



Social Ingenuity: Scarcity as a Driving Force for Sustainable Innovative Ingenuity

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ABSTRACT

The objective of this article is to highlight a new way of understanding business, such as the concept of social ingenuity and frugal innovation, this new vision forces companies to be more creative, flexible and agile when exploring new opportunities. Based on this strategy, companies not only design new business models aimed at underserved markets, but also redesign traditional processes and models (Espinoza, 2014). In this article, a theoretical and conceptual review on frugal innovation and social ingenuity is conducted. The research is descriptive with a qualitative approach and is developed through a documentary and bibliographic review for the process of elaboration of the theoretical framework about frugal innovation. The result of the documentary review allowed establishing that social ingenuity and frugal innovation seek to make the most of production factors, developing new products or services at low costs and quality, with less use of raw materials, trying to cause the least possible damage to the environment and creating value for society in general.

Keywords: Social ingenuity, Frugal Innovation, Sustainability.

1. Introduction

The internationalization of markets, the vertiginous advance of information and communication technologies, as well as new consumer trends force companies to rethink the way they do things, trying through new and diverse innovation strategies to improve their production systems in order to achieve competitiveness. Currently, many developing countries, including Colombia, not only have to face the globalization of markets, but also have an internal challenge to improve inflation rates that considerably affect society in general, increasing the percentages of poverty, restricting the acquisition of goods and products (Esteban, 2020). In this sense, it is important for emerging economies to look for alternatives that allow them to make the most of the production factors they possess, adapting innovations from other developed markets, optimizing costs without affecting the quality of the product or service.

Thus, new strategies on innovation are being proposed worldwide, among which the concept of frugal innovation stands out, which is an entrepreneurial and sustainable way of creating value with the environment, under the limit of resources, with the capacity to meet the needs for which it was created.

The purpose of the article is to try to identify the main contributions of the application of frugal innovation worldwide and to identify the challenge that the Colombian society has to face the dynamics of scarcity of the environment and the creativity of the Colombian to face the challenges imposed by globalized markets from innovative processes based on the frugal approach. To this end, a documentary review is made regarding the constructs, principles and contributions of the approach related to social ingenuity or frugal innovation, the results of the research contribute to identify the key contributions of the frugal innovation process from a holistic and systemic vision.

With regard to Colombia, the business system has directed its efforts to satisfy the needs of social groups with greater purchasing power (middle and upper class), which are part of the big cities, underestimating the markets formed by the most vulnerable groups in the cities and a large percentage of the rural population, with which there is a gap between the city and the countryside, which is in conditions of poverty, mainly due to the abandonment of

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the State and the armed conflict. (Espinosa, 2014). This situation results in a series of unsatisfied needs, such as quality health services, coverage of public services, access to the financial system, education and communications, among others. This situation is presented as an opportunity for the country, through frugal innovation or social ingenuity, to aim at the country's progress, offering citizens of the national territory, better living conditions, without the need to compromise available resources, ensuring a sustainable country for new generations.

For a better understanding of the study, this document is structured as follows: in section one, this introduction; in section two, the theoretical aspects of frugal innovation are presented; in section three, the methodological aspects of the research are related; in section four, the results are presented; and finally, a reflection on the results is made.

2. Theoretical Framework

All The theoretical study of innovation arises from the analysis made by the Austrian economist Joseph A. Schumpeter, who stated that economic evolution is based on a dynamic process where new technologies replace old ones. Freeman (1986) defines innovation as a process by which existing technology is incorporated together with other inventions with the aim of improving a process, a product or a system. Applied to business processes, Ortiz, et al. (2021), state that today's society has become more organized and familiarized to innovate, leaving aside simple mass production. In such a way that the organizational structure allows the integration of communication channels between each of the actors that influence the organization.

In a globalized world, innovation becomes one of the main tools to improve business performance and competitiveness, the positive impact on productive systems has become one of the main characteristics for the construction of an economy structured on knowledge and creativity. In other words, for economic development to be achieved, it is required that new combinations of productive factors originate, reducing costs and adding value for the customer (Blanco & Baier, 2017). Under that perspective, entrepreneurship is one of the sources of innovation that are not based solely on product development, but focuses on processes that are aimed at satisfying societal needs (Pineda & Manzano, 2018). This growth and improvement of productivity must respond not only to satisfy the needs of the target market, but also to solve social problems.

From this perspective, frugal innovation is born, which, through the efficient use of resources, generates value to the development of goods and services at low costs while maintaining quality. In other words, frugal innovation creates affordable products without affecting quality for low-income groups, using fewer production resources, which makes a significant contribution to sustainability (Radjou, 2012).

According to Pansera, et al. (2017), frugal innovation is due to the interrelation of three dynamics of change, such as technological change that seeks competitive advantage from the generation of new processes and products, as well as social innovation that aims to include the less favored classes and institutional innovation that aims to efficiently adapt institutions to a dynamic global context. On the other hand, for Espinosa (2014), frugal innovation is based on three concepts such as affordability, market knowledge and the creation of value chains, which suggests new products and services that are accessible in price, available, but most importantly, that achieve the objective of solving a real need of society.

In this order of ideas, social innovation, which is considered as a process oriented to solve social problems from the communities involved, combined with frugal innovation, achieves a new product or service, quantifying the impact on society and the environment, solving a social problem, generating value which is distributed throughout society. Under this perspective, Pacheco & Rodriguez (2019), point out that governments and society should aim at an economy that can create value for all, where public and private companies of system B, are socially responsible.

Therefore, there is a need for a systemic leadership of society, where a form of management with a behavioral, situational, transcultural, but especially transformational approach can be evidenced, aimed at changing the way things are being done (González, et al., 2021).

3. Methodology

The present research is of a qualitative documentary type, its purpose is to collect information and select it from the reading of texts, documents, articles, bibliographies, etc. According to Hernández, et al. (2014), documentary research is the process of identifying information and knowledge of reality selectively from bibliographic consultation and other materials, so that the knowledge found can be useful for the purpose of the object of study.

4. Results

All Ingenuity is a manifestation of the human being that allows him to face the adverse dynamics that are constantly generated in the world. Throughout history, man has been able to creatively solve his deepest crises. From this perspective, Albert Einstein points out that "it is in the crisis that inventiveness, discoveries and great strategies are born". In other words, it is necessity that motivates man to change his environment through his ideas. It is then, human creativity the inexhaustible resource, most precious in a world of limited and scarce resources (Huamán, et al., 2014).

Given the contextualized and based on the current conditions of social inequality and multidimensional poverty, which especially affect developing countries and have been raised from the globalization of markets, the rapid and growing technological development and increased competitiveness,

coupled with the demands of a neo-extractivist production system that violates the sustainability of the planet. (Esteban, 2020). It is necessary to rethink the way in which "economic development" is produced and generated in a world of exhaustible and scarce resources, where the increase of the global population exceeds the balance of the ecosystems that support it and puts at risk the sustainability of future generations. (Naciones Unidas – ONU, 2018).

Therefore, the concept of sustainable development must be on the agenda of all governmental entities in the world and especially in the minds of society, if what is intended is to make a positive change towards a balanced global development. It is worth highlighting the leading role of the common citizen in contributing to the paradigm shift, that one can only innovate if one has all the resources to do so. Radjou (2012), NaviRadjou argues that "to solve problems with extremely limited resources, all that is needed is ingenuity... and to see in adversity an opportunity to create value for society at a lower cost, based on the needs posed by limited resources".

Radjou (2012), considers that economic and social value can be created using fewer resources and taking advantage of the abundant resources generated by the environment, which he calls "frugal innovation". For the author, it is not only about producing, but also about doing things in the best way. This approach emphasizes the production of economic solutions to satisfy the different needs of a growing society, which does not have the ability to pay or the purchasing power to access those usually offered by the market (Kanter, 2008) cited by (Pansera, et al., 2017).

Actually, frugal innovation is a new way to explore the creation of solution alternatives to the prevailing needs of the productive system from scarcity; without requiring a large percentage of investment in development and research. (Espinosa, 2014). According to Radjou (2012), it is not necessary to be a genius or have great academic knowledge to create solutions, it is only necessary to have needs that drive the innovative spirit of the human being, that motivates them to rethink the design, rethink processes and traditional models, starting from the basis of available resources and the particularities of the contexts; trying to direct the solutions effectively an unsatisfied society, with low purchasing power.

In the video "Creative problem-solving in the face extreme limits", presented by Radjou (2012), there are three important principles to keep in mind when doing frugal innovation: The first is to simplify in a way that is accessible, the second is to take advantage of widely available resources, and the third is to think horizontally, going back to simplicity, producing in a scalable way through a supply chain distributed in smaller units.

Under this concept, emerging economies have promoted frugal innovation on a large scale. For Radjou (2012), the global South (Africa and South America) have been the pioneers in frugal innovation, thanks to the needs of their environment, which have driven them to create cost-effective solutions with clean energy, providing value to society through their products, creating decent living conditions for the most vulnerable and disadvantaged communities. Therefore, "society has become aware of the need for sustainable development in all projects, business initiatives, small and large companies that respond to the triple bottom line, where not only the economic but also the social and environmental impact is a priority". Manzano, et al. (2021). There are many positive experiences of frugal innovation around the world, for example:

In India, at Aravind Hospital, the traditional processes in ophthalmology were redesigned, applying surgical intervention through the concept of "serial production", where each doctor specializes in a specific pathology, allowing more and better care for the patients (Espinosa, 2014). Likewise, Mansukh Prajapati, a potter from India, was able to create a clay refrigerator that does not run on electricity and can keep vegetables and fruits fresh for many days. In Be-Bound, also in Silicon Valley, allows internet connectivity in places where there is no coverage, through SMS technology. Radjou (2012).

In China, Neusoft developed a telemedicine-based solution that made it possible to reach more people in many more places remotely to care for the elderly and the poor in Chinese villages. Likewise, in this Asian region, engineers created a CT scanner, easy to use, low energy consumption and with minimal costs for the patient. Radjou (2012).

At the Latin American level, in Peru, they designed a billboard of considerable size, which extracts moisture from the air and transforms it into water with great purity, which can generate more than 90 liters of water per day, this is done by taking advantage of the existing humidity in the environment. Radjou (2012).

Considering the above, what is the challenge of frugal innovation in Colombia?

Currently, in Colombia, business and society's efforts have been aimed at supplying the needs of social groups with greater purchasing power (middle and upper class) and located in urban areas, neglecting the base of the pyramid, which is composed of the most vulnerable groups in the cities and a large percentage of the rural population, which in comparison with the urban population, is in conditions of poverty, partly as a result of the armed conflict, the abandonment of the State and the disinterest of society in general. (Espinosa, 2014). This scenario poses a large number of needs for the groups involved, ranging from timely and quality medical assistance, energy and drinking water supply, access to telecommunications, access to the financial system, connectivity and education, among others. This adverse and complex situation is presented as an opportunity for the country to invest in

the development of frugal innovation models, which allow offering a better quality of life to populations in vulnerable conditions and also provide citizens with tools to develop their full creative potential, making them participate from their own realities in the improvement and progress of their contexts, without compromising their available resources for this purpose.

From this perspective, the challenge for Colombians is to maximize the inexhaustible resource of creativity, learning to innovate from the particular conditions of each area of the country, trying to maximize all resources, allowing the sustainability and sustainability of the country. In this order of ideas, it is worth noting that in Colombia every day is becoming more visible the desire to contribute to the country through solutions that add value to society, for less and with fewer resources, evidence of this are the programs aimed at frugal innovation, developed by international bodies and with support from the national government, such as the Global Affairs Project of Canada that aims to consolidate cocoa marketing cooperatives, empowering cocoa producers in the Andes. Likewise, the BIS program, which seeks to increase the long-term employability of vulnerable populations in Bogota, Cali and Pereira.

"We have to aim for the future, so that adversity is an opportunity to be great."

5. Conclusions

Innovation is the strategy that allows to encourage economic and social development by changing the structure of the way things are done. With frugal innovation and social ingenuity we seek to change the way society thinks and acts, to generate welfare with few resources and only from human ingenuity, this type of innovation is different from the conventional concept, it seeks to create economic and social value through the use of limited resources, under the principles of simplicity, accessibility and horizontal thinking.

Social and frugal innovation seeks to improve the quality of life and standard of living of society. To this end, it requires the connection of multiple political, social and economic agents to contribute to economic and social development, taking into account the most vulnerable sectors, promoting and empowering society in the generation of sustainable change in their contexts.

Frugal innovation is not a matter of great powers or major research and development studies, it is a matter of developing countries seeking better opportunities from adversity, through the ingenuity and creative capacity of their citizens.

REFERENCES

- Blanco-Mesa, F., & Baier-Fuentes, H. (2018). Hacia una mirada integral de la innovación ligera: análisis conceptual de las innovaciones no intensivas. *Cuadernos del CIMBAGE*, 2(19), 79-103. Obtenido de <https://ojs.econ.uba.ar/index.php/CIMBAGE/article/view/1176>
- Espinosa Angarita, A. (2014). Innovación frugal, el desafío para los negocios de Colombia. *Revista Javeriana*, 58-60. Obtenido de https://www.javeriana.edu.co/documents/180756/258649/ARTadrianaESPINOSA_INNOVACIONfrugal_RJ810.pdf/b3f47542-f94f-40a0-8f5e-0423c5b8b9f6
- Esteban López, A. F. (2020). *De acuerdo con la aplicación de los principios de la innovación frugal a través del estudio de dos casos colombianos, ¿podemos desarrollar innovación frugal en Colombia?* Bogota: Pontificia Universidad Javeriana. doi:<https://doi.org/10.11144/Javeriana.10554.47429>
- Freeman, C. (1986). The role of technical change in national economic development 1. En J. Ash Amin, *Technological Change, Industrial Restructuring and Regional Development* (págs. 100-113). New York: Routledge Taylor & Francis Group. Obtenido de <https://www.taylorfrancis.com/chapters/edit/10.4324/9781315149295-5/role-technical-change-national-economic-development-1-freeman>
- González-Castro, Y., Manzano-Durán, O., & Torres-Zamudio, M. (2021). Liderazgo: una práctica sistémica en el futuro empresarial. *Revista Científica Profundidad Construyendo Futuro*, 14(14), 64-72. doi:<https://doi.org/10.22463/24221783.3161>
- Hernández Sampieri, R., Fernández Collado, C., & Baptista Lucio, M. d. (2014). *Metodología de la investigación* (6 ed.). México: McGraw Hill. Obtenido de <https://academia.utp.edu.co/grupobasicoclinicayaplicadas/files/2013/06/Metodolog%C3%ADa-de-la-Investigaci%C3%B3n.pdf>
- Huamán Flores, F., Arbaiza Rodríguez, F., & Atarama Rojas, T. (2014). La persona como fuente inagotable de creatividad. *Terapia Ocupacional Galicia*, 11(6), 55-68. Obtenido de <https://www.revistatog.es/mono/num6/mono6.pdf>
- Manzano-Durán, O., Peñaranda-Peñaranda, M. M., & Luna-Quintero, J. C. (2021). Sostenibilidad y proyectos sostenibles: Estudio bibliométrico. *Revista Científica Profundidad Construyendo Futuro*, 14(14), 15-24. doi:<https://doi.org/10.22463/24221783.3160>
- Naciones Unidas- ONU. (2018). *La Agenda 2030 y los Objetivos de Desarrollo Sostenible: Una Oportunidad para America Latian y el Caribe*. Chile: CEPAL-ONU, Recuperado: https://repositorio.cepal.org/bitstream/handle/11362/40155/24/S1801141_es.pdf.

- Ortiz-Gutiérrez, M. F., Galindo-Henao, A. M., Valbuena-Rodríguez, P. D., Clavijo-Peña, A. V., & Duarte-Leguizamo, J. D. (2021). Teoría del desarrollo organizacional: Ineficiencia laboral y organizativa. *Revista Científica Profundidad Construyendo Futuro*, 14(14), 25-42. doi:<https://doi.org/10.22463/24221783.3162>
- Pansera, M., Hermann, R. R., & Narvaez-Mena, H. (2017). Frugalidad e innovación popular : nuevos caminos para la sustentabilidad y la inclusión social en Ecuador. *CTS*, 12(35), 131-152. Obtenido de <https://nordopen.nord.no/nord-xmlui/handle/11250/2446454>
- Pineda-López, C. P., & Manzano-Sanguino, Y. D. (2018). La cultura emprendedora en los estudiantes de Administración de Empresas. *Revista Científica Profundidad Construyendo Futuro*, 8(8), 2-9. doi:<https://doi.org/10.22463/24221783.2458>
- Radjou, N. (2012). "Creative problema-solving in the face extreme limits",. Plataforma TED.
- Rodríguez-Téllez, F., & Pacheco-Sánchez, C. A. (2019). Empresas B: un diagnóstico sobre su aplicabilidad. *Revista Científica Profundidad Construyendo Futuro*, 10(10), 2-9. doi:<https://doi.org/10.22463/24221783.3354>