Fostering transformation through the mobilization of grassroots innovations

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Introduction

India, the second fastest growing economy that houses the majority of the rural population in the world, is increasingly led by innovation-driven inclusive growth. Predominantly, India had been an agrarian society, and the agrarian way of life itself has spurred grassroots innovations (GIs) related to agro-technologies. The contribution of the informal sector, including agriculture to Indian GDP, from the year 2000 to 2010 was 54.2% (Charmes 2012). Grassroots Innovations are usually from the informal sector (Erika & Watu 2010; Cozzens & Sutz 2012), demonstrating a complex set of socio-political and economic aspirations of the grassroots people, who are knowledge-rich, but economically poor (Gupta 2003). Farmers/peasants and people from the marginalized and informal sector have long demonstrated that the use of grassroots creativity, practices, and innovations that can assist in resurging rural economies. GIs are social technologies and solution-based science from the informal sector that enhance the social and economic well-being of rural people and propel inclusive innovation.

These bottom-up innovations are conceived to meet local needs and solve rural problems using frugal resources, practical experience, skills and traditional knowledge. The majority of GIs are necessity-led and have the potential to enhance the social and economic well-being of marginalized and lower income members of the society. GIs are also seen as an alternative to the mainstream, formal, high-technology innovations that had dominated the development discourse. If fostered and mobilized effectively, GIs can generate sustainable livelihood opportunities leading to rural development. Rural development is a process aimed at improving the well-being and self-realization of people living outside urbanized areas (Copp 1972). The GI ecosystem and the spread of GIs in India are outlined in this paper. The paper also briefly gives snippets of GI-led socio-economic transformations. The discussion in the paper is just the tip of an iceberg about the role of GI and the importance of fostering GI for sustained growth, transformation, and regional development.
Indian Grassroots Innovation Ecosystem

Since 2000, India has been leveraging on the philosophy of innovation. The Government of India declared 2010-2020 the ‘decade of innovation’. In 2010, the National Innovation Council (NInC) was set-up to spearhead numerous initiatives relating to the innovation and strengthening of the innovation ecosystem of the country. Furthermore, a National Innovation Act was also formulated to facilitate public or private initiatives and partnerships to build an inclusive innovation system and develop a national integrated science, technology, and innovation plan.

Sensing the potential of grassroots innovations (GI), India has taken extensive institutional mechanisms to scout, protect, reward and encourage grassroots creativity, knowledge and practices. For instance, the National Innovation Foundation (NIF) was set up in 2001, to perform such actions. The NIF has a repository of more than 160 thousand GI and traditional knowledge practices, and it is continually growing. Various other institutions such as the Society for Research and Initiatives for Sustainable Technologies and Institutions, (SRISTI), Honey Bee Network (HBN), Grassroots Innovation and Augmentation Network (GIAN), Sustainable Agriculture and Environmental Voluntary Action (SEVA), and Rural Innovation Network (RIN) also play an important role in mobilizing GI, pooling traditional knowledge practices, licensing and sharing benefits with all stakeholders. Using ICT these institutes connect grassroots people to mentors, engineers, designers, investors and entrepreneurs, thereby shaping the development agenda for regional growth (Maurya et al 2014). From the year 2013, the Innovation Scholars In-Residence Scheme was launched to encourage GI activities.

The GI ecosystem is instrumental in providing recognition and a commercial platform for the innovations that have potential to succeed in the market. India’s GI ecosystem comprises of individuals (innovator) and institutions that are part of the national innovation system (Joshi & Chelliah 2013). Institutes continuously scout grassroots creativity and network for public and private partnerships to commercialize local ideas in the local and global market. However, along with institutional and infrastructure set-ups, the skills, capabilities and mind-set of the grassroots innovators also play a significant role in mobilizing GI and furthering rural development (Joshi et al 2015). The mobilization of GI usually follows after scouting these innovations. The potential of innovation is assessed by the institutional members based on the usefulness, features and benefits of the innovation.

NIF, through the Grassroots Technological Innovation Acquisition Fund (GTIAF), acquires rights to technologies for economic and social diffusion and licenses them at low or no cost to small entrepreneurs (NIF 2015). Whenever NIF licenses to third parties for a higher sum or if higher revenues are generated, then in such cases these funds are shared with the innovators even though they have licensed the right (NIF 2015). Moreover, even after licensing to NIF, grassroots innovators can retain their right to use their innovation as they deem fit at their level (NIF 2015).
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GIAN, a regional implementation agency of NIF, is also the nation’s first technology incubator that facilitates incubation and commercialization of GI in India. Since 2003, 113 innovations have been funded by GIAN under the micro venture innovation fund (GIAN 2015). Innovators and entrepreneurs associated and involved with GIAN and NIF can benefit from this fund to convert innovations into products and products into enterprises and overall technology commercialization. Such institutional arrangements not only facilitate mobilization of GI, but also enhance social and ethical capital of the nation (Gupta et al. 2003). Overall, the grassroots innovators, community (family, friends, village people and users), institutes (public, private, and non-government organizations) and innovation infrastructure (policy, training, ICT and transportation) are integral links of the GI ecosystem and play an important in mobilizing GI. Biannually NIF awards are declared and grassroots innovators receive an award from the President of India. Such recognition gives them a platform and the encouragement to develop their innovations further.

A geographic distribution of the grassroots innovators in India and the distribution of categories within GI are depicted in figure I and figure II respectively. Selecting 61 out of 64 awardees of the 2013 National Innovation Foundation (NIF) awards, two maps are generated using ArcGIS ver10. It is clear from figure I that a large number of grassroots innovations are from the state of Gujarat in India, followed by Tamil Nadu, Manipur and Bihar. The innovations in these states are fostered through an innovation network, government subsidies and contractual agreements such as benefit sharing and IPR.
FIGURE: I State-wise distribution of the grassroots innovators in India
(This map is illustration only and it is not according to scale)
FIGURE II: State-wise distribution of the various categories of grassroots innovations in India
(This map is illustration only and it is not according to scale)
From tinkering to transformation

Majority of the grassroots innovators are not only promoters and providers of GI, but also enterprising tinkerers and genius fabricators who own labour intensive micro-firms in their local area. There are instances where these innovators have been able to mobilise their innovation and reap monetary and non-monetary benefits at the local level prior to institutional scouting and support. However, their innovative activities are propelled and diffused at a larger scale once they get support from institutions such as SRISTI, HBN, GIAN and NIF. It is observed that such tinkerers can be transformers at a regional level provided their participation is encouraged and that they are actively involved in the GI ecosystem.

GI ushers well-being by generating employment, creating opportunities for skill enhancement, developing local economies through enterprise building in rural areas, and creating additional means for an extra source of income. As Grassroots Innovators set up their micro-ventures in rural areas, they are the source of regional economic development and sustainable transformation, and this is evidenced by the GI mobilisation cases recorded by institutes like NIF, SRISTI, HBN and GIAN. It is also apparent from the recent NIF database that most of the Indian grassroots innovators are first-generation rural entrepreneurs, who employ and train people from the local community. These innovators are also sowing seeds for family businesses by training their heirs and mentoring the aspiring and skilled innovators in the community.

Mr Mansukhbhai Prajapati, an enterprising rural innovator from a potter community, started his venture “Mitti Cool” after a lot of trials and tribulations. He has invented an efficient mechanism for making clay kitchenware that is durable and on par with non-clay home appliances and kitchenware. Using this mechanism he can make clay refrigerators, water filters, non-stick clay pans, and clay pressure cookers. He has been recognised and awarded for these innovations and his contribution in transforming the pottery profession. Furthermore, his earthen kitchen wares are awarded/ commended because of their quality and inclusivity. His products are also in high demand as they are eco-friendly, affordable and maintain nutrition standards. Currently, his two sons are helping him in his business, and he has trained an additional 500 members of his potter community. His innovation has not only provided means of livelihood to these people but has also saved the traditional knowledge of pottery and took away the caste based stigma of the Potter community and provided stability to the pottery profession. Overall, Mr. Prajapati’s innovation has not only metamorphosed the pottery profession but has ushered in socio-economic change in the region.

The case of the incense stick machine is interesting as it not only eased the task of incense stick making but also enhanced the socio-economic life of indigenous peoples and reduced rural-urban migration in the state of Rajasthan in India. Mr Paresh Panchal, a grassroots innovator, made the incense stick machine based on his automatic thread winding machine innovation experience.
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With the consent and help of district forest officer of Rajasthan, Mr. Panchal spent time with the indigenous peoples to understand the existing incense stick making process. He observed the difficulties faced by wage earners in making incense stick and also gathered their requirements relating to the machine.

Now indigenous peoples could spend more time with their family and the region as a whole saw reduced migrations to cities. As the machine diffused through self-help groups in the remote villages of India, the incense industry witnessed a major boost. The first 50 machines were sold to the village forest protection and management committee in the tribal area of Rajasthan. Up until this date, more than 200 sets have been sold and Mr Patel is regularly receiving orders from all over India. The machine is easy and safe to operate, reduces drudgery, and gives good and uniform quality output and suitable for livelihood generation purpose. Overall, Mr. Panchal’s machine has not only eased the incense stick making job for the tribal community but also increased the efficiency leading to better earnings, more orders, reduced rural-urban migration, and better living standards.

Likewise, grassroots innovator, Mr Mansukh Patel’s cotton stripping machine has not only introduced new processes or systems in the ginning industry but it has also ushered in socio-economic change (Joshi et al. 2015). This machine had been instrumental in mechanising the lint stripping process from the cotton balls and because of this innovation there has been an increase in revenue for farmers and ginners. Additionally, this innovation has relieved village women from the arduous cotton stripping task, giving them quality time for other work. Likewise, due to this machine children are not required for cotton stripping job-work, allowing village children to pursue their education. Mr. Patel obtained a patent for his cotton stripping innovation and set up a rural venture to manufacture the machine. He is employing local people and mentoring aspiring innovators.

In all three cases, it is evident that innovation has transformed rural lives. Innovations from grassroots people not only empower people through local development, design ownership and control of technology, but it also helps to challenge mainstream innovation agendas and development pathways (Fressoli et al. 2014). On the larger commercial plane, these innovations succeeded because of the confluence of grassroots innovators’ capabilities, ingenuity and the institutional support in the GI ecosystem. Institutions like NIF, GIAN, HBN and SRISTI not only scouted these GI but also helped them in commercial diffusion at the larger scale in setting up an enterprise. These institutes have also provided legal and marketing advice such as technology transfer, patenting, licencing, design rights, branding, prototype development, quality testing and positioning. These innovators are also transforming the socio-economic life and reducing inequities by providing affordable quality products and employment opportunities.
Conclusion

Over the past two decades, India has made a huge stride in recognising and fostering GI through institutional mechanisms. GI and the GI ecosystem are playing an integral role in building a resurgent and inclusive rural India. It is now believed that GI from India are not makeshift improvisations or much famed ‘Jugaad’, but are rather systemic creative pursuits that fill the gap of unmet demands at the local level. Additionally, the grassroots innovators are both tinkerers and transformers providing beneficial novel products that are frugal and low-cost. Their innovations create livelihood opportunity, generate income and enhance the quality of life of rural communities, leading to inclusiveness and development. It is evidenced in the three GI cases expounded above that GI are inclusive in nature and have the potential to propel rural development and enhance the socio-economic fabric of the nation.

About the author

Rajul Joshi is a Research Scholar at the University of Technology Sydney (UTS), Australia. Ms. Joshi has 11 years of teaching, research, consulting and mentoring experience. She is a Certified Mentor for Entrepreneurship by London Business School and Goldman Sachs, accredited faculty for Entrepreneurship development by Department of Science and Technology (DST), NSTEDB, EDI and a National Entrepreneurship Network’s entrepreneurship educator.

Note: The author would like to thank the three grassroots innovators for sharing their stories.

References


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