2020_CompetitivenessReport_2014.pdf.

European Commission Consultation on the EU 2020 strategy Suez Environment's Contribution (2014) http://ec.europa.eu/europe2020/pdf/contributions/secontributioneu2020strategy.pdf.

The Environmental Professional's Guide to Lean and Six Sigma (2009). *United States Environmental Protection Agency*, August 2009 www.epa.gov/lean.

Bibliographies du CRDD (2014). *L'économie circulaire, Ministère de l'Écologie, du Développement durable et de l'Énergie/ Circular Economy, Ministry of Ecology, Sustainable Development and Energy*, www.developpement-durable.gouv.fr.