



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; SP-12(9): 256-258
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www.thepharmajournal.com
Received: 08-06-2023
Accepted: 10-07-2023

Ashok Kumar A
PG Research Scholar, School of
Agribusiness Management
Professor Jayashankar
Telangana State Agricultural
University, Rajendranagar,
Hyderabad, Telangana, India

Vijay Nadiminti
Chief Executive Officer, AgHub,
Professor Jayashankar
Telangana State Agricultural
University, Rajendranagar,
Hyderabad, Telangana, India

Srinivasa Reddy D
Field Officer, CCS,
Department of Economics,
Professor Jayashankar
Telangana State Agricultural
University, Rajendranagar,
Hyderabad, Telangana, India

Supriya K
Professor & Head, Department
of Statistics and Mathematics,
Professor Jayashankar
Telangana State Agricultural
University, Rajendranagar,
Hyderabad, Telangana, India

Corresponding Author:
Ashok Kumar A
PG Research Scholar, School of
Agribusiness Management
Professor Jayashankar
Telangana State Agricultural
University, Rajendranagar,
Hyderabad, Telangana, India

Key challenges of agri based grassroots innovations in Telangana

Ashok Kumar A, Vijay Nadiminti, Srinivasa Reddy D and Supriya K

Abstract

Being an agrarian and rural economy, development of India depends on strengthening of its grassroot (Rural) community. Innovation acts as tool for economic development of the Nation and its people. In such a way, grassroot innovations were developed by grassroot innovators to solve the local problems with the use of locally available resources. But there were several challenges to be encountered by the grassroot innovators in initiation and scaling up of innovations. Hence, the present study aims to identify the various constraints experienced by the grassroot innovators of Telangana in technical, sales and marketing, financial and manufacturing dimensions. The data gathered from the grassroot innovators with the help of interview schedule through personal interview method were tabulated and analyzed with suitable statistical tools. Based on the findings, it could be understood that securing funding, lack of technical expertise and lack of awareness about IPR were the major constraints experienced by grassroot innovations. Thus, Government and other voluntary and non-profit organizations should create awareness towards the importance of patenting and mobilize funding to the innovators in order to initiate or scale-up of innovations.

Keywords: IPR issues, grassroot innovations, grassroot innovators, agri-tech, constraints, scaling-up

Introduction

“The soul of India lives in its villages”

-MK Gandhi

As rightly pointed by M. K. Gandhi, being an agrarian and rural country, development of India lies in development of agriculture and its rural communities i.e. grassroot level. In this scientific revolutionary world, agriculture is undergoing second phase of revolution i.e. technological revolution. With the advent of value chain, a newer technology optimizes technological efficiency and facilitates better production and marketing of agricultural goods. According to National Innovation Foundation (2021), an innovation enables the consumers to improve their standard living and satisfy their needs. Further, implementation of the Start-up India programme by DPIIT, Ministry of Commerce and Industry, GoI in 2015 has led to establishment of many agri-tech based startups with the aim to solve farmer's problems at grassroot level.

The major agricultural concern during early times such as low productivity and food security were tackled by innovations like high yielding cultivators, irrigation techniques, pesticides and fertilizers. But, nowadays the pressing problem was to increase the income of the farmers and to ease their difficulties in agricultural operations. To overcome these challenges, several innovations were developed by the people from the local community. The technologies or products or process created by the grassroot innovators at local level to address the local level problems were called grassroot innovations. While, people who developed these grassroot innovations to solve local problems with the use of locally available resources were known as grassroot innovators. These grassroot innovations were simple and affordable technologies developed by grassroot innovators to solve personal and community challenges (Kalpana *et al.*, 2014) [3].

Though grassroot innovations were developed to solve community challenges, it bring out the entrepreneurial traits of an innovator and indicate the potential of income generating activity. In addition, it provides employment to the rural people and paves way for improving their living standard as well. The origin of the concept of grassroot innovation can be traced to Ethiopia, March 2004. Promoting Local Innovations in Ecologically-Oriented Agriculture and Natural Resource Management (PROLINNOVA), an international network of NGO aims to advance local agricultural innovations by identifying, recording, sharing and promoting regional innovations.

While, India joined this PROLINNOVA network in Global Forum on Agricultural Research and Development in 2012 and emphasized the importance of farmer-led innovation's horizontal and vertical expansion (PROLINNOVA, 2021) ^[9]. Eventually, according to Global Innovation Index (GII), India secured 46th rank and regarded as most innovative country in 2021 for its advancements in innovation and the ecosystem for development of innovation.

Several institutions like National Innovation Foundation (NIF), Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI), Grassroot Innovations Augmentation Network (GAIN), Honey Bee Network (HBN) and Creative Minds were working to promote grassroot innovations. Press Information Bureau (PIB) (2021) figured out that Honey Bee Network in India has documented nearly 2 lakh grassroot innovations and traditional knowledge in the past two decades. Among different states of India, Telangana holds fourth position in Indian Innovation Index (PIB, 2021) ^[8]. Similar to India, various organizations like Palle Srujana, Telangana State Innovation Cell (TSIC) and many other play a vital role in promoting of grassroot innovations and agri-tech startups in Telangana.

Palle Srujana, a voluntary organization had documented over grassroot innovations and aims to empower rural innovations in Telangana and Andhra Pradesh. Similarly, AgHub (Agri Innovation Hub) was a two-tier model developed by PJTSAU (Professor Jayashankar Telangana State Agricultural University) to promote agri-tech start-ups and student entrepreneurship. Eventually, Telangana government through its programme, 'Intinta Innovator' has scouted more than grassroot innovators to promote rural innovations. Based on previous studies, it could be observed that the grassroot innovators has to undergo several challenges such failure to protect innovation through IPR from informal economy (Lyamchai *et al.*, 2005) ^[4] capacity to create strong network and link with other stakeholders, constraints in securing funding and time availability of the members (Seyfang and Haxeltine, 2011) ^[10] broad scale diffusion of innovations desirability and feasibility of grassroot innovations (Martin *et al.*, 2015) ^[5] triple tension issues such as scaling up, success and sustainability (Hossain, 2018) ^[11] lack of managerial and entrepreneurial skills to deal with social-cultural-commercial trilemma (Jones *et al.*, 2021) ^[2].

Statement of the problem

Though innovation acts as a tool to overcome the challenges and paves way for development, the grassroot innovators were forced to encounter several challenges while establishing and scaling up their innovations. Hence, the present study was attempted to identify the various constraints encountered by the grassroot innovators under various dimensions such as technical constraints, manufacturing constraints, sales and marketing constraints and financial constraints.

Material and Methods

Ex-post facto research design was adopted as the present study examines the constraints experienced by grassroot innovators in establishment and scaling up of grassroot innovations in Telangana (after the occurrence of the phenomena). While, Telangana state was purposively selected for the study since it occupies fourth position in Indian Innovation Index (2021). Further, it was observed that State

Government of Telangana and some of the organizations popularly known as grassroot innovation enables such as Ag-Hub, Grama Bazar, Inqui-lab, Kult, NIRDPR, Palle Srujana, SRiX, TSIC, T-Works, T-Sat focus on capacity building and strengthening of grassroot innovation ecosystem. Though, these grassroot innovation enablers were scattered across three zones of Telangana, majority of them were in Hyderabad. Hence, a list of grassroot innovators from AgHub (PJTSAU), Palle Srujana and TSIC along with few grassroot innovators from database of grassroot innovators constitutes the 100 respondents of the study. The data were gathered with the help of structured interview schedule through personal and telephonic interview method. The gathered data were analysed with tabular analysis and the results are presented below.

Findings and Discussion

The various constraints encountered by the grassroot innovators in establishment and scaling up of grassroot innovations includes technical constraints, manufacturing constraints, Sales and marketing constraints and Financial constraints.

Table 1: Bottlenecks experienced by grassroot innovators in starting and scaling up of grassroot innovations in Telangana

S. No.	Constraints	Grassroot innovator's response (in %)	
		Yes	No
A			
Technical constraints			
1	Commercial product development	63	37
2	IPR related	63	37
3	Technical expertise	20	80
4	Certifications	52	48
5	Availability of formal training	11	89
B			
Manufacturing constraints			
1	Availability of raw material	49	51
2	Availability of infrastructure	56	44
3	Availability of electricity	24	76
4	Availability of testing facilities	19	81
5	Availability of skilled manpower for manufacturing	17	83
C			
Sales and marketing constraints			
1	Customer acquisition	53	47
2	Availability of sales personnel	39	61
3	Pricing constraints	22	78
4	Market access or expansion	71	29
5	Branding of product	55	45
6	Fixed market price	41	59
D			
Financial constraints			
1	Availability of working capital from banks or loans	80	20
2	Availability of schemes or subsidies	72	28
3	Availability of insurance facilities	68	32

Technical constraints

From Table 1, the technical constraints experienced by the

grassroot innovators can be understood. Less than two-third of the grassroot innovators face technical difficulties in IPR related issues (63%) and commercial product development (63%), followed by certification issues (52%), lack of technical expertise (20%) and unavailability of formal training (11%).

As most of the grassroot innovators lack technical expertise on product technical competencies and product viability, they experienced constraints towards development of commercial product. In addition to this, lack of awareness towards benefits of IPR and patents, complex process involved in patenting and financially unaffordable nature of rural grassroot innovators led them to encounter severe technical constraints. Similar findings were reported by Seyfang and Haxeltine (2011)^[10], Martin *et al.*, (2015)^[5].

Manufacturing constraints

Table.1 depicts the manufacturing constraints experienced by the grassroot innovators. More than half of the grassroot innovators experience manufacturing constraints towards availability of infrastructure (56%), followed by availability of raw material (49%), availability of electricity (24%), availability of testing facilities (19%) and availability of skilled manpower for manufacturing (17%).

Since, lack of infrastructure facilities and limited resources hinders the development of new innovations, grassroot innovators need infrastructure support. Thus, by establishing a district or block level infrastructure support to grassroot innovators would encourage them and enhance their innovations quality. The findings were in line with the results of Hossain (2018)^[1] and Jones *et al.*, (2021)^[2].

Sales and marketing constraints

Sales and marketing constraints encountered by the grassroot innovators can be understood from table.1. Nearly less than three-fourth of the grassroot innovators had difficulties in market access or expansion (71%), followed by branding of product (55%), customer acquisition (53%), fixed market price (41%), availability of sales personnel (39%) and only few of the grassroot innovators encounter pricing constraints (22%).

As most of the grassroot innovators were from rural area, they were not aware of the importance of branding and lack customer support. Hence, there was a need to educate about the importance of the branding to the rural innovators and their customer network need to be strengthened through promotional activities. The results were in accordance with the studies of Seyfang and Haxeltine (2011)^[10], and Jones *et al.*, (2021)^[2].

Financial constraints

Higher percentage of the grassroot innovators had constraints towards availability of working capital from banks or loans (80%), followed by availability of schemes or subsidies (72%) and availability of insurance facilities (68%).

Since, the grassroot innovators had no secured source of income to enhance or update their innovations as well as lack of patent or IPR, force them to encounter the consequences of financial constraints such as lack of access to expand the market or to sell the product to other areas. The findings were similar to the results of Seyfang and Haxeltine (2011)^[10].

Conclusion

From the study, it was revealed that, though grassroot innovators develop innovations to solve the problems in their surroundings, they were forced to encounter several

constraints such as lack of technical expertise in commercial product development, IPR related constraints, availability of infrastructure for manufacturing, lack of market access or expansion of market and availability of schemes or subsidies to encourage and motivate the grassroot innovators to establish and scale-up the enterprise. As India is a rural based developing country, development of rural region leads to development of economy; which can be done by improving the livelihood of the rural people. Hence, creation of awareness and providing proper infrastructure and resource support at grassroot level would lead to formulation of more innovations and empowerment of local people. Further, financial institutions and other non-governmental organizations should support the grassroot innovators which enables them to formulate more innovations to serve the community.

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