**To what extent can ‘grassroots’ innovations help to develop sustainable ways of living in practice? Case study: Jugaad movement.**

Following the Brundtland’s (1987) definition of sustainable development, sustainability relates to the idea of generating sound progress and economic growth; social equity for all; human wellbeing and ecological security. It is a process in time aimed at improving defined values to preserve and sustain our quality of life and that of future generations within ecological limits (WCED, 1987). It involves exercising purposed social agency, to accelerate ‘progress’ but also define the specific political directions in which such progress evolves (Leach, et. al., 2010) so far pioneered by a top-down approach for action-solution. With the linear-model of innovation only ‘value-free’ science retains the validity to drive pathways for development, ignoring that science can also encourage solutions that conceal the interests of superior groups and obscure other directions of growth (Benessia, et. al., 2012; Stirling, 2009; 2010). While in the past no other alternatives were thought to be capable of driving innovation in the name of development, it is perceived today that there isn’t just one process that can be followed as innovation is not just applied science (Kline and Rosenberg, 1986; Fagerberg, 2004; Nightingale, 2014). Both problems and solutions for sustainable development depend on mobilising a plurality of options: science and technology are means and not ends and challenging power is crucial. The reality of research for innovation needs to be more dynamic in terms of directionality, distribution and diversity (Stirling, 2010) to generate “new kinds of hybrid knowledge and practice” (Benessia, et. al., 2012, p. 75) as different routes can be pursued to construct a world where many worlds can fit together. Jugaad is a Hindi term whose key meanings are flexibility and inclusivity for collective growth. It supports the potential of improvised solutions generated from maximising the use of available resources and know-how, turning uncertainties into opportunities while giving great value to local knowledge and joint efforts. It demands that innovation should not be tied to rigid R&D but follow greater degrees of adaptability involving local cooperation. It works with politics of hope to overcome obstacles and open up the appreciation of different trajectories of change than those that a clear-cut system provides. With its origin in India, the Jugaad philosophy has encouraged the emergence of practical, grassroots’ approaches to sustainability in rural communities around the world.

With consideration of its flaws and limitations, I will evaluate the extent to which the Jugaad mindset can be a relevant option for seeking bottom-up solutions and whether it may have profound implication for development and growth in today’s increasingly fast, competitive and resource-constrained environment.

After the Industrial Revolution, innovation has mainly been the centre of discourses of the more developed economies able to take advantage of their financial and capital assets, find solutions to urgent problems through R&D departments while constantly working toward greater innovative technological progress (Fagerberg, 2004, p. 14; Prabhu and Jain, 2015; Ahlstrom, 2014; Teece, 1993; Freeman, 1995). Over the years, a structured top-down approach has been developed in terms of how, by whom and for whom innovation is performed involving definite set of stages, firm’s large budgets and highly skilful personnel (Fagerberg, 2004; Freeman, 1995). In these developed economies, the innovation process is then modelled in such a way that it is capital-intensive: it works on the basis that greater inputs and inflows of capital, labour and investments will bring greater outputs in scale and scope (Chandler, 1990; Prahalad, 2012).

It was Schumpeter’s (1942) belief that a capitalist system best responds to the necessary conditions for reaching the ultimate goal of higher standard of living for all, with entrepreneurs and large firms as the actors which will guarantee such bliss in a state of competitive equilibrium. However, in order to survive in such competitive environments, firms have to be wise in making the right business choices. Under circumstances of trade-offs, these will be more likely to follow the most profitable plan of action in terms of marketing opportunities at the expenses of other possible directions of change. Following Chandler’s argument that firms and markets are co-agents in that “a market cannot be understood without an understanding of firms’ strategies and structures” (Teece, 1993, p. 223), despite a recent increase of investments from Western companies (Brem and Wolfram, 2014) low-income countries have been largely unattractive to firms’ strategic plan of action as these hold low economic value when compared to Western middle-class markets. Driven by pressures of meeting expectations of immediate growth and reach high rate of profits and recognitions, small developing markets are something that large firms have so far found difficult to commit to as their priorities tend to shift towards greater conditions to enjoy.

In such rigid capital-intensive setup, the Western innovation system has allowed itself to become risk-averse with its science-push approach, homogenous managerial arrangements, risk assessments, cost-benefit analysis, and modern engineering working with artificial models to reduce uncertainties (Benessia, et. al., 2012; Stirling, 2009; Nightingale, 2014). While this allows to achieve greater accuracy and precision, it drastically reduces the ability to deliver on differentiation and “although such learning is viewed as wisdom in stable environments, it produces inflexibility and competence traps in changing worlds” (Van de Ven, et. al., 1999, p. 117 in Fagerberg, 2004, p. 7). Minimising variabilities creates a situation where generalisation leads to an over-estimation of the operational feasibility of products by suggesting that technologies that work in one setting will work in others (Leach, et. al., 2012). Particular contexts may require different approaches as “variations in circumstances may often lead to different paths of development and to increasing diversity rather than standardisation and convergence” (Freeman, 1995, p.15).

Providing systemic solutions that appropriately address the needs of the rural poor remains an imperative in order to meet the 17 Sustainable Development Goals. It is rather those less developed economies with limited access to high-tech resources, financial and governmental assistance that qualify as breeding places for the improvised nature of ‘grassroots’ innovations. While lacking in capital and financial assets, they still face the same constrains that most of societies encounter in areas like transportation, energy, education and healthcare. Solutions may be challenging to be delivered due to associated costs, though immediate assistance is needed. In contrast to highly planned R&D and capital-intensive arrangements, people in developing countries are coming up with vibrant grassroot alternatives, with the term grassroot referring to “individual innovators who undertake innovative efforts to solve localised problems and work outside the realms of formal organisations” (Bhaduri and Kumar, 2011, p. 29). Working with local knowledge and experimentation, they modify mainstream technologies to favour the interests of the most marginal groups (Leach, et. al., 2012). Over the years, India has positioned itself as a leading country in delivering such services appropriated for basic needs by the common people (see Gandhi’s Hind Swaraj). Among these, ‘Jugaad’ innovations have recently captured great attention from traditional business practices, “proffered as a tool for development and a robust solution to global recession” (Birtchnell, 2011, p. 357).

Jugaad is a word taken from Hindi which captures the meaning of finding frugal, flexible and inclusive solutions to problems (Radjou, et. al., 2012). It is a relatively new approach for thinking constructively different about innovation with possibly high potentials for the development of new solutions to everyday problems in low-income communities whose struggles are normally unrecognised. In such contexts, innovators are making use of available technologies for more improvised low-cost solutions for people living outside the traditional economy (Prabhu and Jain, 2015). In this respect, Jugaad can then be translated with the idea of delivering more value with less capital and financial inputs.

Creativity and imagination are essential in developing Jugaad products, together with one’s own understanding of the product’s artificial functions. Here, functionality may indeed play a great role in answering how such innovations become a reality. Technologies generally offer a dual nature with features that are intrinsic such as the physical traits of the machinery, and imposed features that depend on people’s understanding of the technology; these imposed meanings are what defines a technology (Nightingale, 2014). In other words, a technology exists only according to the perception that people have of the material object and its purpose depends on the subjective aims of the user. While only a limited number of intrinsic features can be associated with a single tech, many imposed functions can be given to it (ibid.). Equally, Jugaad innovations refer to both the adoption and adaption of technologies for purposes for which these were not firstly designed for. Innovators try to combine previously unseen applications between available resources and the problem to be solved, with inclusivity rather than economic growth as main objective.

Jugaad means thinking in a frugal and flexible manner; It requires adaptability with uncertainty and comfort with hazards. Such highly practical approach differs from the burden that over-engineered and fast production processes place on managers who are always expected to deliver high-standard improvements all the time. So, it is in the difference in the purpose and motivation to innovate where the most basic distinction between Western and Jugaad innovative thinking can be found. Along these lines, Bhaduri and Kumar (2011) have shown that in contrast to developed countries where innovation is mainly driven by extrinsic motivation such as property rights, business gain and deadlines, the main drivers of grassroots innovations in India are rather intrinsic (i.e. joy of work, confidence, autonomy and duty). Therefore, Jugaad stands away from Western sophistication or perfection as it seeks to develop a ‘good-enough’ solution that simply gets the job done (Radjou and Pabhu, 2012).

For these reasons, Jugaad approach results as being highly user-driven in that it attempts to solve a single need at a time, opposed to a top-down framework that imposes ‘one-size-fits- all’ solution. Hence, the experience of users is the most important driver of change.
Jugaad innovations can have various degrees of positive and substantial impacts on people’s growth. They can enhance individual user’s quality of life as well as their economic and social status. The creation of small and local enterprises that can follow from the new Jugaad product can provide new employability opportunities for the locals, positively affecting their income while also broadening their knowledge and skills through training (Alvarez, et. al., 2015; Holger, et. al., 2015; Kahle, et. al., 2013). Furthermore, Jugaad innovations are often suitable to be adopted by other developing countries facing similar socio-cultural and economic constrains (Tiwari and Herstatt, 2012). When issues of scalability may occur, the small-scale models of micro-entrepreneurship born out of Jugaad can potentially function as inspirations for others to get involved and create opportunities for scaling out in different localities (Prabhu and Jain, 2015). Although Jugaad offers great benefits, it is not short of its own limitations. Jugaad innovations work effectively when confronted with a problem that needs instant fix. These do not derive from research of any kind, hence resulting in being the opposite of good engineering design (Nightingale, 2014). As an individual response to problems, Jugaad innovations are usually untested in larger setting and this can arise critics regarding the workability of its ideology as a business strategy (Birtchnell, 2011). To effectively put the Jugaad theory into practice, firms would need to authorise individuals to present solutions without these being formally approved and while this may work at the grassroot level, it needs other arrangements in order to be applicable at a bigger scale. Further studies whence generate sound policies to better harness the Jugaad mentality in a business environment are needed.

Overall, Jugaad can be seen as a new way of extending Western interpretation of entrepreneurial spirit in the Schumpeterian way. Jugaad innovators focus entirely on the successful finalisation of the product and how this can directly bring positive outcomes for the community rather than having as main concern the pressure of competing business lines. Despite its flaws and limitations which may often cause Jugaad innovations to represent challenges for the common sense, its philosophy carries some universal truths that can be adopted in any competitive environments by changing the dominant prospect of one single vision of progress. Most Jugaad solutions may not be the best solutions for many, but good in itself is a relative term. They can be unsafe, sometimes illegal even (Birtchnell, 2011) but despite all the weaknesses they suffer from, they are almost essential to many people who emphasise the importance of such form of innovation in contemporary market prospects.

In many cases, to fully grasp the nature of Jugaad it is not the machinery that is needed as much as deeper knowledge of the lifestyles and contexts of the local communities through open-ended engagements and dialogues (Jain and Kotch, 2015; Benessia et. al., 2012). Cooperation with the local is key in getting to know mindsets and aspirations and the nature of the problem as “it is only by directly engaging with such differences that we may hope to steer the most robust overall directions” (Leach et all, 2012). The unwillingness of firms to listen to the ‘excluded’ represents high degrees of failure as the best strategy to adopt may simply be to remain open to various impulses to reduce “the change of being ‘locked out’ from promising new paths of development” (Fagerberg, 2004, p. 13). In such a scenario, Jugaad innovations “represent a complex set of socio-political and economic aspiration of people, who normally rely on their skills (...) more than the formal body of technology” (Bhaduri and Kumar, 2011, p. 31). So, one must look at the psychological and cognitive factors behind them. Jugaad is an outcome of specific needs and struggles as well as highly local-community centred. The success of Jugaad does not simply lies in its products, it is rather in the people and communities using them that some answers may lie.

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