Pro-Poor Innovations to Promote Instrumental Freedoms

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There is a positive influence of the innovation concepts for distinct types of freedom (political freedoms, economic facilities, transparency guarantees, social opportunities, and protective security), with emphasis on the expansion of social opportunities and economic facilities.

pro-poor innovation | frugal innovation | human development | grassroots innovation

1. Introduction

The influence of innovation and technology for human development and progress has been debated for a long time, going back to Schumpeter's pioneering contributions to the understanding of the factors that generate economic growth [1]. Since then, the notion of development and well-being has evolved by broadening its scope of analysis to include dimensions that go beyond the economic perspective [2]. The innovation literature has also advanced by defining a wide diversity of types of innovation that have a direct or indirect social impact, allowing low-income consumers to be included in previously inaccessible markets [3].

Concepts such as frugal innovation, inclusive innovation, grassroots innovation, social innovation, reverse innovation, and indigenous innovation come together to place the poorest at the focus of innovation, whether in consumption or production. Pro-poor innovations (PPI) is an overarching concept serving as an umbrella for a host of other concepts. It is important to emphasize that this definition does not depend on whether the innovation was generated or consumed in emerging or developed countries, in addition to including innovation for different purposes (commercial or social). When specific differences between concepts are identified and will be explained in the results of this study.

Regardless of whether they are for-profit or explicitly developed for inclusive purposes, the initiatives of PPI have the potential to contribute to sustainable development [4][5][6]. Products that come from frugal innovations, for example, seeking to minimize the use of resources and energy, have the potential to support environmental sustainability [7]. The concepts of innovation discussed here can promote economic development focused on the poorest social strata, fighting inequality, which is critical in the search for social sustainability [8]. The potential of PPIs to support Sustainable Development Goals (SDGs) is well-recognized in the literature [9]. For instance, several studies point to the innovations that make health services less expensive, ensure access to clean water, and support the efforts against hunger. Others have focused on frugal innovation [10][11], grassroots innovation [12][13], low-end Innovation [14], constraint-based Innovation [15], inclusive innovation [16], and reverse innovation [17].

Thus, enough research on PPI has been carried out to warrant a systematic review and organize the knowledge gathered so far, hoping to pave the way for future initiatives.

Alves and Mariano [18] and Lima et al. [19] previously adopted the CA's instrumental freedoms as a theoretical lens to systematically examine the joint literature on climate justice and human development. The use of instrumental freedoms as an analytical tool in literature is instructive because it offers a normative framework that explains the development arising from the innovation process in a broad sense, including the transforming role of the human agency living in poverty.

2. Conceptual Foundation

2.1. Pro-Poor Innovations and Derived Concepts

Various concepts have been coined to describe different models of innovation with the potential to improve the well-being and freedom of marginalized communities [20].

A group of concepts with a strong commercial bias, and a potentially inclusive impact, can generally be understood in terms of externality. One of such group terms is frugal innovation; a concept focused on core functionalities, substantial cost reduction, and optimized performance and efficiency [7][21]. The cost reduction feature is linked to other terms such as low-cost innovation [22], cost-reducing innovation [23] and low-tech innovation [24]. Low-cost and cost-reducing innovation differ from frugal innovations by seeking to reduce costs even at the expense of quality. Low-tech innovations are based on low levels of R&D investment, not necessarily generating low-cost products and services. Differentiated products can be generated on simpler technological platforms, differentiating low-tech innovations from low-cost innovations. Although the platform target is the developing countries, these types of innovation can be adopted in the developed world in what is known as reverse innovation [17][25]. This type of innovation meets the requirements of decreasing consumer demand, known as voluntary simplicity [26].

Several concepts are named after the motivating element of the innovation, for instance, resource-constrained or constrained-based innovation [15]. This perspective understands that scarcity conditions stimulate the generation of solutions created by the community under constraints. Resource-constrained innovation differs from frugal innovation by focusing on the environment that originates the innovation instead of focusing on product and target audience characteristics. The Indian term *jugaad* is constantly used to represent this sense of a simple solution using limited resources to overcome severe restrictions [27]. Jugaad differs from other terms in that it is not a colloquial word, lacking theoretical formalization. Another term coined from the origin of innovation is the so-called grassroots innovation that designates community-led solutions aimed at sustainable development, taking advantage of the knowledge and skills of a local community [28]. The idea of developing local technologies also permeates the concept of indigenous innovation, linked to Chinese economic growth [29].

Another group of terms clarifies the inclusive and socially responsible objective of these types of innovation. Inclusive innovation generally designates initiatives focused on marginalized communities and impacts their

livelihoods [20]. The most ambiguous concept in literature, often with multiple definitions, is that of social innovation. The common points among the various definitions are that social innovations include a change in social structure, relationships or systems and that change solves a relevant social problem or meets a human need or goal [30]. This definition is similar to that given by Christensen et al. [31] for a catalytic innovation, which involves new scalable and sustainable solutions for social change. Catalytic Patiño–Valencia et al. [32], in catalytic, differentiate social and inclusive innovation by the type of problem they aim to solve and the type of population assisted. These authors conclude that inclusive innovations are carried out in specific populations as a way to overcome the condition of exclusion. In contrast, social innovations address general problems of society, whether there is exclusion or not.

The term pro-poor innovation [33] is applied here and elsewhere as an overarching concept because it represents the characteristic common to the described concepts of generating benefits to the poorest either intentionally or through externalities.

2.2. Capability Approach and Instrumental Freedoms

The Capability Approach (CA) is a theory that focuses on the ability of individuals to achieve the kind of life they have a right to value, which distinguishes it from more traditional approaches such as utilitarianism [34]. A person's ability to have a good life is defined as the set of valuable actions and potential states [35]. The CA was first articulated by the Indian economist and philosopher Amartya Sen in 1980 [36]. CA is of practical importance in formulating public policies, being the basis of the Human Development Reports and the Human Development Index [37]. A prime concept for understanding the CA is that of functioning. Functioning refers to aspects of a person's state, that is, the variety of things a person can be or do in their life [38] and applies to more basic needs such as 'being well nourished' as well as to more complex ones, such as 'being socially accepted'. On the other hand, a person's capability reflects the alternative combinations of functioning that a person can achieve [39]. A person's capabilities will depend on several factors that differentiate how a person converts resources into functioning. Their physiological conditions and physical and social environment limit their access to functioning [38].

In his work, *Development as Freedom*, Sen considers that individual freedoms are the basic elements of development [40], being, simultaneously, means and ends of its achievement. There is a two-way relationship in which public policies can expand capabilities, and these, in turn, can influence policies through their effective use [41]. That said, certain freedoms play an instrumental role in development, contributing directly and indirectly to people living the way they would like to live [42]. These freedoms represent critical means for capabilities, as they contribute to one's ability to live more freely and thus directly enhance one's capabilities. Sen categorizes five basic instrumental freedoms [41] shown in **Table 2**.

Table 2. Instrumental Freedoms.

Instrumental Freedom	Definition
Political Freedom	Fair elections, ability to criticize the government, freedom of the press, potential to run for elective office and contribute to the political process.

Instrumental Freedom	Definition
Economic facilities	Access to financing, credit, and global markets.
Social opportunities	Education, healthcare, and social services, which enable citizens to become productive members of society.
Guaranteed transparency	Open and transparent negotiations in business, government, and any transactions between citizens.
Protective security	Social security net that prevents the population, when vulnerable and exposed to critical changes, from succumbing to extreme conditions such as poverty and hunger.

3.1. Economic Facilities

PPI is important to ensure market access to the poorest as potential consumers and producers through the empowerment fostered by these innovations. In addition, there is potential for productivity gains derived from these innovations. However, there is no consensus about the impact of PPI on poverty reduction and inequality.

One of the common points in research into different concepts relating to PPI is the generation of entrepreneurial opportunities and the opening of consumer markets in the low-income population. Nari Kahle et al. [43] indicate that creating more inclusive markets by multinational corporations enhances economic development. Pansera and Sarkar [44] offer evidence suggesting that innovations generated by the low-income population not only satisfy previously ignored consumer needs but can also foster greater productivity, sustainability, and poverty reduction through more significant income generation. A considerable group of articles, particularly those involving the concept of grassroots innovation, describe the entrepreneurship generated by PPI as closely connected to environmental causes [45][46][47]. Research on inclusive innovation indicates that more accessible technologies can be used to train new entrepreneurs [48], addressing, in part, the problem of lack of entrepreneurial skills [49].

The literature on reverse innovation explains the competitiveness of frugal products and services in foreign markets, which offer cheaper solutions to meet people's needs while consuming fewer resources [50]. Emerging countries would be pressured to produce innovations to solve their urgent social problems, leading to solutions that would rarely be conceived of in environments with different circumstances [51].

Job creation is a key challenge for pro-poor innovators [52]. There is evidence that PPI in the financial market with the democratization of means of payment and financial and banking inclusion have the potential to create jobs [53][54].

In addition to helping to create jobs, many articles indicated that the development of more accessible funding programs could create conditions for entrepreneurship at the grassroots level [55][56][57][58]. Noteworthy are the technologies that exploit mobile phone coverage in developing countries, such as M-PESA in Kenya [58][59][60]. Smartphone apps allow marginalized communities to access banking services and avoid costly intermediaries by sending money [48].

3.2. Impacts on Social Opportunities

Social opportunities address a wide variety of capabilities that represent basic requirements for citizens, such as good health, basic education, female welfare, and childcare.

Health is the central theme in a substantial number of articles in the sample. Frugal innovations appear to be appropriate for health care organizations that operate under severe resource constraints and can universalize access to health [61]. Bhatti et al. [62] point out sixteen innovations, grouping them into six categories that demonstrate the wide range of options for applying frugal innovation to health care. Another survey of 50 health frugal innovations found that most of the innovations surveyed were generated in developed countries and first marketed in developing countries [63].

Another example of PPI's potential for complex health procedures is their application in critical care areas such as maintenance of intensive care units, which often require expensive drugs and equipment [64]. In addition, articles on indigenous innovation with locally generated solutions for heart [65] and skull base [66] surgery were also found in developing countries.

3.3. Political Freedoms

Social opportunities address a wide variety of capabilities that represent basic requirements for citizens, such as good health, basic education, female welfare, and childcare.

Democratic aspects such as the empowering role of decentralization of authority are little discussed in traditional innovation models such as the triple helix [67]. In this regard, it is possible to indicate how PPI can broaden political participation, the right to free expression and strengthen democracies.

Overall, studies point to greater political engagement and strengthening the democratization process through PPI. Poorer people find in their own social condition a strong barrier to political participation. By increasing empowerment at the low-income population, PPIs can remove this barrier, contributing to the state-building process [43]. The term with the most documents presenting contributions to political freedom and low-income people engagement was grassroots innovation, perhaps because of its historical exposure to activist movements [68][69]. Paneque–Gálvez [70] states that marginalized groups such as indigenous peoples, through their access to previously financially prohibitive technical skills, may gain a greater mastery over their territories and greater capability to participate in political discussions about their management. While today's grassroots innovations seem less explicitly political than their predecessor forms, they can still represent a form of political participation [71][72].

3.4. Transparency Guarantees

Widespread access to information, especially on government affairs, not only broadens economic freedom but also ensures greater clarity about the terms of the social contract between the public administration and citizens.

Despite the paucity of articles dealing directly with aspects of corruption that could be impacted by PPI, some articles have discussed ethical aspects of these new forms of innovation. One term that stands out in this theme is the Indian term *jugaad*. This term is constantly linked to corrupt traditional Indian practices having a primarily negative cultural connotation. The sample authors criticize the use of the word to designate an innovation for reinforcing systemic risks in India [73] and legitimizing corrupt practices [74]. The articles have no central focus on the innovation aspects of these practices. Thus, some innovations known as Jugaad in India may have positive purposes and social impacts.

Two articles discuss the ethical aspects of inclusive innovations [67][75]. For these authors, the discourse connected with this kind of innovation has always been shaped by widely implied value assumptions, and discourse about inclusive innovation reflects unease about some of the most common values. Thus, from an ethical point of view, innovations aimed at inclusion need to be in line with the values and principles of those most in need.

3.5. Protective Security

As for the insertion of PPIs in markets undergoing an economic recession, the crisis scenario seems to influence the decision process regarding the adoption of innovations since low-income consumers are more vulnerable [76]. This innovation class can be crucial for the survival of companies in developing countries during crises, enabling growth, which underscores the importance of emerging markets in the global economy [50]. Schillo and Robinson [77] point out that during economic crises, innovations may produce negative results, such as increased income inequality, even if these innovations lead to economic growth. Thus, the authors suggest that to identify innovation as inclusive, economic, environmental, and social outcomes should be evaluated.

Poor communities are the ones that suffer most from environmental unsustainability, and it is the poor people that suffer the most from calamities caused by climate change and environmental degradation, such as floods, droughts, fires and famines [78]. In this regard, a concept that relates PPI with environmental problems is the idea of green leap innovation, whereby businesses of the low-income population are involved in the sale of clean and regenerative technologies [79][78]. Nevertheless, despite the potential of PPI to protect against environmental problems, there is evidence in the literature that this type of innovation can also engender environmental concerns such as deforestation and pollution [80].

Relevant research on protective security has focused only on developing countries, most likely because of their characteristic of greater social vulnerability.

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