

State of Agricultural Extension reforms in India and the need of convergence

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Extension reforms play a significant role in catalysing the extant policies and provisions that are affecting the extension service across India. Although the country has seen a series of reforms in the past seven decades, the changing contours of agriculture over the years demand new sets of interventions and reform measures. Regimes in the past decades have brought a series of measures to strengthen the extension system. The present study found that the most of the reforms were concentrated on a single theme and even the multiple reforms were overlapping with similar mandates. This resulted in poor performance and poor accessibility to the needy households. Moreover, during the pandemic the existing system reforms showed a fair amount of refinement. Therefore, the study highlights the importance of convergence across common themes of various interventions brought in to enhance the extension services.

Keywords: Agricultural extension, convergence, food security, private stakeholders, reforms and interventions.

FARMING in India has now become a vulnerable occupation than a viable option with manifold increase in extreme events and uncertainty in recent times. Given that 43% of farmers and 1.3 billion people depend on agriculture, it is extremely important to secure food during extreme events¹. Near-stagnant low growth rates and the global headwinds circumventing agriculture sectors are posing new threat for timely achieving national priorities and sustainable developmental goals 2030. In addition, share of expenditure on agriculture research and education in Agricultural GVA is merely 0.37%, far less than other developing economies². In addition, the narrowing private investment and sluggish growth of overall economy is expected to jeopardize emerging markets from a global perspective. However, the recent reforms brought in to strengthen the farm sector as a whole are modest and convincing to stakeholders, but their impact on small and marginal farmers who stay far away from the policy touch points and institutions is still arguable. The most viable option to reach out to such people is through public and private extension and advisory system. This underlines the role of National Agricultural Research System (NARS) to bring relevant technologies and knowledge in order to manage the reforms in the agricultural extension system^{3,4}. This would help in reducing yield gap between research stations and farmers' fields to a significant extent.

Present status and future prospect

Agriculture extension services in India have been publicly funded and delivered through the Department of Agriculture, Cooperation and Farmers' Welfare (DAC&FW), an apex institution of extension service with supporting nodes (state departments) at the States and Union Territories. With limited resource and manpower in the private sector, DAC&FW continues to dominate the extension system in the country. However, there is a considerable effort from various agencies and private firms continuously striving to provide extension services to the farming community. This concerted effort from both private and public players makes this system one of the largest knowledge and information dissemination institutions in the world³.

Agriculture extension system has seen a significant structural change in the last five decades across the Indian states and sectors⁵. This powered the Indian public agricultural extension to undergo a number of changes⁶. The role played by the existing agricultural extension system from the time of the Green Revolution is immense in terms of connecting farmlands and farmers to key institutions such as KVK, State Agricultural Universities (SAUs) and State Departments of Agriculture. Further progress in poverty and hunger reduction crucially depends on the increased productivity and profitability of these farmers, which in turn depends on the successful delivery of agricultural extension. These institutions are playing a pivotal role in technology dissemination⁷, where need-based training and exposure visits to farmers and farmer-led extensions serve as effective tools. The country is already reeling under pressure from limited land and water availability due

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to degradation of natural resources; climate change; changes in demand and consumption patterns, moving towards high-value agriculture; increasing population pressure; liberalization of trade and global trade war⁸. When the ambitious scheme of doubling farmers' income by 2022 being in operation, strengthening the existing extension system is imperative. Constituted by the Ministry of Agriculture and Farmers Welfare, Govt of India; the Doubling Farmers Income (DFI) Committee in its 11th report considers Extension Service System (ESS) as the first-mile activity in creating farmer capacities, that can sustain income-based agricultural practices. Considering the immense significance of extension, its revitalization is warranted.

India after 75 years independence has considerably strengthened the extension system with more than 100 research institutions, 74-plus SAUs, Central Agricultural Universities (CAUs), and widening the reach of State Agriculture Ministers, Departments and Institutions along with significant development in private extension services provided by companies and the corporate sector. About 722 KVKs are engaged in tandem in all the districts of the country for validating and acclimatizing the technologies for local conditions for technology-inclusive farming. In addition, there are several NGOs involved as well. Further, in 2002, the Government of India (GoI) launched Agri-Clinics and Agri-Business Centres to supplement and strengthen the existing extension mechanism through private participation by extension services for free or at a nominal cost by educated and trained candidates in a self-employment mode. GoI had also initiated ATMA (Agricultural Technology Management Agency) in 1998 under the Innovation in Technology Dissemination (ITD) component of the National Agricultural Technology Project (NATP). It was done in association with World Bank and first piloted in 28 districts and later expanded through the country⁴. ATMA is a fully integrated and planned agency to bring together different agencies involved in extension activities under one platform to decentralize decision-making through 'bottom-up approach' (Figure 1). Moreover, it is an attempt to link research, extension, farmers, NGOs and the private sector⁹.

Although it claimed to be an innovative model of extension¹⁰, the Agency was plagued with issues such as lack of dedicated manpower, functional autonomy and attitudinal barriers at all levels, thus limiting it from achieving its goals¹¹. Nevertheless, ATMA provided a platform for interactions between line departments and farmers while introducing the bottom-up planning and commodity interest groups into field extension practice¹². Whatever the problems and achievements so far, the future prospect lies with integrating the efforts of existing organizations with the aim of achieving pluralistic extension services.

Further, there is a continuous quest for technological innovations and solutions in farm practices and reach, by more than 50,000 scientific communities¹³. There is a continuous tweak in policies and programmes to mainstream

the extension services starting from community extension-based to ICT-enabled extension. However, there are issues pertaining to the coverage of, access to and quality of information provided to marginalized and poor farmers. A deeper analysis revealed that the organizational performance issues still hinder the effectiveness and efficiency of public agricultural extension system, viz. staff numbers, low partnerships and continued top-down linear focus to extension⁴. There is an increasing need to work in partnership and to share knowledge and skills in order to meet the information needs of marginal and smallholder farmers in India¹⁴. Thus, convergence of efforts and schemes aiding extension activities is necessary at this juncture. This will enable existing systems to solve the longstanding farm distress in a more realistic, holistic and inclusive manner.

Given that a sizable population is engaged in agriculture, it is essential to know the future trend of development to secure food supply and livelihood. The biggest threat to agricultural production in this century is climate change¹⁵ and factoring in this aspect to assess the future trend is necessary. India is expected to cross China in terms of population by 2027 and the demography is expected to peak by 2040 (ref. 3). Improvement in production and the productivity system would be the only way forward to achieve the goals of food security, a hunger-free society, nutrition outcomes, and a sustainable and secure food system for India. Hence revisiting the extension reforms in agriculture is a dire necessity for pragmatic and sustainable farming and food system.

Evolution of extension advisory system

The first-wave extension service provision was initiated through the Community Development (CD) and National Extension Service (NES) programmes, which clearly showed the government's intent to provide a number of services in areas such as agriculture, health, animal husbandry and education to all sections of society¹⁶. Over the years evolution of agriculture has resulted in the demand for new technology to secure stable food production, mitigate climate change effects and build climate-resilient farmlands

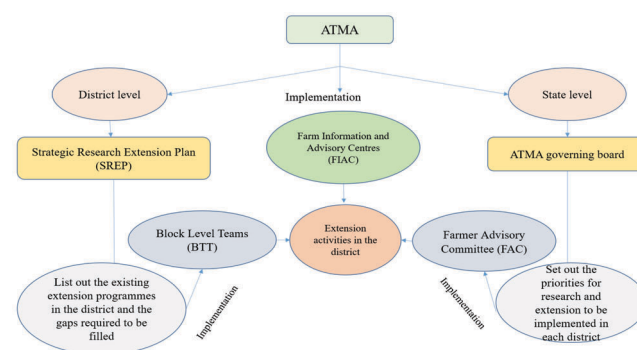


Figure 1. Integrated approach of ATMA.

and farmers. Indeed strong agricultural extension is one way to help farm innovations and technology reach millions of farmers. The country's extension service has seen huge transformation/evolution from agent-based system to ICT-enabled to mobile-based service for effective dissemination of information to the farming community. Though pluralism in communication channels has enhanced the availability of a variety of information, it poses challenges of reliability of information. Therefore, ensuring farmers' access to sources of reliable and relevant information has become increasingly important¹⁴. This was mainly attributed to strong NARS, comprising the apex Indian Council of Agricultural Research (ICAR) and SAUs⁴. Since its inception, ICAR has brought a perfect blend of education, research and extension to help technology innovations reach millions of farm communities. The role played by agriculture research and extension system in adoption of high-yielding varieties in the last seven decades has resulted in India becoming a food secure, surplus country with commendable transition from ship to mouth in the early 1960s to an impressive growth after the Green Revolution in 1970s and 1980s, and food surplus since early 2000.

The success of extension depends mainly on extent of information dissemination and its effect on improving the agricultural value chain. About 86.08% land holdings are held by small and marginal farmers (cultivating an area of 2 ha or less)¹, who have less resources at their disposal to communicate and ascertain information through ICT. Hence there is an increasing need for stronger intermediaries that can facilitate information access for diverse smallholder farmers¹⁴. Figure 2 presents the existing information dissemination through various intermediaries.

Case of private extension

Given the diversity of agricultural regions and how the farming population is dispersed, it was pertinent to provide extension services to all farmers. It was earlier found

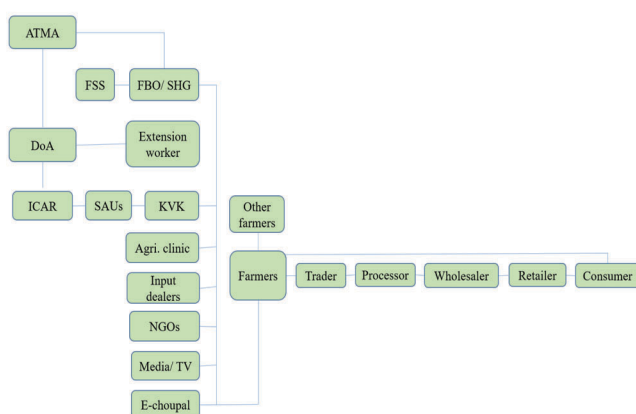


Figure 2. Information flow from agricultural extension.

that the extension worker : farmer ratio was wide in India, i.e. 1 : 1000 (ref. 17). Now it has widened further. Therefore, the involvement of private players in agricultural extension becomes imperative to improve accessibility and its relevance in agricultural development¹⁸. This would further strengthen the extension service delivery system in the country to have a wider reach to farmers, affecting efficiency in decision-making, resource conservation, allocation and planning, and timely farm operation and marketing. Figure 3 shows the key stakeholders in private extension and various approaches in agricultural extension.

It was observed that both public and private extension systems are innovating approaches for the transfer of technology and information to farmers so as to empower them to face the challenges of market liberalization and globalization¹⁹. The favourable factors for successful private extension services, include advancement in ICT, broad public research system, changing cropping patterns, contract farming, inability of the public system to reach large clients, etc. However, there are challenges in the operation of private extension in India originating from service affordability to small and marginal farmers, large tracts under subsistence farming, and overexploitation of resources. To address these challenges, it is prudent to carryout SWOT analysis for omission of errors in the implementation and to effectively leverage private extension services (Figure 4). To strengthen the approaches/efforts of private extension, it is important to devise a public sector extension policy so that private bodies will be willing to provide extension services is partially determined by government actions²⁰.

Convergence efforts

There are continuous efforts in strengthening the extension system in India to reduce the gap between laboratory

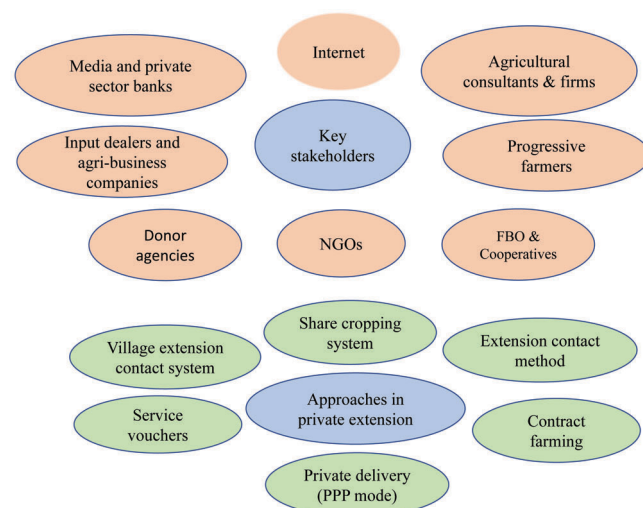


Figure 3. Key private stakeholders and approaches in agricultural extension¹⁷.

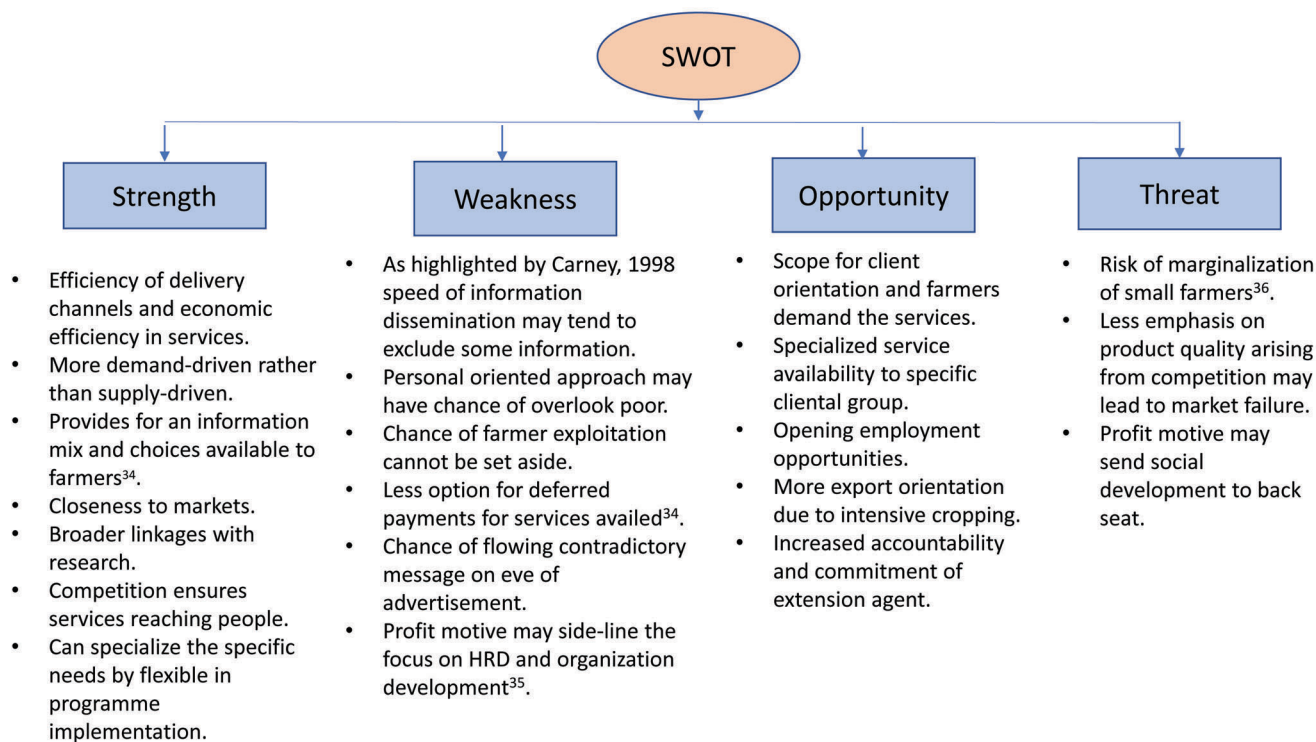


Figure 4. SWOT analysis of private extension system¹⁷.

to land. The existing system is dominated by the public sector with key institutions throughout the country; it more or less work traditional system²¹. Traditional agricultural extension systems designed to disseminate information and services to the farming community are not able to deliver according to expectations. Often public extension services are criticized for being inefficient and out of touch with the needs of their clients²¹. Also, trends in data reveal that the role of the public sector may not be as significant in the future (ISNAR). Hence the time is apt to make an effort to develop a platform by converging the underlying efforts of key stakeholders in extension service. Moreover, now there is much optimism about the private sector's capacity to deliver new and attractive technologies, even though existing levels of private investment in research in developing countries are low²². India's favourable demography and the young and educated farmers are more closely associated with the private extension system²³. As the country's level of education and youth population is expected to increase, it is pertinent to involve them in the mainstream private extension system.

The first leg of convergence started by establishing ATMA in 1998, where scope was given to develop a platform for convergence of human and financial resources available in the government, civil society, farm community and private sector²⁴. In fact, the Agri-Clinics and Agri-Business Centres were a convergent effort to train graduates on a self-employment mode with active participation of Department of Agriculture, Cooperation and Farmers'

Welfare (DAC&FW), GoI, National Institute of Agricultural Extension Management (MANAGE), Hyderabad, and Nodal Training Institutes (NTIs) and National Bank for Agricultural and Rural Development (NABARD), Mumbai. The National Agricultural Technology Project (NATP) envisaged the role of both public and private systems under the innovations in technology dissemination component with involvement of ATIC (Agriculture Technology Information Centre) of universities for transfer of technology, consultancy cell in each ATIC for providing technology information to farmers, entrepreneurs, researchers and others, while also initiating the collaborative research work with private agencies for generating information on certain basic aspect¹⁷.

Pandemic and the existing extension system

During the COVID-19 pandemic, the Extension Advisory System was actively involved in guiding the farmers harvesting and marketing of produce even during the nationwide lockdown. The experiences suggest for reorientation and preparedness of extension system with changing priorities²⁵, particularly during the natural calamities. Even in the past during SARS/HIV in 2004 suggestions were made to rehabilitate EAS²⁶. Further, improvement in the existing extension system is evident from the fact that the new farm laws were not effectively communicated to the farming community, resulting in protests in parts of country.

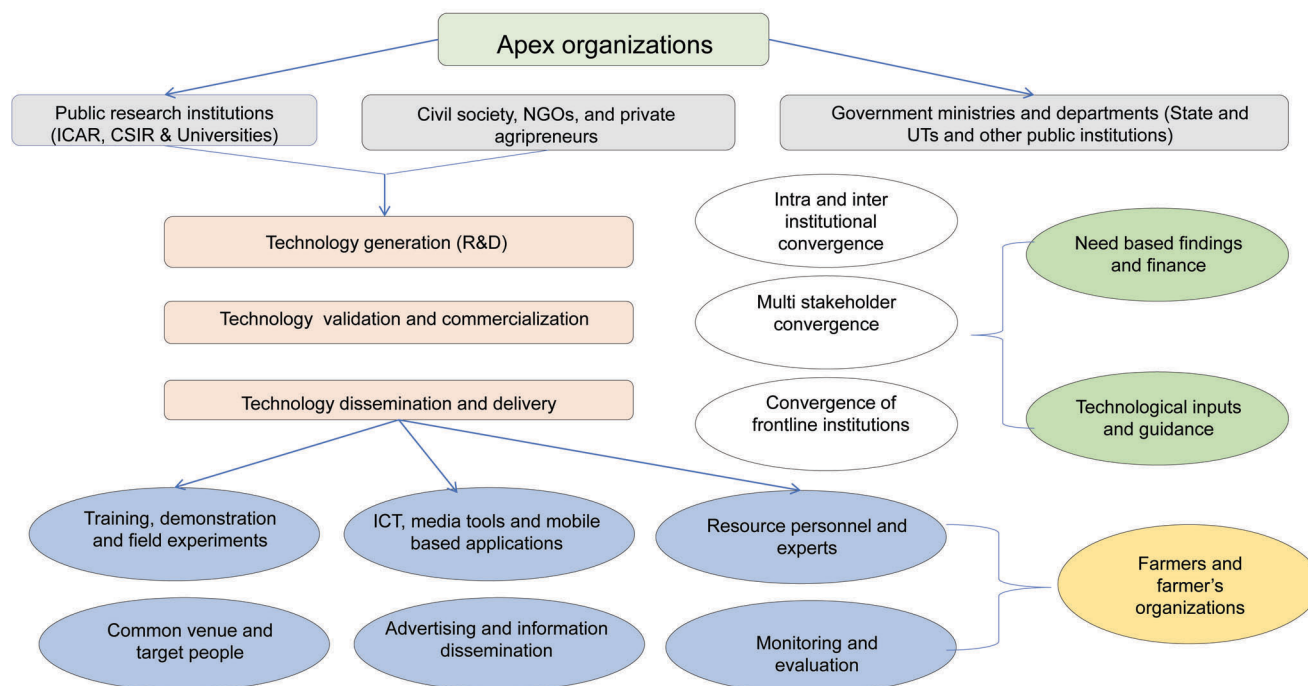


Figure 5. Suggested multilevel convergence model. Source: Authors own compilation.

Lack of end-to-end communication strategy allowed misinformation and vested interests to spread the rumors resulting in farm protests across India, mainly in Punjab and Haryana. There is also lack of a single-ended channel for communication between farmers and central agencies, authorities and institutions formulating those laws. In order to overcome this lacuna, GoI proposes to form a Conciliation Board, to be set up by the SDM to resolve disputes, besides supervision, monitoring and proper implementation. For effective implementation of the farm laws or any other interventions affecting the farming community, the following three-point reformative measures are essential, besides convergence of systemic reforms on track.

First, a strong communication channel for the education of various stakeholders, viz. farmers, elected representatives, ground-level officials and local change agents. Revisiting the model of village extension system (VES) is equally crucial to encourage truthfulness of information in the communication channel.

Second, the extension activities at the village level need priority attention. Extension should largely engage in educational efforts. At present it is burdened with distribution of subsidized farm inputs and welfare measures.

Third, keeping in view the large penetration of smartphones and broadband connectivity in the rural areas, the government can plan an effective roadmap for deployment of ICT-based extension system by employing progressive farmers as 'kisan mitras' and deploying agriculture graduates and diploma-holders on an ad hoc basis for strengthening the knowledge base of these kisan mitras. Moreover, raising the budget of public extension system is crucial for

the timely and effective operation of various interventions. It is desirable to increase the agriculture budget to at least 1% of its GDP.

Ways of convergence

There has been no dearth of interventions in last seven decades for increasing the public extension service to the needy farmers (Table 1). The Government and civil society organizations are engaged continuously to provide extension services at all times, free of cost. However, there are still issues pertaining to the policy such as supply of credit, land holdings, prices, input and marketing²⁷, information distortion, lack of fund allocation, and capacity building, carry out same work by different organizations/institutions. These issues could be effectively resolved by convergence of efforts, while making extension service system more effective and target oriented to serve the interest of resource poor farmers.

The first level of convergence has to happen by making the private extension service a viable business opportunity for private entrepreneurs and investors. There is also the need for a standard mechanism for them to engage with large organizations and a wide set of partners to supplement and complement each other's efforts. Second, is to enhance the engagement of FBOs and other institutions which are engaged in frontline extension activities with large public institutions to reduce the information and technology adoption lag. Third, public institutions must emphasize on facilitating the formation of links between the farmers and

Table 1. Convergence efforts and their outcome

Convergence cases	Schemes/programmes/missions/policies/institutions	Outcome	Region
Banana fibre extractor: a case of successful convergence ³¹	KVK of ICAR-CTRI, State Government NGOs, SHG, DST, UNDP and ICAR-ZPD-III	Livelihood security of farmers through commercial extraction of banana fibre	Andhra Pradesh
Mithun identification using microchip installation ³¹	KVK Papumpare, DAH, State Forest Department, NGO, FO, ICAR-NRC Mithun	Scientific identification of mithun through installation of microchip helped in ownership dispute settlement and preventing theft	Arunachal Pradesh
Hybrid maize seed production ³¹	DMR New Delhi, ZCU Zone-III, KVKs of eight states, NRC Mithun, AAU, Farmer Seed Producer	Food security through increase in maize productivity in the states of North East India	States of NE India
Assuring a livelihood security to tribes in East Godavari district ³¹	KVK CTRI, ITDA, AP Forest Department, SAU and NGO	Livelihood security of farmers through sustainable tamarind production and marketing	Andhra Pradesh
KVK-ATMA convergence model ³²	ATMA, ZPD, Zone-VII, state and ICAR KVKs, Government of Madhya Pradesh, JNKVV	Helped sustain the double-digit growth of agriculture in Madhya Pradesh	Madhya Pradesh
Hosangabad model ³³	MANAGE, Dhanuka Group, Government of Madhya Pradesh	Sustainable development through agricultural resource management and development	Madhya Pradesh

Source: Authors own compilation.

other organizations as well as encourage the private players in extension activities²⁸. Fourth, fortunately India is bestowed with pluralistic extension organizations, viz. public, private, cooperatives, NGOs, etc. There is a sort of duplication of efforts by these players without any cooperation and convergence. PPP mode may be explored to reduce the idleness, duplication and better utilization of scarce resources. Public organizations are strong in backward linkage, private organizations are strong in forward linkage, and NGOs are strong in social engineering and mobilization²⁹. The comparative advantage of each organization may be explored for advancement of extension services to hitherto untouched regions and sections of the society. Last is by linking the frontline public extension agencies like ATMA, KVK, etc. to dedicated private players for successful demonstration and field days with farmers. The idea is to leverage the linking of these organizations through ‘seeing is believing’ and building confidence in them through ‘learning by doing’, i.e. by working together³⁰.

Figure 5 shows a possible extension convergence model. As evident, the three apex organizations will play a key role in bringing together the agencies and institutions in extension service delivery, viz. public research institutions, civil society and Government ministries. Among, all these organizations, the highest level of responsibility lies with public research institutions and civil society, which can play a role starting from R&D to monitoring and evaluation.

Conclusion

As observed from the above, it is clear that there is no dearth of interventions to harness and stimulate the extension service in India. These are evident in changing the key contours of various delivery mechanisms. However,

their reach has not met with the desired/potential level to affect more people. Also, such interventions tend to concentrate on specific themes with a mere focus on important aspects. This has resulted in poor performance and low efficiency as observed by many researchers, who have suggested unveiling the convergence across various interventions directed upon similar themes/mandates/aims. With suggestions from various studies, the present study has put forward a multivariate convergence model that can be leveraged to better target and help the needy farmers. This model may help in conserving resource endowment directed to various interventions and reforms at large.

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