PERSPECTIVES

FROM SMALL TO SMART
Empowering Farmers through Technology

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ABSTRACT

In India, small and marginal farmers face multiple challenges in their endeavour to engage in agriculture as a livelihood. Small and marginal farmers have been falling prey to middlemen owing to the small quantities that they produce and their socio-economic conditions. The lack of collectivization, small land holdings and informal credit sources form a vicious cycle of debt-trap leading to a rise in farmer suicides in the country.

The government has shifted its focus from trying to increase productivity and yield and is now moving towards targeted means to convert agriculture into a viable business for farmers through Farmer Producer Organizations (FPOs). In this context, leveraging technology innovations can help FPOs in India become profitable and sustainable business models. This paper seeks to highlight the importance technology plays in changing the agricultural landscape of the country and explores technology innovations already available in the market that can help incentivize the primary sector and its stakeholders.
INTRODUCTION

Current Situation of Small and Marginal Farmers in India

Agriculture is a significant contributor to India’s GDP. As per the Economic Survey of 2015-16, the share of agriculture in the GDP is 17.4%. In addition, the agriculture and allied industries sector provides employment to close to 50% of the country’s population [i].

The Indian agricultural landscape is characterized by a majority of small and marginal farmers. According to the Agricultural Census of 2000-01, there were an estimated 98 million small and marginal holdings out of around 120 million (i.e. 81.6%) total land households in the country. More recent data from 2005-06 shows that the share of small and marginal farmers in land holdings has increased to 83% [ii].

Data from various studies suggest that small and marginal farmers contribute more effectively to diversification and food security and are equal to or better than large holdings [iii].

However, these farmers face multiple challenges in trying to sustain agriculture as a viable livelihood.

Agriculture is, for most farmers, subsistence farming with productivity enough to fulfill the needs of the self thus leaving little to be sold. Some other issues that plague the small and marginal farmer and make the sector unviable for sustainable livelihood activities are:

a. fragmented land-holdings,
b. low input use efficiency,
c. stagnant crop productivities,
d. scarcer and costly labour,
e. the lack of formal credit,
f. fluctuating markets, and
g. unpredictable climate [iv].

The need to contribute to agriculture is also on the decline as more and more individuals from rural areas are moving to the cities in search of alternative means of livelihood.
FOCUS AREAS

Given the unpredictable nature and lack of profitability of cultivation for small and marginal farmers in India, alternative activities and processes have become the focus areas for the Government to make agriculture viable for farmers. A couple of these initiatives have been discussed in this section.

Livestock as a Sunrise Sector for the Economy

In the rapidly changing agricultural landscape, livestock is a rising sector and has contributed 4.1 to the GDP in 2012-13 [v]. Livestock not only contributes to food production needs but also supplies draught power, organic manure and domestic fuel [vi]. Most importantly, livestock is the main source of income for small and marginal farmers who cannot rely on crop production owing to the small size of landholdings. Given its demand in the food economy and the heavy reliance of small and marginal farmers on it, the growth of the livestock sector has to be more demand and technology driven.

Livestock has an impact on the income of small households as it generates a regular source of marketable outputs and helps in easing consumption needs during periods of crop failures. Moreover, being predominant among small landholders, the livestock reduce income inequality [vii]. Additionally, small livestock breeds provide a cash cushion whereas large animals act as capital reserves [viii].

The focus on livestock as an alternative source of livelihoods for small and marginal farmers has increased over the last decade with the Central and State Governments launching multiple schemes to provide a boost to the sector. The most recent of these is the National Livestock Mission that commenced in 2014-15 and is mission-mode approach to covering all activities that are required to ensure quantitative and qualitative improvements in livestock production systems and capacity building of all stakeholders [ix].
The Power of Collectivization-Farmer Producer Organizations (FPOs)

Farmer Producer Organizations (FPOs) have a proven solution to deal with a range of challenges that confront small and marginal farmers. Member farmers are able to leverage collective strength and bargaining power to access financial and non-financial inputs, services and appropriate technologies, reduce transaction costs, tap high value markets and enter into partnerships with private entities on more equitable terms [x]. FPOs use the strength of collective planning for production, input procurement and output marketing to add value to farmer's produce. The success stories and experiences with FPOs in India makes a strong case for policy support to significantly increase their power in the market place, reduce risks and help small and marginal farmers move up the agri-value chain.

To promote the growth and sustainability of FPOs in the country, the Department of Agriculture and Cooperation issued a policy document to encourage the formation of FPOs [xi]. In 2014-15, the PRODUCE Fund of INR 200 crore was announced for the building and promotion of 2000 Farmer Producer Organizations (FPOs) in next two years. In addition to this, the 'Equity Grant and Credit Guarantee Fund Scheme' for Farmer Producer Companies was launched in 2014, enabling these institutions to access a grant up to INR 10 lakh to double member equity and also seek collateral-free loans up to INR 1 crore from banks, which in turn can seek 85% cover from the Credit Guarantee Fund.

However, till May 2015, only 879 FPOs were registered across India [xii]. Additionally, FPOs are facing sustainability and management issues due to lack of training and capacity building in the various activities of the FPO. Efforts have to be channelized towards making FPOs self-sufficient, profit-making business entities through investments in capacity building in development of business plans and efficient capital generation and management.
PM's Vision to Double Farmers' Incomes by 2022

Keeping in view of the plight of the Indian farmer, the Prime Minister, Shri Narendra Modi, in February 2016, announced that steps have to be taken to ensure that farmers' incomes are doubled (nominally) by 2022. In a National Round Table Meet in November 2016, the need for a synergy between policy and technology was highlighted. ICT-based agriculture solutions are a key component of the government's strategy to enable systematic and symmetric information flow for input use as well as financial and operation management [xiii].

The key focus areas to achieve this goal include improving irrigation, provisioning of quality seeds and nutrients, investing in warehousing and cold chains, value addition through food processing, creating a national farm market, introducing crop insurance schemes and promotion of ancillary activities like poultry, beekeeping and fisheries [xiv].

Not undermining the importance of technology in achieving this goal, the Government of India has launched several initiatives such as the Kisan Suvidha application, the electronic National Agriculture Market (e-NAM), PUSA Krishi App, Agri Market App, Crop Insurance App and Farmers' Portal- www.farmer.gov.in - a one-stop shop for all info needs [xv].

"Our farmers are pride of our Nation. We have a vision of doubling the income of farmers by 2022."
-PM Narendra Modi
In recent times, the public policy environment in India has been supportive of technology-led agricultural innovations and has been actively developing new institutions to ease access and affordability of technology adoption among farmers. Increasingly, private entrepreneurs are innovating and investing in the agricultural space (see Diagram 1). Farmers are also eager to invest in technologies that cater to their requirements as technology innovations provide the potential to achieve the necessary conditions for scale, with distributed low cost and customized delivery [xvi].

Currently, available technology solutions in the primary sector space aim at benefiting the individual farmer. There are not many innovations to support collectives such as Farmer Producer Companies, Co-operative Societies, etc. However, for small and marginal farmers, bargaining power and credit worthiness comes from working in groups. The Centre for Digital Financial Inclusion (CDFI) has developed a technology innovation, KANCHI that provides a holistic solution for FPOs to function as business entities.

Diagram 1: Different technology innovations in the agricultural space
Source: https://aglundernews.com/part-two-is-indian-agriculture-ready-for-gadgetization.html
Enabling Financial Inclusion for Farmers

CDFI, in collaboration with National Agro Foundation (NAF), has developed KANCHI - Kisan's Advancement through Cashless Innovation- to digitize business operations and financial activities of Farmer Producer Organizations (FPOs) to promote financial inclusion amongst small and marginal farmers.

KANCHI is a multi-lingual, technology driven initiative to develop a platform for FPOs to digitize their business and financial activities. The main objectives of KANCHI are:

- To strengthen FPOs' operations digitally by making them transparent and cashless
- To enable small and marginal farmers to get access to formal sources of credit

KANCHI is being piloted in Uthiremerur block of Kanchipuram district in Tamil Nadu from April, 2017 and about 1200 farmers from 2 FPOs on-boarded on the platform.
MODULES OF KANCHI

KANCHI has the following components:

a. Farmer Data Repository (FDR) - This is the core module of KANCHI platform as it allows the FPO to maintain profiles of member farmers i.e. from basic information about the members' family, land details, sources of income, bank account number, mobile number etc. This information will help understand the needs and requirements of individual farmers.

b. Farmer Investor Services (FIS) - In a farmer producer organization (FPO), all the member farmers are equal owners and shareholders. Every farmer is allotted 100 non-transferable shares of face value INR 10 each. Presently all activities from application receipt to issue of share instruments are paper-based. This module will digitize services such as issuance of equity/share certificates, distribution of corporate benefits, statutory compliance and grievance redressal.

c. Lending and Recovery System (LRS) – This module will manage accounting, disbursement, recovery and discharge of loans from financial institutions to FPOs/farmers. Farmers can receive and repay loans directly into and from their bank accounts respectively. Additionally, all the loan-related transactions are digitally recorded and can be tracked. This will help in developing a credit history for the farmer, which ultimately will help farmers avail formal credit from banks directly.

d. Milk Aggregation Portal (MAP) – This module enables digitization of the entire milk supply chain and ensures direct payments into the farmer's bank account. On a daily basis, dairy farmers deposit milk at milk collection centres which is transported to chilling plants of marketing companies. The entire process is manual and cash-based.

e. Input Centre Digitization (IC) – This module digitizes retail sales made by FPO-run input centres and maximizes the volume of sales for the farmers through retail invoicing of transactions.
BENEFITS OF KANCHI

With the farmer at the core, KANCHI has the following benefits:

- Digitizes record for all retail transactions
- Increases volume of sales through FPO-sourced products
- Builds sense of ownership for the FPO within farmers
- Promotes business acumen amongst farmers
- Reduces paper-work through management of share-based documents digitally

Input Centre Digitization (IC)

- Maintains digital data records of all farmers
- Enables informed decision-making for FPO/farmers
- Provides insights into farmers needs and requirements

Farmer Data Repository (FDR)

- Facilitates direct transfer of benefits into bank accounts
- Promotes continuous engagement with formal financial institutions
- Generates reliable credit history
- Promotes increased transparency through digitized record entry

Milk Aggregation Portal (MAP)

- Facilitates management of loans availed by farmers
- Generates credit history by digitally recording all loan-related transactions
- Promotes continuous engagement with formal financial institutions

Farmer Investor Services (FIS)

Lending and Recovery System (LRS)
EXPECTED OUTCOMES

KANCHI is a cost-effective digital solution that seeks to maximize cashless transactions in agriculture by facilitating farmers in securing credit from formal financial institutions by building their financial history. The expected outcomes of KANCHI are elaborated below (see Diagram 2).

- Ensure agricultural business transactions are routed through banking channels
- Minimize cash transactions for FPOs
- Create credible transaction history for farmers to foster increased interaction with financial institutions
- Create digitized records for internal transactions for FPOs/Self-Help Groups (SHGs)
- Increase volume of banking transactions and keep accounts active
- Reduce dependence of rural farmers on informal sources of credit
- Rate FPOs/SHGs on the basis of credit discipline
- Assist stakeholders in timely repayment of loans

Diagram 2: Expected Outcomes of KANCHI

KANCHI will create a cashless ecosystem for farmers and FPOs and will eliminate the reliance on informal sources of credit through digital financial inclusion. It will maximize the benefits for the farmer by converting agriculture from a mere livelihood option to a vibrant business opportunity.
**CONCLUSION**

The current political environment in India is geared towards enhancing the income of the farmers by investing in agriculture and its allied activities. Additionally, one of the main activities under Corporate Social Responsibility (CSR) guidelines is income enhancement through farm based livelihood opportunities. Given the cost-effectiveness and holistic design of KANCHI, the technology platform can prove to be a major breakthrough in solving some of the most pressing issues in collective farming.

Currently, most major CSR investments are in the field of education, sanitation, health and environment. Income enhancement through agriculture development is yet to gain recognition as a core funding area. Investing in technology innovations like KANCHI that are easily scalable and replicable can prove to be an effective channel for utilization of CSR funds. With growing emphasis on converting agricultural activities into a sustainable, business models, the relevance of KANCHI becomes higher.

KANCHI not only digitizes business operations but also allows for driving business acumen amongst farmers. The modules focus on share management, operations management and creating credit worthiness which are essential factors in determining the success and sustainability of any business entity.

Encouraging farmers to view agriculture as a profitable business opportunity vis-à-vis merely as a livelihood activity is central to the Government's vision of promoting financial inclusion and enhanced income for farmers. KANCHI can prove as a useful tool in this endeavour.
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