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Developing Agri-Value Chain for Rural Livelihoods in Asia Pacific Region





APRACA Centre of Excellence (ACE)

Bankers Institute of Rural Development (BIRD), Lucknow

An ISO 9001:2015 Certified Institution Promoted by NABARD

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PREFACE

About seventy-five percent of the world's poor live in rural areas and depend on agriculture as their primary source of income. Given the World Bank's estimate that economic growth in the agricultural sector is twice as effective in reducing poverty as growth in other sectors of the economy, strengthening agricultural value chains may be among the most effective ways to address global poverty. Agricultural businesses in developing countries offer an opportunity for market based economic development that creates benefits throughout global value chains. Supporting the stability and growth of such businesses fosters economic prosperity and job creation thus improving livelihoods.

Rural agricultural producers/farmers are the focal points for most of the value chains. Facilitating them capture market opportunities, get fair deals and produce higher-quality products go a long way in improving the efficiency of the value chains. Closer business links between the primary agricultural producers, agro-processors, exporters, traders and retailers provide significant potential for improved and increased employment and economic returns for rural producers.

In this context, NABARD-APRACA Centre of Excellence (ACE) set-up at Bankers Institute of Rural Development (BIRD), Lucknow, is happy to bring out its 3rd half-yearly publication on the theme: "Developing Agri-Value Chain for Rural Livelihoods in Asia-Pacific Region". The theme has been chosen in view of predominance of smallholder farming in Asia-pacific region. Small producers face multiple obstacles in entering local value chains, from high transaction costs to insufficient access to financial and other assets such as storage facilities and infrastructure. Development of inclusive and efficient agri-value chains can help smallholder farmers to transit out of subsistence farming and reap just and equitable gains that well-functioning value chains offer. Developments through integrating agricultural activities in value chains have been noticeable from different countries and institutions including in India, China, Philippines, Indonesia, etc.

In India, Farmer producer Organisations (FPOs), especially promoted by NABARD since 2011, have gained popularity in recent times because of their ability to link producers and markets across agriculture value chain. In view of this, GoI in 2019 launched a scheme "Formation and Promotion of 10,000 new Farmer Producer Organizations (FPOs)" with a clear strategy and committed resources. There are several success stories of value chain in the country which

have demonstrated leveraging economies of scale and improving market access for members. It is in this context, we aspire to share Indian experiences on agri-value chain in rural livelihoods through our publication.

I am confident that this publication by ACE, BIRD will be a useful resource for the policy makers, practitioners and field personal in developing and strengthening agri-value chain.

I am thankful to the authors and institutions for sharing their experiences and views through articles contributed by them and congratulate our team of ACE, BIRD, Lucknow, for this effort.

Shankar A. Pande
Director
Bankers Institute of Rural Development (BIRD),
Lucknow

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Abbreviations

AIF	Agriculture Infrastructure Fund
APMC	Agricultural Produce & Livestock Market Committee
ATMA	Agricultural Technology Management Agency
BIRD	Bankers Institute of Rural Development
BoDs	Board of Directors
CAGR	Compound annual growth rate
CEO	Chief Executive Officer
CIAE	Central Institute of Agricultural Engineering
CIG	Common Interest Groups
CSCs	Common Service Centres
CWC	Central Warehousing Corporation
DMI	Directorate of Marketing and Inspection
DOC	De-oiled Soybean Cake
DPIP	District Poverty Initiative Project
ECA	Essential Commodities Act
FIGs	Farmers Interest Groups
FPC	Farmer Producer Company
FPCL	Farmers Producer Company Limited
FPOs	Farmer Producer Organisations
FSSAI	Food Safety and Standards Authority of India
FWWB	Friends of Women's World Banking
GDP	Gross domestic product
GI	Geographical Indication
GIS	Geographic Information System
GoMP	Government of Madhya Pradesh
GrAMs	Gramin Agricultural Markets
GSDP	Gross State Domestic Product
GST	Goods and Service Tax
HUL	Hindustan Unilever Ltd
HVC	High Value Crops
HYV	High-yielding varieties
ICAR	Indian Council of Agricultural Research
IFFCO	Indian Farmers Fertiliser Cooperative Limited
IPM	Integrated Pest Management
JISL	Jain Irrigation Systems Ltd
JLG	Joint Liability Group

KVKs	Krishi Vigyan Kendras
KYC	Know Your Cluster
MEP	Minimum Export Prices
MPDPIP	Madhya Pradesh District Poverty Initiatives Project
MSCs	Multi State Cooperative Societies
NABARD	National Bank for Agriculture and Rural Development
NAFED	National Agricultural Cooperative Marketing Federation of India Limited
NCDEX	National Commodity & Derivatives Exchange Limited
NDDB	National Dairy Development Board
NGO	Non-Governmental Organisation
NPC	Nominal Protection Coefficients
NPM	Non-Pesticide Managed
NRM	Natural Resource Management
OD	Over Draft
ODOP	One District One Product
OF	Operation Flood
OG	Operation Green
PACS	Primary Agricultural Credit Society
PAN	Permanent Account Number
PFT	Project Facilitation Team
PIA	Programme Implementing Agencies
PIB	Press Information Bureau
PMAs	Programme Management Agencies
PODF-ID	PODF – Interest Differential
POPI	Producers' Organization Promoting Institute
PRODUCE	Producers Organisation Development and Upliftment Corpus
RRPPCL	Ram Rahim Pragati Producer Company Limited
SHG-BLP	Self-Help Group-Bank Linkage Programme
SHGs	Self-Help Groups
SHPL	Safe Harvest Private Limited
SPS	Samaj Pragati Sahayog
SROs	Self-Regulatory Organisations
SRR	Seed Replacement Rate
TOP	Tomatoes, Onions and Potatoes
UPI	Unified Payments Interface
VTF	Virtual Trade Fairs
WPI	Wholesale Price Index

A Summary on
'Report of the Working Group on Agriculture Value-Chain Finance'

Background

A Working Group was formed by the Department of Financial Services, Ministry of Finance, Govt of India under the chairmanship of Shri C.S. Setty, Managing Director, State Bank of India to explore the possibilities of new banking products for agriculture value chain financing, as decided during a meeting of hon'ble Prime Minister of India with the Secretaries to the Government of India on 18 September 2021. The members of the Working Group included Shri Vijay Dube, ED, PNB; Ms A Manimekhalai, ED, Canara Bank; Shri V S Khichi, ED, BoB; Shri P R Rajagopal, ED, BoI and Shri Shaji KV, Chairman NABARD (then DMD NABARD).

The Terms of References (ToR) of the Working Group were

a) To make specific actionable recommendations, including on regulatory changes required, for ensuring:

i) Laying down the scope and possibility for adoption and implementation of Agriculture Value Chain Finance in India

ii) Developing specific solutions including product specific financing and the type of financial instruments / new banking products to ensure easy finance for post-harvest management

iii) Examining working capital products and other schemes provided by NBFCs and examining if same products can be provided by Commercial Banks at a lower interest rate of interest through which enhanced investment credit and separate financing facility can be made available for small landholder farmers/ FPOs.

b) To prepare a roadmap for implementation with time lines.

The present paper is a summary of key findings and recommendations of the Working Group.

1. Contribution of Agriculture in Indian Economy and Current Financing Trend:

Agriculture plays a key role in development of Indian economy. It accounts for about 16.5% of the country's GDP (2018-19), approximately 55% of total employment (Census 2011) and means of livelihood for 57.8% of households in rural India. Globally, the country has second largest arable land (168 million hec), of which 68.3 million hec is under irrigation. Despite such contribution of agricultural in the development of Indian economy, the sector faces various challenges, viz. small and fragmented holdings, which limits the ability of the farmers to bargain for better rates for inputs and outputs, low productivity caused by lack of accessibility of good quality seeds especially for

small and marginal farmers, low fertility of soil, lack of access to quality fertilisers, lower irrigation efficiency (50% of agriculture being rain fed), lack of mechanisation & modern technology and inadequate extension services. Besides, the sector also suffers substantial post-harvest losses, limited access to financial products and markets. *Kisan Credit Card* (KCC) is the single largest credit product for crop cultivation. Over the years, the quantum of bank loans to agricultural sector have shown an increasing trend. However, the share of credit in agri & agri allied sector to the agri gross value added (AGVA) witnessed a decreasing trend. As on March 2021, the share of agri & agri allied sector to the AGVA is around 34 percent as compared to 43 percent in 2017.

2. Agriculture Value Chain Finance: Concept and Need

Agri Value Chain: Agri-Value Chain comprises of a set of actors and activities connected with managing inputs, production, infusing technology, post-harvest management, value addition by processing, marketing, financing, exports, mitigating risk, etc., so as to deliver commodities, goods and services in a desired form from the place of their primary production to the end consumers through a sequential set of incremental value addition stages and other related services. In general, the agri value chain encompasses the three major activities, viz., supply/production, processing and manufacturing and marketing distribution and consumption. Each step or activity in the agri-value chain is composed of processes undertaken by consecutive actors and adding value to the product.

Value Chain Finance: When credit or other financial services flows through actors along the value chains, it is called value chain finance, and may or may not include support from formal financial institutions. The value chain reduces commercial risk by providing an assured market for the produce, thus making it easier for chain actors to obtain financing from banks and other formal sources. Efficient value chain financing is critical in agriculture since it enables small & marginal farmers, traders, and processors along the chain to optimise financial investment, resource allocation, and capacity expansion.

The value chain finance is "the flows of funds to and among the various links within a value chain". The approach allows chain actors an increased access to finance with product market without much emphasis on collateral. Transactions are intertwined to allow automatic repayments of loans via transaction proceeds in the product market. Also, because of scale economies in product as well as financial markets, it reduces lending costs and risks. In the context of agri value chain finance (AVCF), input suppliers need credit for manufacturing, bulk buying, stocking and distribution of seeds, agro-chemicals, equipment and machines. Alternatively, farmers need credit for purchase of inputs and for investment in land improvements, irrigation, storage, machines and equipment. Traders need finance for purchasing, bulking and stocking of the produce before it is sold; and also for purchase of vehicles, to construct a warehouse, or pay for equipment to weigh or grade products. Small-scale processors require financial support for investment in processing.

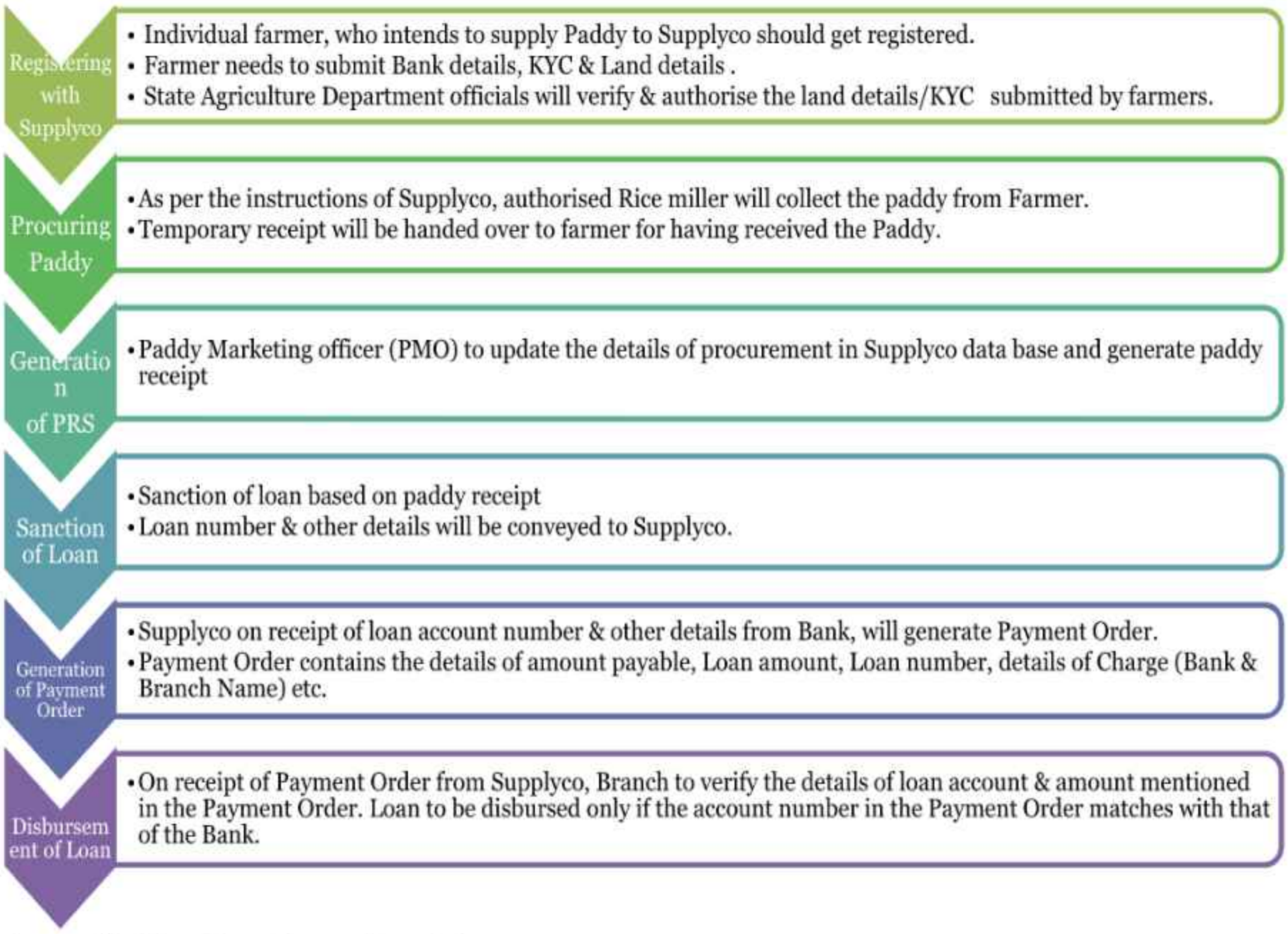
Thus adaptation of AVCF would enable banks to develop a long-term strategy for growth in lending to the other market segments and increased adoption of banking services leading to large increases in deposit balances, and payment services. The AVCF also reduced the costs and risks offering a means to reach smallholder farmers, who are otherwise excluded from the formal financial system. The Working Group estimated an amount of Rs. 10,22,000 crores as an opportunity to AVCF and also discussed two models which are prevailing in various states and recommended replication of same in other states.

3. Prevailing Models of Agri- Value Chain Financing in India:

Model A: Financing against Paddy Receipts to farmers under Tie-Up with procurer

Such model of AVCF is already prevailing in Kerala, where Canara Bank, SBI, PNB, BOI and UBI have been involved in lending to farmers against paddy receipts issued by the procuring agency, Kerala State Civil Supplies Corporation (Supplyco), a fully state owned organization. Under this model, in a bipartite agreement with Supplyco and banks, the banks lend short term loans to farmers against paddy receipt sheets issued by Supplyco. The bipartite agreement ensures payment and interest within 4 to 5 months from credit disbursement. Supplyco also extends corporate guarantee to the loans granted under this arrangement. The complete flow of value chain finance is depicted in Box: 1.

Box: 1 Agriculture Value Chain captured in Paddy Receipt Scheme



Source: Working Group Report, Page: 16

Model: B: Financing farmers receivables under a Corporate Tie-Up

The Working Group presented this model, where SBI has successfully been financing farmers engaged in supply of tropical fruits to a food processing. Under this model SBI signed a six years' MoU with Foods and Inns Ltd. (FIL), a multi-location manufacturer and exporter of a range of processed Tropical fruit pulps, purees and vegetables having factories in Mumbai, Chittor, Valsad, Sinnar and Gonde (Nasik). The company sources varieties of fruits and vegetables directly from the farmers and bills are drawn to the corporate based on which bank finances to farmers. Further, corporate remits all payments due to the farmers who have obtained loans and advances from the Bank under the Tie-up arrangement, directly to the farmers' accounts with the Bank for ease of appropriation towards the principal and monthly interest amount. FIL also assists farmers through their horticulture program. The model of agri value chain finance in shown in Box: 2.

Box: 2: Financing farmers receivables under a Corporate Tie-Up

Source: Working Group Report, Page: 17

In addition to the Public sector banks (PSBs), a few NBFCs and Private sector banks are also engaged in lending to Agricultural sector primarily for purchase of tractors and other equipment. Interestingly, presence of NBFCs & private sector banks in this market is substantially higher as compared to public sector banks. The Working Group captured the two models of AVCF, one by a NBFC viz. Samunnati Finance Private Ltd. for integrated red chilli AVC and another by an Agri-fintech company, viz. Jai Kisan: B2B2C model with end to end digitization.

4. Opportunities for Public Sector Banks:

There is an immense scope for PSBs in AVCF by replicating the NFBCs' model of financing. However, Banks have inherent difficulties in mediating in providing additional services like farm/cultivation advisories/cattle management/sourcing independent insurance services at market rates, etc. All these services are chargeable to the farmer. Considering such challenges, collective of farmers or FPOs will be ideal agencies who can undertake these services because then the benefits will flow directly to the farmers. Otherwise, at each point of mediation there are costs to be borne by the farmers. If FPOs are able to establish supply relationships with corporates and undertake these tasks, then banks will be able to fund the FPOs based on their credit needs. Alternatively, banks can do the funding under co-lending or work with the

NBFCs as business facilitators by paying fees to them to work this funding arrangement.

5. Key Recommendations:

i. Inclusion of all Actors of value chain under the Regulatory Definition of Agri Value Chain: There is need to bring the entire set of activities from input supplies to sowing/cultivation to harvesting to procurement to processing up to the point of retail sales under the regulatory definition of Agri Value Chain by the RBI and developmental agencies including the Government/Financial Institutions to enable seamless financing of the Value Chain under the category of "Agriculture".

ii. Inclusion of all players of AVC under 'Agriculture' for priority Sector Lending: The two glaring exceptions in the AVC which are not part of "Agriculture" as per RBI norms right now are:

a. finance to input suppliers like fertiliser dealers, seed suppliers, dealers of agricultural machinery/implements and

b. finance for aggregation or procurement of farm produce

These two activities subject to maximum bank limits of Rs 5 crores should be categorised under Agriculture finance subject to the finance for aggregation/procurement being availed by collectives of farmers including FPOs/Cooperatives/any other collectives' entity (*expanding the scope of Para 8.4.1.i of the RBI Master Directions on Priority Sector Lending)*. This would make the scope and coverage of AVCF integrated, meaningful and inclusive within one sector itself.

iii. Identification and Creation of Value Chain for a few Products: The Working Group recommended that NABARD & Banks identify at least 15 commodities in the agro/food processing sector for proper mapping of the value chain and suggest durable credit funding models for stakeholders in these value chains within a definite time frame. Based on the models developed, banks may take up financing under the AVC in these 15 commodities in a pilot mode and ensure that incremental credit deployment to the extent of 50% (given the low base of current loans under this category) is extended to players in these AVCs.

iv. Engage with NBFCs and Agritechs/ Agri Fintechs: In order that the models for AVCF currently being used by NBFCs are given a push, Banks should actively engage with these NBFCs and tie-up for loans under the co-lending scheme of the RBI. Further, as digitisation is gaining momentum and the Agritech sector is attracting higher investments, commercial Banks should engage with Agritech/Agri-fintech entities as BCs/BFs/BAs for lending to the Agri Value Chain. It is recommended that all banks should tie up with agri-focused NBFCs/Agritech companies for AVCF at a run-rate of one tie-up every month and complete at least 10 tie-ups.

v. Creation of omnibus Credit Guarantee Fund under a single agency similar to CGTSME: For seamless financing of the AVC, the Working Group recommended for creation of omnibus Credit Guarantee Fund under a single agency similar to CGTSME covering all Agri Value Chain loans up to Rs 2 crores and loans up to Rs 5 crores extended

to FPOs/Farmers Collectives, having a minimum membership of 300. This can subsume the existing credit guarantee schemes available for FPOs/FPCs and AHDIF under NABARD/SFAC. Further, compared to the amount spent on debt waivers by various State Govt. (estimated minimum of Rs 1,50,000 crores), the Working Group recommended allocation of small corpus say Rs 10,000 crores to give boost to AVCF. The Working Group also suggested channelization of allocation for PM Kisan for ensuring coverage of all incremental loans to the AVCF segment.

vi. Flexibility in minimum number of members: The number of members of FPOs is stipulated as a minimum of 300 for eligibility under the NABSanrakshan Credit Guarantee Scheme & 500 for the SFAC Credit Guarantee Scheme with exemptions for the North-Eastern and Hilly States. In order that FPO formation is not constrained by the number initially, at least all FPOs having a minimum of 21 or more member may be treated as FPOs for bank funding and for guarantee cover under various schemes. This will lead to a faster spread of the FPO culture and where required, the number of farmers can be increased.

vii. Handholding of FPOs: It is recommended that the entire work of capacity building/handholding/nurturing/advisory support needed by the FPOs/other forms of collectives like FPCs/Cooperatives/Trusts etc be provided by a single agency like NABARD in an integrated way based on a structured curriculum/ module of training. NABARD may coordinate with the commercial banks for using their training systems and the RSETIs also for this purpose. The idea is to ensure that the external support required for the initial stabilisation of FPOs should be provided by a single agency. The commercial banks will underwrite and lend as the capacity building role will be borne by the Development Bank.

viii. Developing Digital Platform: NABARD may take steps to develop a digital platform/systems to digitally capture the entire FPO activities so that such a digital platform can form the basis for AVCF by capturing the cash flow in the value chain. The platform so developed can serve as FPO Loan originating system for banks. Through the platform, banks can finance two more nodes in the value chain in an integrated manner duly escrowing the cash flow through these nodes of the AVC. This digital platform will also serve as comprehensive information management system for FPOS. Also this platform can be expanded to include various agriculture value chain activities in due course.

ix. Regulatory Changes in financing KCC: KCC loans have succeeded in filling a major gap in the AVC at the start of the chain. The Working Group suggested a regulatory change in KCC loan. They recommended allowing interest-servicing alone to be a sufficient condition for renewal of KCC. There is definitely a strong case for allowing this at least for KCC loans of up to Rs 3 lakhs as these are availed by mostly small and marginal farmers and transactions by them happen in cash. This will also lead to further saturation of KCCs for crop cultivation.

x. Enhancement of collateral free Crop Loans in Digitized States: Currently, maximum

collateral free loan under agricultural sector is Rs. 1.60 lakh. The Working Group recommended enhancement of credit limit up to Rs. 3.00 lakh for any activity (including crop loans) within the Agri Value Chain, for the states where land records are digitised and banks are given a provision to record their loan interest on the digitised land portal.

xi. Uniform Scale of Finance: As MSP, an output price, is common across the country, there is sufficient rationale to move towards One Nation/One Scale of Finance for the 23 commodities covered by the MSP system. This will be a major reform in Agri Value Chain financing particularly for crop cultivation and is derived from the irrefutable logic that if output price is uniform across the country, input costs for SoF can also be approximated with a 10/20% leeway for individual banks to ensure uniformity and ease of doing KCC business for both lender and borrower.

xii. Extended Benefit of Interest Subvention: Currently, the benefit of interest subvention is applicable for crop loans and working capital loans in animal husbandry. However, for AVCF, the Working Group suggested to extent the coverage of interest subvention for loan for farm equipment, minor irrigation, land development, tractor loans and all activities in the AVC subject to the existing loan cap of Rs 3 lakhs per farmer. This is expected to increase utilisation of bank loans for small value investment credit.

xiii. Enhancing Limit for Warehouse Receipt Financing: The Regulatory limit under Warehouse Receipt Financing under Agriculture for FIG/PG/FPO/Collectives of farmers may be increased to Rs 5 crore from the current limit of Rs. 75 lakh (as per RBI Master Directions on Priority Sector Lending) as part of the Agri Value Chain as that will be the aggregate requirement of a group of farmers. For FPOs especially, the requirement will be the aggregate of say about 300 farmers and therefore an increase in the eligible limit is recommended.

xiv. Introduction of Sourcing Linked Incentive: The Government may introduce a Sourcing Linked Incentive (SLI) to Corporates in the Food/Agro processing sector to incentivise sourcing of farm produce/Agro products directly from collectives of farmers based on the payments made to these collectives. This will lead to greater sourcing by Corporates directly from farmers' collectives rather than from Individual aggregators/Commission Agents. The incentive may either be by way of tax incentives/other means.

xv. Relaxation in Regulation for FPOs: There is a need to provide a light-touch regulatory ecosystem for promoting FPO formation. The FPOs as per their constitution may be a Society, a Trust or a Company and such legal entities are required to file certain Annual/ Statutory returns. Since, these FPOs consist of farmers who are generally not well versed with such intricacies, as such the processes may be simplified and the penalties may be waived/ relaxed during an initial incubation period of 5 years or a turnover below Rs 2 crores. Further, FPOs may also be given exemption/ relaxation on GST during the said period.

Sowing the Seed of Success: A Case Study of Samarth Kisan Producer Company Limited, Agar (Malwa), Madhya Pradesh

Rajesh Yadav*

Abstract

The goal of Farmers Producer Organizations (FPOs) is to encourage farmer collectivization and increase farmers' production and income. It enhances farmers' advantage in emerging market opportunities, escalates their competitiveness and streamlines agri-value chain in generating increased revenue for the farmers. There are several success stories from India which demonstrate that FPOs have been successful in making agriculture profitable for thousands of farmers. The present case study is an attempt to document the journey of Samarth Kisan Producer Company Private Limited, Agar (Malwa), Madhya Pradesh. The study attempts to identify the key challenges, learnings at various stages of this FPO's journey and harnessing this knowledge for developing a set of guidelines for future reference in the development of FPOs.

Introduction

A Farmers Producer Organization (FPO) is a business entity comprised of primary producers that replaces one or more value chain actors in existing agri-or allied agri-value chains in order to increase the producers' economic rent. FPOs, which are a hybridization of cooperative and corporate institutional models, create an enabling environment by allowing producers to participate in alternative agri-value chains through the aggregation of input resources, collective procurement, and common infrastructure and services for processing and supply chain management. Value chain integration for input management, technology transfer, access to formal credit, collective marketing, and risk mitigation measures allows FPOs to become competitive value actors by lowering the cost of value addition and marketing costs, as well as eliminating repetitive marketing costs such as loading and unloading, transportation, and management.

For better understanding of the FPO ecosystem, improving training delivery methodology and identification of policy issues, BIRD, Lucknow, has undertaken case studies on FPOs working in different regions of India and find out the specialisation in particular segments of the FPOs' business path lines.

The present case study was conducted in respect of *Samarth Kisan Producer Company Limited,* Agar (Malwa) in the State of Madhya Pradesh, which was incorporated in the year 2006 under the Producer Company Act, 2003 and specialised in seed production systems.

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Background and issues catalyse for incorporation of FPO

Madhya Pradesh is a leading agriculture state in the country and contributes substantially to the agriculture GDP of India. MPDPIP (Madhya Pradesh District Poverty Initiative Project) is a World Bank-funded ambitious poverty alleviation programme of the Govt. of Madhya Pradesh started in 2000. This project is being implemented in 14 districts of the state. The project has adopted a holistic and alternative approach for livelihood and income generation by strengthening market-driven processes at village level. The project is based on a participation development process. This demand-based project has supported 3.5 lakh rural families by organising them into 56 thousand Common Interest Groups (CIG). Major investments have been made in activities like irrigation infrastructure creation, land reforms and agriculture productivity enhancement. Under this project, producers have been organised through community-based business initiatives to reap the potential of agribusiness.

Requirements for institutional development for the exit plan of the initiatives undertaken under MPDPIP have led to the incorporation of a "producer company" registered under the producer company act and to provide effective financial, market, and knowledge linkages for the rural community. The FPO was created to encourage farmer collectivization and increase farmers' production and income. Seeds are a key business activity of the company because of the growing need for quality seeds and the existing demand for high-yield seeds. The company wants to ensure growth in the seed business with a focus on increasing the seed replacement rate (SRR). The SRR is very low, at present, in the villages in which the company's seeds are marketed.

The Samarth Kisan Producer Company Private Limited is a federation of agriculture-based groups formed under the MPDPIP. The groups comprise of small and marginal farmers of the district of Agar (Shajapur) as members. The company's registered office is in Agar, Madhya Pradesh.

The FPO is a federation of the Common Interest Groups consisting of five people each, which were under the MPDPIP. The creation of a federation of CIGs was promoted by the government to achieve the scale required for producer companies to become profitable. The members were inspired to join the company as shareholders after observing the benefits that being associated with the company accrued to them.

Brain-storming and Identification of economic activities for FPO

It was perceived and observed that despite not possessing land for seed production, private seed companies are able to produce sufficient seeds and undertake marketing outreach to meet 90% of demand. The cost of seed was found to be higher on account of high marketing costs due to multiple value chain actors. Further, most of the economic rent from the seed production value chain is found to be in favour of private companies. It was also observed that the value chain is not based on inclusive growth but on earning more and more profit in favour of private companies.

A seed potential demand of 75600 quintal was estimated considering a total crop area of 2.52 lakh ha of the 5 selected crops, namely soybean, maize, wheat, gram, and coriander,

and a seed replacement rate of 40%. Potential mapping of the seed requirement was scrutinised on the basis of the major crops in districts, the average seed rate recommended by the ICAR and 40% of the SRR.

Prioritization of economic activities

The company, at present, is involved in the inputs, production, procurement, packaging, and retail of seeds. The company provides all the inputs like high quality production seeds, fertilisers, pesticides, weedicides, etc., and know-how about production techniques. It also provides certification for the production of high-quality breeder seeds to its member farmers. It also procures the produce, packages it, and sells the produce under its own brand, Samarth Seeds.

The company is ranked first in Madhya Pradesh in seed production and marketing, with a total production of over 2000 Mt and an annual turnover of Rs 7.8 crore.

Structure of the Farmer Producer Organization

As per the structure of the FPO there are three groups of major stakeholders as under:

1. *Cooperative structure* of the FPO comprising members of CIGs (producers) who elect board of directors of the FPO
2. *Corporate structure* of the FPO comprising of CEO, Specialised Managers, Service Providers and staff, who are the real executers of the operation and management of the FPOs
3. *Facilitating structure* of the FPO in the form of advisory committee responsible for overall guidance of the functioning of the FPO

No. of shareholders: The number of shareholders of the company has remained consistent at 6552 shareholders since its inception. All farmers are small and marginal farmers.

The strategy used for member retention and growth: The FPO quotes a daily price to its members for procurement of their produce, which is higher than the prevailing prices in the APMCs and sometimes even the MSP. This encourages farmers to sell their produce to the company. It also provides high quality inputs like seeds, fertilisers, weedicides, etc., access to different facilities like warehousing and technical know-how, procurement of small implements to boost production, and access to government schemes to its members to ensure member retention.

Business operation and Financial Performance of the FPO

The total business undertaken by the company is Rs. 43.77 crore since the inception, with a gross and net profit of Rs. 8.53 crore and Rs. 1.10 crore respectively. After incurring a cumulative loss of Rs. 7.85 lakh in the first three years, FPO stabilised and has never been in loss during the past 12 years of operation.

Seed production and premium paid to the producers

- Since inception, a total of 5,256 producers were covered, with a total seed production coverage area of 9924.40 ha and a total seed procurement of 1.39 lakh quintal. As far

as the average annual coverage of a producer for seed production is concerned, only 5.73% of the total producers and less than 1% of the potential crop area of the producers were covered during the past years.

- An average premium of Rs. 116.47 per quintal over the MSP has been paid to the seed producers, which is the net incremental enhancement of the economic rent of the seed producer apart from the procurement price on MSP.
- However, the average seed yield per ha is coming to 14.04 quintals per ha, which is very little compared to the average grain yield.

Financial Performance of FPO

(Rs. in lakh)

Particulars	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Revenue	337.86	417.29	465.35	538.97	555.67	570.00
Expenses	319.16	389.23	459.32	536.77	537.27	562.91
Profit Before Tax	**18.70**	**28.06**	**6.03**	**2.20**	**18.40**	**7.09**
Tax Expenses	8.40	9.34	1.95	0.01	-0.17	0.33
Profit After Tax	**10.30**	**18.72**	**4.08**	**2.19**	**18.57**	**6.76**

FPOs role as a value chain actor/s and gross margins under different types of business participations

FPO entered into the value chain as a main value chain actor, partly as an input supplier, partly as a post-harvest aggregator, processor, wholesaler, and retailer, and as a facilitator as a supporting value chain actor. The FPO primarily undertake three types of business, viz.

1. Seed procurement, processing, storage, and collective marketing
2. Trading business
3. Input business (Plant Protective Measures)

As per the analysis of the inventory register data of FPO for the past three years, it is observed that:

- The gross margins of the "seed business segment," which includes soybeans, wheat, urad/lentil, mustard, and gram seeds, range from 11.28% to 25.78%.
- The trading business is mainly concentrated on soybean and mustard crops, wherein the gross margin of the trade business varies from 1.94% to 20.97%.
- The margins in input business ranges from 1% to 2%, barring in 2018-19, when it was 17.91%.
- In total, 99% of the business operations of FPO is related to seed procurement, seed processing, and seed marketing.

Outreach of the FPO vis-à-vis business participation of producers

- **Members' business participation**: 5.73% of total producers and less than 1% of the

producer's potential crop area were covered by seed business. However, seed as an input is available to all producers at a cheaper rate compared to the market price.

- **Extent of business with non-members**: 75-80% of the total seed business is conducted with non-member producers.

Direct benefits to the producers

A. **Enhancement of production and productivity:** With coordinated efforts through technology transfer, quality seeds and monitoring by professional experts in convergence, promotion and development measures, the yield of the major crop has increased by about 1.5 times from the pre-FPO level.

B. **Supply of cheaper inputs:** Cost of seed input of member producer as well as non-member producer has been reduced up to extent of 25% lower than the prevailing market rate.

C. **Procurement on MSP rate:** Seed is procured at an assured price of MSP as per the seed policy of FPO.

D. **Seed procurement premium:** Premiums over and above the MSP are being extended to the seed producers.

Convergence and support from various stakeholders

(Rs. in lakh)

S.No.	Name of Institution	Purpose Grant	Years	Grant
1	Deptt of Rural development, GoMP	Working capital	2007-08	25.00
2	-do-	HR Support 5 year	2007 to 2012	20.00
3	-do-	Infrastructure fund	2011-12	34.87
4	SFAC (50:50 contribution)	Infrastructure fund	2015-16	37.50
5	SFAC Delhi	Equity grant	2019-20	9.17
6	Solidaridad Bhopal	Seed Gravity	2020-21	9.81

Financial Resource Management, Credit linkage and Repayment Status

The paid capital of the company is Rs. 9.17 lakh and the working capital of Rs. 25 lakh was supported by the Panchayat and Rural Development Department, Govt of Madhya Pradesh by keeping it in the form of an FD in the bank and making an OD limit on it. Hence, the total capital of the company during the initial year for operation and management of FPO was Rs.34.17 lakh. Later on, the company took loans from many economic business institutions to meet working capital requirements. The FPO got two loans from IGS BASIX of Rs. 30 lakh each, and also got two loans from FWWB worth Rs. 15 lakh each. After that, a credit of Rs. 1.0 crore through NWR extended by Union Bank. Later on, an enhanced limit of Rs. 2.0 crore was extended by Yes Bank. The FPO has availed credit from NABKISAN with a credit limit of Rs. 1.0 cr. It took loan from Samunnati Finance also with a credit limit of Rs. 80 lakh. The FPO has not defaulted on

the loans up to this day.

At present, against the requirement of Rs 450 lakh, FPO has Rs. 186.07 lakh as own fund, comprising of an equity share worth of Rs. 18.34 lakh and a reserve and surplus fund of Rs. 167.73 lakh. FPO is dependent on credit from the financial institutions for 60% of its requirement. The equity share of a mere Rs. 280 per member itself shows the business interest of the producers. It needs to be increased to at least Rs. 1000 per producer member to enhance the equity share from Rs. 18.34 lakh to Rs. 65.16 lakh. This will also increase FPO profit margins by reducing financial cost of FPO.

Networking planning undertaken by FPOs

The FPO's presence is in 22 districts of Madhya Pradesh. It aims to expand its dealer network in all 51 districts of the state. The FPO is trying to increase the production levels in its current geographical boundaries and increase its marketing network.

Conclusion and Way forward

At present, there are a few grey areas, which need to be relooked for upscaling of FPO and increasing business participation of the producers.

1. There is a need to enhance low-cost financial resources through raising the equity share from Rs. 280 per member to the minimum level of Rs. 1000.
2. There is a need to enhance the business participation of the producers through diversification of the business. It is observed that there is gross potential of about 600 CHCs for 15000 ha of land, with a total annual business potential of **Rs. 37.60 crore**, which is untapped so far.
3. FPO has ample opportunities to harness the potential of poultry and fisheries sectors due to the area being rich in vegetative protein (soybean) and the major gradient base of poultry and fishery feed (maize and mustard).

Despite the challenges in the way of promotion and development of FPOs in India, this FPO has also proved that there is vast potential and prospects of enhancement of economic rent for the producers through business participation in prevailing agriculture value chains and by entering as a main value chain actor through the integration mechanism of aggregation of inputs and procurement, value additions, and collective marketing.

Infrastructure and support services, convergence of the various schemes of the government and development agencies and credit support from the financial institutions are vital factors for graduating FPOs.

Achieving Economies of scale through collectivization: A Case Study of Ramrahim Pragati Farmers Producer Company Limited, Dewas, M.P.

Prafulla Ranjan Jha*

Abstract

Farmer Producer Companies support farmers including the small and marginal farmers in addressing their Production and Marketing related issues. International and national experiences in the performance of FPOs advocate in favour of support to such member based farmer bodies, for increasing their power in the market place, reducing risks and helping them move up the agri value chain. In this context, a case study on Ramrahim Pragati Farmers Producer Company Limited, formed by the Self Help Groups of tribal women in Bagli block of Dewas district in Madhya Pradesh is presented, which was under taken by BIRD Lucknow. It reflects learnings for the new and existing Farmer Producer Companies. Such success stories are pointers to the immense potential of FPOs to integrate producers in the value chain.

Introduction

Background

The Self Help Groups of tribal women in Bagli block of Dewas district in Madhya Pradesh promoted by Samaj Pragati Sahayog (SPS), Dewas, an NGO working in the area since 1990s, were being exploited by landlords and money lenders of the area, a usual scenario prevalent in most of the tribal dominated area of our country. To overcome these challenges, Samaj Pragati Sahayog (SPS), an NGO, initiated a Commodity Aggregation initiative in order to link these SHGs with organised markets to sell their agricultural produces. Under the initiative, SHG federations formed by SPS used to purchase, aggregate and store the agricultural produce of the members of the SHG until prices turned favourable. The federation then facilitated the sale of the commodities to the Mandi at Indore or to institutional buyers. By purchasing produce at fair prices from the members, the SHG federation had effectively raised minimum prices for the major agricultural commodities like wheat, maize, gram, soybean etc. in the local market which attracted the wrath of local traders and money lenders. They complained to the local administrative authorities and the Mandi officials that the SHG federation was violating the local law by dealing in agricultural commodity business. As a result, 02 tractor load of agricultural commodities were seized by the local administration. It is worth mentioning here that according to the Agricultural Produce Market Act, 1972,

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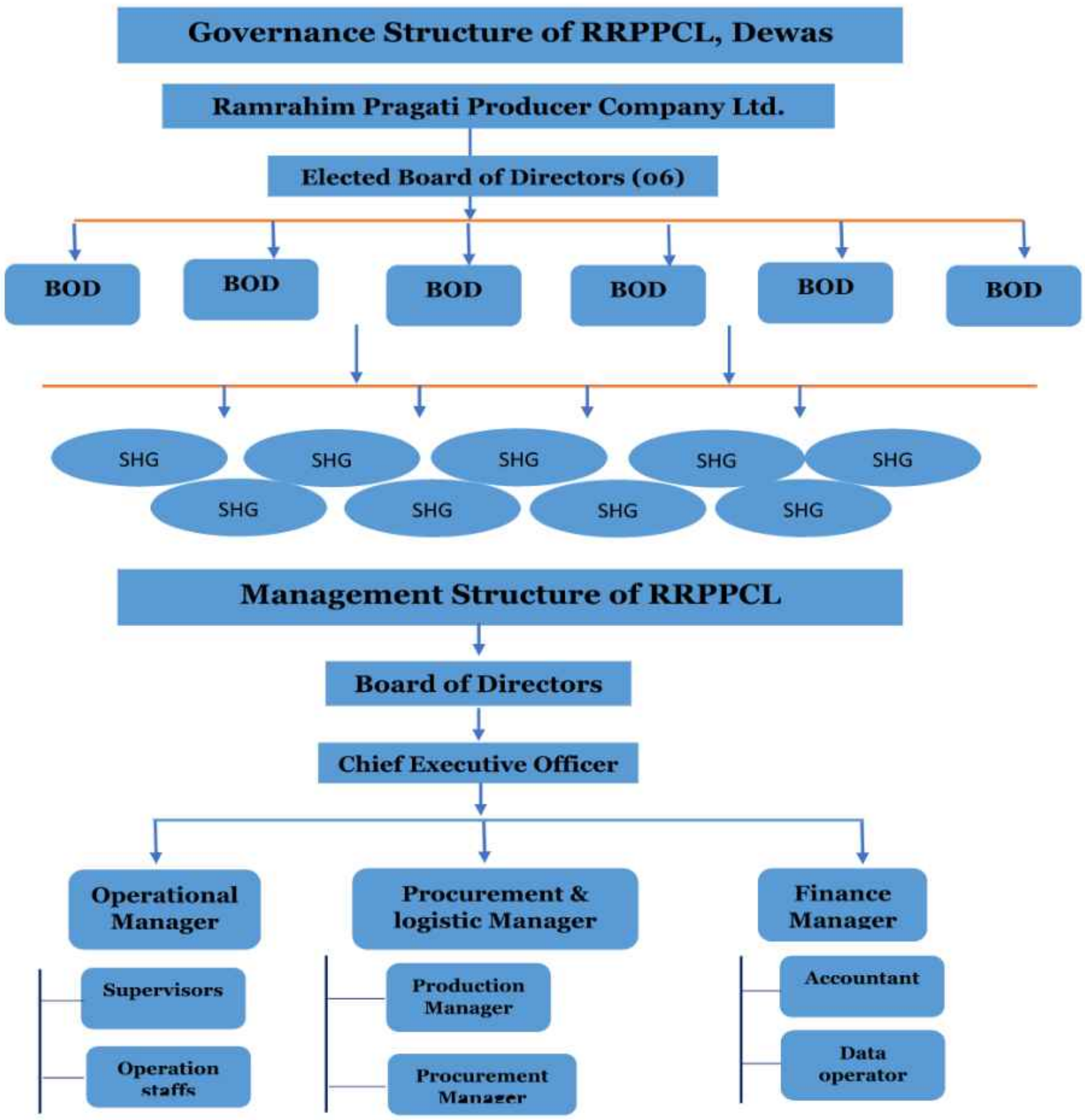
only 'the trader' or 'the farmer' can participate in the sale and purchase activity of the Mandi. On the other hand, the women members of the SHGs were generally not given their due rights to their ancestral agricultural land. Thus, by the letter of the law, these women did not qualify, technically, as farmers.

To counter this legal hurdle and to overcome the challenges faced by SHG members, SPS, the promoting NGO facilitated the formation of Ram Rahim Pragati Producer Company Limited (RRPPCL), incorporated under Part IXA of the Companies Act, 1956 on 09th April 2012 with registered office at Basanti bai Sisodiya Garden , Bagli, Dewas, Madhya Pradesh. The company was conceived to be owned not by individual women but by Self Help Groups of women, majority of them being tribal women.

Governance & Management Structure of FPO



Membership and paid up capital

Ram Rahim Pragati Producer Company Limited was incorporated as Producer Company in 2012 by 10 SHGs. The nominated representatives of these 10 SHGs still function as Directors and promoters of the company. However, over the period of time, 390 SHGs through 05 SHG federations spread over 88 villages in Bagli block comprising approximately of 5800 women are members of the FPC as on 31 March 2022. The paid up capital of the company as on 31 March 2022 is Rs. 70,55,740 whereas the authorised capital of the company is Rs. 01.00 Crore.

Particular	Years from the inception								
	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21
No. of Shareholder SHGs	120	162	162	162	290	304	304	304	390
No. of women members	1800	2430	2430	2430	4350	4560	4560	4560	5819
Paid up capital (In lakh)	6.50	10.45	20.00	20.00	39.03	58.80	58.80	58.80	70.56

Evolution of Business path line of RRPPCL

In the initial years of its inception, RRPPCL started with seed production of soybean and wheat, input sale to members, decentralised collection of agriculture produce like black gram, *Moong*, *Urad*, etc. from members and aggregation & sales of the produce to *mandis*. Since it was an organised entity, it had to pay both *mandi* tax and entry tax. Additionally, they had to pay a two per cent commission to take part in the auctions. Further, the process of cleaning, grading and sorting was centralized which resulted in further increasing the costs of the logistics. Restricted by these factors, RRPPCL had to hold off selling the produce on the same day to wait till the market prices increased so as to compensate for all the additional costs. On the other hand, the prices of Bengal Gram fell by nearly 25 per cent during summer of 2013. Due to this, RRPPCL suffered losses. To overcome these bottlenecks in the business, RRPPCL hired professionals for managing the company. The new team of CEO, Finance Manager and Operational Managers prepared a business plan for the FPC after conducting a detailed survey of the area and conducting a series of meetings with the BODs, SHG federations, members and POPI.

Major challenges faced by the women members of the company were:

- Low Access to Organized Commodity Markets
- Lack of Affordable credit
- Low holding Capacity of members
- Lack of timely availability of quality inputs.
- Reducing soil productivity due to high chemical fertilizers & pesticide use

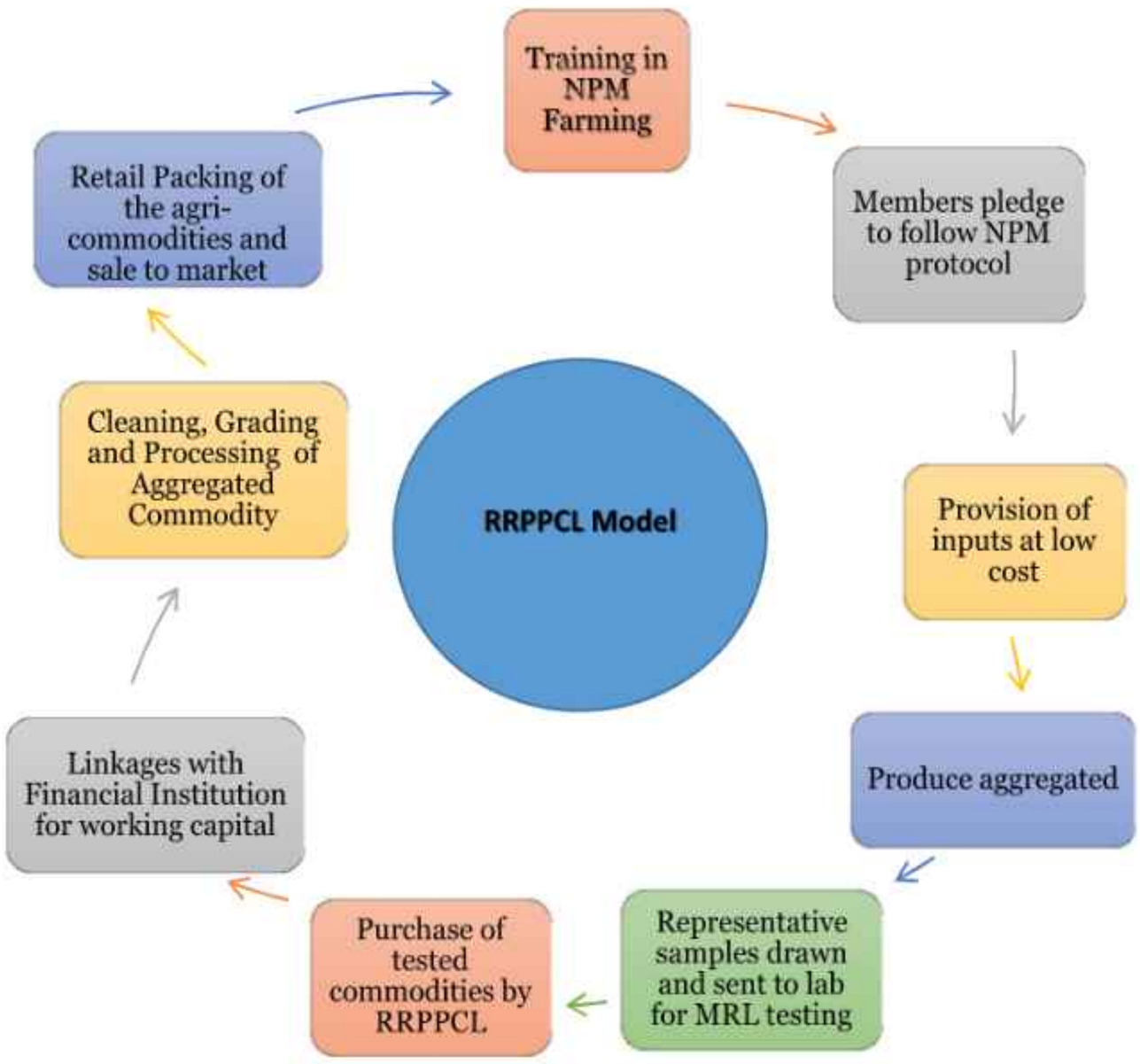
- Depleting Groundwater Levels
- Lack of Infrastructure for Storage and Marketing

Considering these constraints, RRPPCL drew a unique business path line which was not only suitable to the tribal women members but it was also catering the need of upcoming market segment based on Non-Pesticide Managed (NPM) agriculture produce and traditional crops suitable to environment.

During the course of evolution of business line of the FPC, some new business activities were added in due course based on the gradual increase in the capacity of the member farmers and the demand of products in the market. However, in due course of time, RRPPCL worked with member farmers to restore agricultural biodiversity in the region by promoting the revival of traditional crop varieties, traditionally practiced by majority of the tribal farmers. These varieties were targeted as the niche products of the company for marketing.

Further, with support from the promoting NGO, the company promotes NPM Agriculture produces and markets pesticide free agricultural commodities. RRPPCL shareholder farmers are regularly trained in NPM practices by agriculture experts and in-house professionals. Every batch of commodity procured by RRPPCL is tested for pesticide residues as per FSSAI recommendations in the Food Safety and Standards (Organic Foods) Regulations, 2017 (Jaivik Bharat Standards) in FSSAI accredited laboratories.

RRPPCL model of Business activities



Present key business activities of RRPPCL

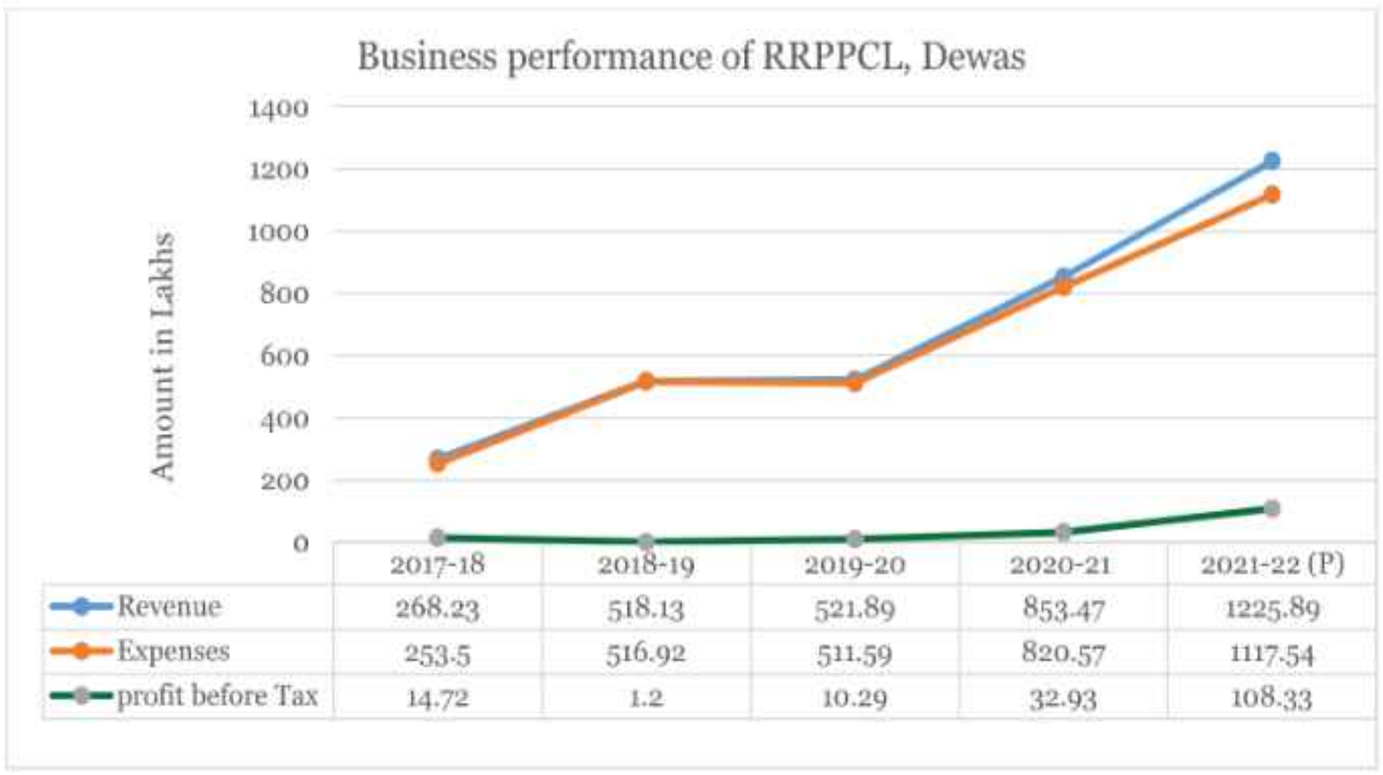
The primary activities of RRPPCL is to aggregate the agricultural produce of its women shareholders, store it in warehouse under hermetic condition; carry out grading, cleaning, processing, retail packaging of the aggregated produce and post negotiations with buyers, sell in the organised market. In the last 3 years, in addition to sale of NPM commodities to Safe Harvest Private Limited (SHPL), the company has also sold NPM commodities to local market and to Indore based business entities at a negotiated price. The company also provides quality certified input supply like Seeds (Kharif/Rabi) and bio-pesticides to its member farmers. For FY 2020-21, RRPPCL entered into an agreement with SHPL to sell retail quality whole wheat (sharbati), wheat flour (sharbati), broken wheat (daliya), bengal gram, kabuli chana, gram flour (besan) and tur dal. In addition to sale of NPM agri commodities, RRPPCL is also engaged in packaging of all products (at present 15) currently being retailed by SHPL in NCR market. In the initial years of its operation, the company was merely aggregating and selling primary produce, but with passage of time, RRPPCL now adds value to the proce before selling it in the organised market. This has allowed the company to move up in the value chain and gain a higher share of the consumer rupee. On the other hand, the company has established itself as a reliable agency for doing job work including cleaning, grading, processing and retail packaging of agri commodities in the area. As a result some corporate players are now in negotiation with the company to do job works for them.

Further, to expand its business horizon and to tap the captive market of SHG members, the FPO started retail business (Kirana sales) during the year 2021-22. Under this, they deliver grocery items like sugar, tea leaves, bathing soap, detergent powder and bar, salt, match box, soya oil, spices powder, etc. at wholesale rates to SHG members at their door steps. During the year 2021-22, the total turnover under retail business was approximately 2.48 Crore.

RRPPCL has availed working capital loan from various financial institutions since 2012 with timely repayments and no defaults.

Financial Performance of FPO

The glimpses of business performance of RRPPCL, Dewas for the last 04 years is depicted below -



	2017-18	2018-19	2019-20	2020-21	2021-22 (P)
Revenue	268.23	518.13	521.89	853.47	1225.89
Expenses	253.5	516.92	511.59	820.57	1117.54
profit before Tax	14.72	1.2	10.29	32.93	108.33

Enabling factors for RRPPCL, Dewas

- Sale of agri- commodities with a focus on NPM and traditional crops both whole and processed to organized players like Safe harvest private ltd., Kashyap Sweetners, Snehal enterprises etc.
- Development of scientific post-harvest storage and processing facilities and also hiring post-harvest facilities available at Avantee Mega food Park, Indore.
- The SHGs formed during 1990s are still active and functional and they are managed by 5 SHG federations, operating at panchayat level. In the initial years, the corpus of SHGs were in the range of Rs. 20000 to Rs. 30,000, which have now increased to Rs. 3 to Rs 5 Lakh on an average.
- The FPO procures agri-commodities from the members. To support the member farmers in production, FPO procures good quality/ certified seeds from the registered distributors/whole sellers and supplies them to members on a no-profit basis. The FPO has acquired licence for stocking and sale of seeds. It is focusing on producing seeds to help farmers throughout the year.
- Earlier the FPO was aggregating and collecting the agri-commodities from the members at their door steps, which used to result in high operational cost. To overcome the problem, the FPO has now set up village collection centres equipped with digital weighing machine, quality check gadget and storage facilities. The FPO uses GIS tool to streamline the supply chain including location of various village collection centres, procurement routes with focus on better asset utilization and route optimization leading to more collection of agri-commodities with minimal transportation cost and other overhead expenses.



Making Operation Green work: From TOP to Total

Harsh Wardhan*

Abstract

Operation Green scheme was launched by the government of India in year 2018 to build efficient value chains of tomatoes, onions and potatoes (TOP) and to stabilize their prices for both farmers and consumers. However, TOP continue to be the most volatile agricultural crops in India with high level of fluctuations in prices observed each year. The Union Budget 2021-22 (FY22) announced the expansion of the Operation Green (OG) scheme from tomatoes, onions and potatoes (TOP) to 22 perishable commodities, with the overarching idea of building efficient supply lines for these perishables, similar to that of the Operation Flood (OF) for milk. This paper examines the progress made by OG in the last four years, and suggests that OG has to be taken on a mission mode like the OF, if price volatility in perishables is to be contained, price spread between farmers and consumers has to be minimised, and post-harvest losses are to be reduced. This requires defining medium to long term targets, chalking out a proper strategy, and above all creating a separate Board on the lines of National Dairy Development Board (NDDB).

Introduction

Barely a month after witnessing a record CPI based inflation rate of 158.1% in June 2022 (MoSPI, 2022), tomato prices plunged to its lowest level in July, forcing many farmers to discard their produce on the roads. The same volatility can be seen for onions and potatoes at any time, making the policymakers apprehensive. All the three crops: tomatoes, onions and potatoes (TOP) keep experiencing such severe price volatilities. This is despite Operation Green scheme, first announced in 2018 budget for TOP, being in force for the past four years. In its 2021-22 budget, the Union government also announced the expansion of Operation Green (OG) scheme from the three commodities – tomatoes, onions and potatoes (TOP) – to 22[1] perishable commodities, (more additions were made to the list for short term measures in 2022). The underlying purpose, potentially, was to achieve the dual objectives of augmenting farmers' incomes and stabilising prices, through building of efficient value chains for the perishable horticultural commodities.

The pertinent question at this point, however, is whether mere expansion of its coverage to more commodities can strengthen the scheme. The vulnerability of value chains became more evident during the COVID-19 pandemic. In year 2020, the volatility was mainly a result of inefficient value chains of TOP, the COVID-19 induced supply chain disruptions further exacerbated the situation. Confounding policy interventions in tackling price volatility seem to be the other driving factor. For instance, when wholesale

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[1]Twenty two commodities include following perishables: Mango, Banana, Apple, Pineapple, Orange, Grapes, Aonla/Amla, Pomegranate, Guava, Litchi (Fruits); Tomato, Onion, Potato, Peas, Carrot, Cauliflower, Beans, Bitter gourd, Okra, Garlic, Ginger (Vegetables) and shrimp (Marine products).

prices of onions touched Rs. 30/Kg in September 2020, the government put export bans and stocking limits on onion. However, as in the past, such ad hoc policy measures were least effective in bringing down onion prices.

Supply Management of TOP

Although production of these commodities is both seasonally and regionally concentrated, these are consumed throughout the year and all across India. Over the years, there has been a substantial increase in the production of TOP, making India the second largest producer in the world. Second advance estimates of 2021-22 put tomato production at 20.3 million tonnes, onion production at 31.7 million tonnes and potato production at 53.6 million tonnes (DoA&FW, 2022). The increase in production of these three commodities even surpassed their demand. As per estimates of production and demand in Table 1, annual demand for tomatoes, onions and potatoes during TE2021-22 was 18.6 million tonnes, (compared to 20.7 million tonnes production), 21.8 million tonnes (compared to 28.1 million tonnes production) and 47.9 million tonnes (52.8 million tonnes production), respectively. Production has far exceeded demand for TOP in almost all years. This indicates that the issue at hand is to manage surplus production, ensuring fair share of price to farmers with least possible post-harvest losses.

Table1: All India Annual Production and Demand for TOP

Year	Tomato		Onion		Potato	
	Production	Demand	Production	Demand	Production	Demand
2012-13	18.2	16.8	16.8	18.3	45.3	42.2
2013-14	18.7	17.2	19.4	18.8	41.6	41.4
2014-15	16.4	16.3	18.9	18.7	48.0	44.0
2015-16	18.7	17.2	20.9	19.4	43.4	42.8
2016-17	20.7	18.2	22.4	20.9	48.6	45.0
2017-18	19.8	17.8	23.3	20.6	48.6	45.4
2018-19	19.0	17.7	22.8	21.4	50.2	46.2
2019-20	20.6	18.4	26.1	21.0	48.6	46.2
2020-21	21.2	18.8	26.6	21.7	56.2	48.9
2021-22	20.3	18.6	31.7	22.9	53.6	48.7
TE2021-22	**20.7**	**18.6**	**28.1**	**21.8**	**52.8**	**47.9**

Source: Production figures from DoA&FW (2022); Demand figures estimated by author by adding consumption data from NSSO, exports from DGCI&S, and adding percentage estimates of processing, bulk consumption and wastages.

Vegetable farmers are often seen discarding their crops on roads, or resorting to distress sale or simply leaving the crops in fields and cold storages when prices drop way below production costs. On the other hand, in the lean season, consumers feel the pinch in their pockets as prices sky-rocket. Imperfect markets, lack of well-integrated value chains are the major reasons, among others, for this boom-and-bust cycle that the TOP crops go through (Gulati and Wardhan 2019, Chengappa et.al 2012, Birthal et.al 2019).

Against this backdrop, the Government of India announced the Operation Green (OG) scheme in the Union Budget of 2018-19, on similar lines of the Operation Flood (OF). With an initial outlay of Rs. 500 crores, the scheme was aimed for the value chain development

and price stabilization of TOP. As the scheme has been expanded, lessons with respect to TOP will be key in understanding the challenges and in shaping a way forward.

Operation Green: Design and status of implementation

This paper[2] evaluates the progress made so far by the OG scheme, explores the areas that need to be addressed for its expansion, and recommends the replication of some of the basic principles and designs of the OF towards strengthening the OG.

Design of the Scheme: The OG scheme earlier for TOP and now expanded to all fruits and vegetables (TOTAL) comprises of both short term and long term components, focusing on price stabilisation measures and the integrated development of value chains, respectively.

- The price stabilisation measures aims to protect the growers from making distress sale and to reduce post-harvest losses. The short term intervention have further been extended to 20 more commodities to cover more than 40 fruits and vegetables. Interventions in the form of transportation and storage facilities are provided for the glut situation when their prices fall below three years' average market price at the time of harvest. In such situation, the National Agricultural Cooperative Marketing Federation of India Limited (NAFED), which is the nodal agency for implementing the price stabilisation measure, moves out the excess supplies from the surplus regions to the warehouses/cold storages closer to the consumption centers in the deficit regions. The ministry of food processing industries (MoFPI) provides 50% subsidy for each of the transportation and storage activities to the agencies, empaneled for these activities, through NAFED (MoFPI, 2022a). The terms on which these subsidies are granted include: (i) promise of direct procurement from farmers at a price higher than the preceding three years' average market price; (ii) inter-state transfer within a minimum distance of 250 kilometers; and (iii) storage closer to a consumption center in the deficit region (MoFPI, 2022a).

- The development of integrated value chains form the long-term goal of the scheme and cover 22 commodities. These endeavors range from ensuring product quality to developing processing and marketing facilities of the produce. Efforts include setting up of agri-logistics, formation of new farmer producer organisations (FPOs) and capacity building of the existing ones. A project, if selected is provided a grant-in-aid at 50% of the total project cost of up to Rs. 50 crores to the selected programme implementing agencies (PIA) (and /or 70% of the same in case the PIA is an FPO). While a project comprising of all the above mentioned features is given preference for subsidy allocation, the provision of post-harvest processing facilities is mandatory for all applicants for the subsidy (MoFPI, 2022b).

To avail the subsidy under the long term integrated value chain development projects, it is mandatory for the PIAs (and the FPOs) to bring in at least 20% (10% for FPOs) of the

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[2]Primary data used from NABARD-ICRIER study on 'Deconstructing Value Chains of Tomatoes, Onions and Potatoes (TOP)', which the author had earlier undertaken.

project cost from equity contribution and at least 20% (10% for FPOs) from a term loan.

Status of Implementation: In July 2019, MoFPI appointed two programme management agencies (PMAs), namely Grant Thornton India and the NABARD Consultancy Services Private Limited for the initial projects (MoFPI, 2019). Further technical bids have been invited for appointment of more PMAs to assist MoFPI in implementing the scheme.

With the main condition for disbursement of subsidy being that 20% project cost has to be equity contribution by the PIAs, very few proposals were received. As of March 31, 2022, six projects[3] have been approved for the scheme (MoFPI, 2022c). These projects, mostly for setting up of processing plants for TOP crops, are at various stages of implementation. The projects are worth Rs. 363.3 crores, of which Rs. 136.82 crores (or 38% of the total project value) have been approved as grant-in-aid. But a mere sum of Rs. 15.4 crores has been released, which is 3% of total scheme outlay of Rs. 500 crores. This is because the scheme envisages payment of subsidy on reimbursement basis.

Challenges confronting TOP

When compared to the OF in terms of the time period that it took for efficient and inclusive milk value chains to develop – viz. over two decades from 1970 to 1996 - it seems too early to evaluate the efficacy of the OG for doing the same for perishables, since it has been in effect only for four years now. However, for successful implementation and /or strengthening of the OG at this stage, it is critical to recognise and address the existing challenges faced by the TOP crops.

Price Volatility: The perishable nature, seasonality and regional concentration of production leads to extreme price volatility of the TOP crops. The inflation rates based on wholesale price index (WPI) in Figure 1 show the boom and bust cycle of the prices of TOP (Office of Economic Adviser, 2021). For instance, tomato experienced the highest ever WPI inflation rates of 281.1% and CPI inflation rates of 158.8% in June 2022 (OEA, 2022) (MoSPI, 2022). The reasons were both lower production due to lesser acreage planted by tomato farmers and climate vagaries in terms of heat wave in Northern India and unseasonal rain and cyclone in Karnataka resulting in damaged crop (Wardhan and Roy, 2022). In case of onion, one of the lowest inflation rates at (-) 76.6% was witnessed in September 2016 and the highest ever inflation rates of 455.8% was witnessed in December 2019. However, the government mostly resorted to knee jerk reactions and ad hoc policy measures. Immediate solutions offered by the government for price rise in terms of bringing in the Essential Commodities Act (ECA), de-hoarding measures, and introduction of minimum export prices (MEP), are not aligned to the fundamental principles of market economics. Ad hoc decision making needs to be replaced by strong market intelligence that can help forecast prices, based on the historical trends and current supply and demand conditions.

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[3]Approved projects: Andhra Pradesh Food Processing Society, Chittoor (for Tomato); Nedspice Dehydration India LLP, Mahuva, Gujarat (for Onion); Khemanand Dudh and Krishi Producer Company Limited, Ahmednagar (for Onion); Banaskantha District Co-op. Milk Producers Union Ltd, Gujarat (for Potato), Vangi Foods, Kheda, Gujarat (for Tomato) and Smartagri Agroville, Nashik (for Onion).

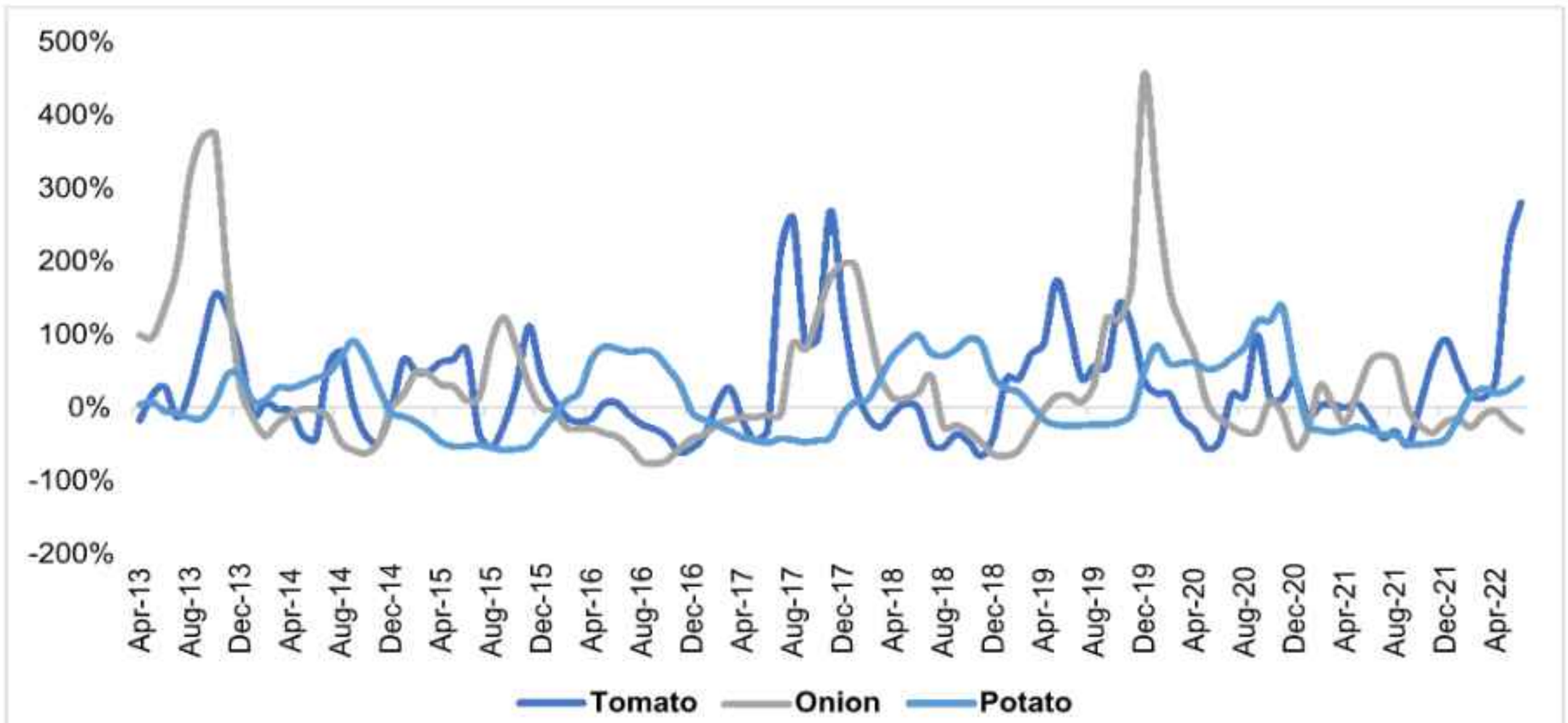

Figure 1: Year-on-year Inflation Based on Wholesale Price Index (2011-12=100) (In%)

Source: OEA (Office of Economic Adviser), DPIIT, 2022

High burden of marketing inefficiencies: Markets for fruits and vegetables are highly fragmented and lack adequate infrastructure facilities and services to handle large arrivals (DMI, 2013), (Pingali, et. al 2019). The current market structure attracts considerable marketing costs that include commission fees, market fees, and other services charges. TOP traded through APMC markets attract commission fees of 2% to 7% (Table 2). These commission charges are only official figures, field visits (undertaken between 2017 and 2019) to major APMC mandis like Lasalgaon, Pimpalgaon, Mahuva, Kolar, Agra and Azadpur reveal that the actual commission charged by the commission agents is much higher. In course of a rapid reconnaissance of these markets during 2018-19, it came out that in several instances that farmers were being charged the commission fees without them being aware of it.

Table 2: Official Commission Charges at Production and Consumption Centres

Top 3 Producing States	Official Commission Charges	Major Consumption Centres	Official Commission Charges
Tomato		Delhi	6%
Andhra Pradesh	4%	Mumbai	6%
Madhya Pradesh	2%	Kolkata	4.5%
Karnataka	5%	Hyderabad	4%
Onion		Bangalore	5%
Maharashtra (Nashik)	4%	Ahmedabad	7%
Madhya Pradesh	2%		
Karnataka	5%		
Potato			
Uttar Pradesh	3%		
West Bengal	4.5%		
Bihar	No APMC Act		

Source: Various APMCs and Directorate of Marketing and Inspection (DMI)

Also, as the commodities move across states to different wholesale markets, they attract multiple market fees and charges, which result in higher consumer prices without any benefits accruing to the farmers.

In fact, the crumbling infrastructure of APMC mandis has been the most disturbing state of affairs in APMC system. In various APMC mandis (Pimpalgaon being exception), the existing infrastructure of APMCs has run out of its capacity. For example, the largest tomato mandi of Kolar, which caters to more than 4 Lakh MT of tomatoes a year is spread over 20 acres of land and is overflowing (Gulati, et. al, 2019). The operations of the mandi have spread out to the fringes. The mandi requires not only a complete renovation of the existing infrastructure, but also additional land. As marketing is the key aspect for any value chain, infrastructural development of existing APMCs and setting up of private mandis becomes important.

Lower Price realisation for farmers: An analysis of farmer's share in consumer rupee for the three TOP commodities in Table 3 suggests that farmers earn one-third of the consumer price; rest going to the middlemen, wholesalers and retailers apportioning the highest share. Considering Delhi as one of the main consumption center, tomato prices from Pimpalgaon (Maharashtra), Kolar (Karnataka) and Solan (Himachal) as well as Gujarat, Haryana and Rajasthan adjusted for their harvesting months and seasonality and taking three years average prices (TE2018-19) estimates farmer's share to be 32.4% of retail prices in Delhi

Table 3: Mark-ups (Costs and Margins) for Value Chain Participants of TOP

	Tomato	Onion	Potato
Farmer	32.4%	29.1%	26.6%
Trader	25.6%	24.1%	8.4%
Wholesaler	15.6%	16.3%	21.1%
Retailer	26.4%	30.5%	43.9%

Source: Author's own calculation

Similarly, for onion, three years (TE2018-19) season wise weighted average of wholesale prices from Lasalgaon (Maharashtra), Indore (Madhya Pradesh), Mahuva (Gujarat) and Jodhpur (Rajasthan) catering to all of Delhi onion demands, it is found that farmer's get only 29.1% of consumer's price. For potato, average prices from Agra (UP) and Jalandhar (Punjab) for TE2018-19, farmer's share of consumer

rupee is estimated to be 26.6%.

In this context, one may refer the example of the dairy co-operative models of linking farmers to markets and providing the much needed backward linkages, which has been instrumental in enhancing the price realisation for farmers to about 75% to 80% of the consumer rupee. Similar farmer-market linkages are missing in the TOP value chains and examples of successful marketing led by FPOs or contract farming arrangements have been very limited.

Low Processing Levels: While India is the second largest producer of the TOP vegetables, processing capacity for these is limited. Among all three, potato has the highest share of processing of around 7.5% (CPRI, 2014) compared to tomatoes at 1% and onions at 3%, despite all of these commodities having the potential to be converted into a number of value added products. This may not only help in mitigating high price volatility, but also minimise post-harvest losses. The idea is to process more when arrivals are at its peak and prices are low, avoiding distress sale or discarding of crops by farmers, and encouraging the use of such products when prices of fresh commodities are high for consumers. This can potentially stabilise the prices and also give consumers alternate options to fresh produce.

While ketchup market is anticipated to reach almost Rs. 2000 crores (Bonafide Research, 2021), use of tomato puree as an alternative to fresh tomatoes during price rise has not picked up. Indian tomatoes have low yields, which increase the cost of raw material and finished goods, making Indian processed tomatoes relatively expensive than their Chinese counterparts. Because of high fluctuations in tomato prices in India, processing units are unable to process tomato round the year. It is only sustainable for the processors to process when tomatoes are procured at prices less than Rs. 4 to Rs. 4.50 per Kg. On the other hand, China produces 25% to 30% more tomato paste per hour than India at a much cheaper rate because of low raw material and processing cost (Mohan, 2019). Even Indian manufacturers prefer importing cheap Chinese tomato paste. Producing tomato pulp in India is viable only when crops fail in China (Mohan, 2019).

For the tomato pulping industries in Chittoor, no contract farming with the producers are in place and the processors procure their raw material from Kolar or Madanapalle mandi or directly through farmers without any contract. However, Sahyadri farmer producer company (FPC) has engaged about 2000 farmers growing tomatoes on 5000 acres. They procure in bulk at guaranteed prices from the farmers (Sen, 2015). The FPC already tied up with Hindustan Unilever Ltd (HUL) in 2019 to supply tomato puree.

Domestic market for dehydrated onions has not taken off given the strong consumer preference for fresh onions (Premi and Premi, 2017). India produces about 75,000 MT of dehydrated onions, which is about 3 to 4% of total onion production (1 Kg dehydrated onion equivalent to 10 Kg fresh onions). Nearly 80-85% of it is exported while the remaining goes to the domestic food industry. Majority of the dehydrated onion units in India are located in Bhavnagar district in Gujarat, with a high concentration in Mahuva region. These units procure the raw materials (white or red onions) directly from mandi

without engaging into contract farming, they operate for only few months in a year (February to June) when white onion prices are low. This way, Mahuva farmers have no extra benefit because of presence of dehydration industry in their area. Reeling under low international demand and negligible domestic demand for dehydrated onion products, these units have a high pile up of previous year's stock, making them financially unsustainable.

Compared to Mahuva farmers, those engaged with Jain Irrigation Systems Ltd (JISL) have benefitted more. JISL has engaged in contract farming with onion farmers in and nearby Jalgaon since 2000. The company provides seeds, drip irrigation equipment, sprinkler as well as extension services to the contract farmers. The company sources 90% of the onions from smallholder farmers, having area less than 2 hectares (JISL, n.d.). With the support from JISL, they not only produce onions of differentiated quality, but also get insured against the instability in onion prices. The price received by the growers is pre-determined by the company even before planting. According to the officials of JISL, if market price is higher than the assured price, then market price less 60 paise is given. For e.g. if market rate is Rs. 11, then Rs. 10.40 will be given (Gulati, Wardhan, & Sharma, 2019).

A primary reason for the processing of TOP not picking up in India is the low number of takers in domestic market. On the contrary, processed products in the western world are much cheaper than fresh and hence there are takers. This has been possible because of the scale of processing capacity. While there is a need to increase processing capacity in India, it is also important to relook the goods and service tax (GST) rates levied on these processed products. Milk and most milk products attract 0 to 5% GST, while that on processed products like tomato puree and / or fruit juices is as high as 12%. Bringing this down to a lower slab will attract processors and make such products affordable to consumers.

Low Export Volumes: India's share in global exports for tomatoes, onions and potatoes in TE2020 was 1.0%, 18.7% and 2.5%, respectively (FAOSTAT, 2022). With India being a leading exporter of onions in the world (FAOSTAT, 2022), it is natural that onions would dominate in the value of its TOP exports basket (as in Table 4). In terms of their individual contributions to the total value of agri-export trade from India, the share of tomato, onion and potato remained meagre at 0.01%, 0.15% and 0.05% during TE2021-22. On the other hand, the share of processed potato products in the total value of potato exports between 2002-03 and 2021-22 has largely hovered around 30% or above, while that for both tomato and onions have remained relatively low (see Table 4 for details).

Table 4: Export of TOP from India, 2002-03 to 2018-19 (USD Million)

Year	Tomato (Fresh + Processed)	Onion (Fresh +Dehydrated)	Potato (Fresh+ Processed)
2002-03	2.9 (15)	85.8 (13)	4.1 (41)
2003-04	2.1 (30)	167.6 (7)	9.9 (39)
2004-05	2.3 (43)	153.8 (7)	12.6 (44)
2005-06	3.4 (28)	183.8 (13)	16.5 (47)
2006-07	8.2 (8)	292.6 (12)	21 (39)
2007-08	40.2 (5)	314.7 (18)	19.4 (47)
2008-09	29.1 (7)	423.3 (7)	35.7 (31)
2009-10	23.7 (8)	540.9 (9)	22.4 (29)
2010-11	32 (20)	454 (14)	50.9 (33)
2011-12	97.4 (4)	439.8 (19)	49.4 (43)
2012-13	102.5 (4)	446 (19)	45.3 (40)
2013-14	143.4 (3)	611.2 (14)	71.9 (43)
2014-15	78.7 (8)	487.8 (23)	166.3 (17)
2015-16	67.4 (8)	584.3 (19)	80.3 (31)
2016-17	88.3 (7)	574.1 (19)	125 (21)
2017-18	25.8 (21)	603.4 (15)	105.8 (36)
2018-19	41.4 (12)	599.7 (17)	100.9 (37)
2019-20	36.3 (14)	440.1 (26)	135.8 (40)
2020-21	40.9 (20)	522.1 (27)	156 (52)
2021-22	36.1 (20)	619.1 (26)	188.9 (46)

Source: Directorate General of Foreign Trade, 2022

Note: Figures in the parentheses represent the share (in %) of processed / dehydrated products in the total value of exports of the respective crops.

Prior to 2017-18, Pakistan was the largest importer of tomatoes from India. While India exported 268 thousand tonnes of fresh tomato in 2016-17, it declined to 55.8 thousand tonnes in 2017-18 as a result of import bans imposed by Pakistan. Overall, India accounts

for about 3% of the global tomato exports, but is a net importer of processed tomatoes mainly because of high cost of tomato processing in India.

With about 19% share in global exports, fresh onions from India have huge demand in global market because of its high pungency and year-round availability. India's onion exports increased considerably from 2.6 lakh tonnes in 1999-2000 - when it was canalized through NAFED and 12 other agencies - to 2.42 million tonnes during 2018-19. This was almost 45% more than the 1.68 million tonnes, which it had exported in the previous year. Exports declined to 1.5 million tonnes in 2021-22 (DGFT, 2022). However, India's onion exports are geographically concentrated with 97% of the total onion export going to the South and South East Asian and the gulf countries, vis—a-vis a meagre 1% to the European countries (DGFT, 2022).

Similarly, potato from India is largely exported to the neighboring countries with nearly 70% of it going to Nepal (DGFT, 2022). Despite being the second largest producer of potato globally, India accounts for only 2.5% of the global volume of potato exports, even lower than that of Pakistan (3.8%) and China (3.3%) (FAOSTAT, 2022). In absolute terms, India's exports were 0.43 million tonnes in TE2021-2, a miniscule proportion of India's production of 52.8 million tonnes (DGFT, 2022).

Analysis of international competitiveness of the TOP crops reveals interesting results. Nominal protection coefficients (NPC) estimated by Gulati et. al., (2022), as the ratio of domestic wholesale prices and international free on board prices show that India has been competitive in tomato and onion exports and mostly competitive in potato (Fig. 1). A consistently lower value of NPC, less than 1 indicates high competitiveness (Saini and Gulati, 2017). While NPCs for onions and tomatoes have always remained below 1 (dotted line in Figure 2), for potatoes, NPCs were higher than 1in three out of 17 years. But the frequent imposition and removal of Minimum Export Price (MEP) and / or intermittent export bans, especially on onions and potatoes, not only hamper the credibility of India as an exporter, but also hurts the interest of farmer who could have benefitted from higher export price. In fact, practices like MEP and ECA, distort markets and prevent them to function on their own.

At the same time, such erratic policies provide opportunities to other countries such as, Pakistan, Afghanistan and Egypt (together accounting for 8.4% of the global exports of onion in TE2020) to export at the cost of India. India, perhaps can do much better by focusing on fixing the inefficient value chain and poor infrastructure instead of resorting to abrupt trade policy measures. For instance, Netherlands - despite not being among the major producers of onion globally - has emerged as a leading exporter accounting for 20% of the global exports of onion (TE2019) (FAOSTAT, 2022) by leveraging on its efficient storage and packaging solutions.

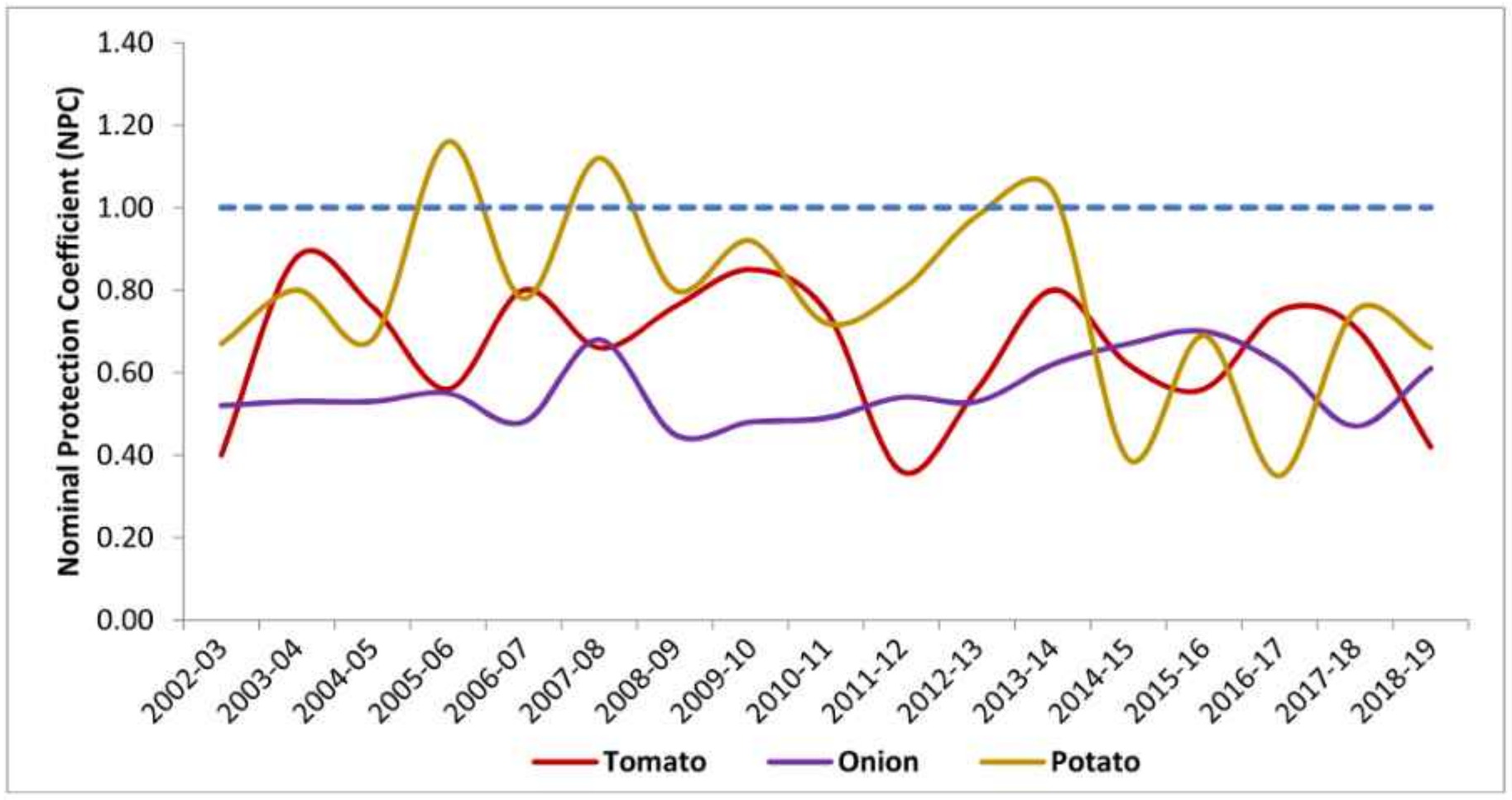

Figure 2: Trade Adjusted Nominal Protection Coefficients (NPC) for TOP

Source: Author's own calculation

Parallels between OF and OG

In the context of such policy induced market distortions, where can OG go from its present status? Given the qualitative non-homogeneity of the TOP commodities, how can the best practices of the OF be leveraged or replicated for this scheme? Also, one needs to remember that in case of OF, there was a strong demand pull and supply. While in case of OG, demand conditions (for processed and value added products) have to be created to contain the supply push. OF was all about augmenting production and productivity of milk and thereby farmers' income, whereas, for OG, the intention is to stabilise prices and thereby augmenting farmers' income. Given these differences, what we suggest here to emulate the best administrative or operational practices of the OF, in the main.

First, as in case of the OF, OG can be housed in an independent board- similar in essence to the National Dairy Development Board - managed by professionals and headed by a visionary chairman. MoFPI as a nodal agency for OG may not be effective given that promoting processing is just one of the objectives of the scheme. Being housed in the Ministry of Food Processing, OG's mandate - for integrated value chain development may be subsumed within other schemes like Sampada Yojana, potentially diluting the significance of the overall OG scheme in general. Thus, to achieve a success like the OF, OG needs a mission mode execution, subsuming all other schemes within in, and not the other way round.

Second, like the co-operative model based OF with farmers at its core, OG should be implemented with the FPOs at its core. As vegetable cultivation mainly involves

marginal and small farmers[4] who account for 87.5% of India's total land holding (Agricultural Census, 2015-16), bringing them under FPOs can improve direct farmer-market linkages, as well as facilitate farmers' access to quality farm inputs, credit, extension and advisory services, among others. As per Ministry of Corporate Affairs data, India has more than 9239 FPOs (Kumar, et. al, 2022) and there are plans to create 10,000 more by 2024 through NABARD with budgetary provision of Rs. 6865 crore (DoAC&FW, 2021, p.145). Again, evidences from the poultry sector show how contract farming in the form of integrator model accounts for 80% of poultry production in India (DoAHD, 2022), which has helped transform the sector from backyard operations to organized integrated farming. Similar, models need to be explored for the perishables, too.

Contract farming for TOP has the potential to transform agricultural value chains through access and / or adoption of right technology and creation of vital linkages with alternative markets. Both marketing and income risks can be minimised by pre-determined demand and buy-back prices. Existing contract farming models like that of dehydrated onions of Jain Irrigation Systems Ltd (JISL), potato contract farming by McCain and PepsiCo reveal that such arrangements also increase farmers' access to technology, credit, marketing channels and information with low transaction costs.

McCain Foods Ltd, world's largest producer of French fries and one of McDonalds' main suppliers is a successful model of potato value-chain in India. It is engaged in contract farming of potato in three districts of Gujarat (Banaskantha, Sabarkantha and Mehsana) and has a potato processing facility in Mehsana, Gujarat. All input costs are borne by the farmers themselves and there are strict norms for the quality of the potato to be grown. In case of non-adherence to company guidelines or low quality of the produce, price paid to the farmer is reduced. In 2016-17, McCain engaged with around 700 farmers on 7000 acres of land in Gujarat. With per quintal cost at around Rs. 665 and an average yield of 321 quintals per hectare, farmer's returns ranges between Rs. 60000 to Rs. 76000 per hectare, the farmers are earning a profit of around 28 to 35%, relatively higher than that made by farmers operating at the traditional mandi (in Agra) in 2019 (Gulati, et. al, 2019).

Despite the potential for assured income, participation of farmers is limited in McCain's contract farming model. This is plausible due to entry costs, in this case the input costs, which might be prohibitive for small individual farmers, but affordable when farmers form a collective. This is where OG has a role to play by developing integrated value chains through FPOs, thus eliminating the need of working directly with individual small and marginal farmers.

Third, major producing and consuming centres for TOP should be mapped based on production and consumption trends, and leverage the e-National Agriculture Market (e-NAM) for seamless marketing of the commodities. Aggregation of TOP should be

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[4]Share of small and marginal farmers for Tomato, Onion and Potato: 82.1%, 70.4% and 86.7% respectively (Source: Agriculture Census 2015-16, Ministry of Agriculture and Farmer's Welfare)

done at farm level itself with assaying, sorting, grading and packaging. Sorting and grading should be done based on quality indicators, like size (large as grade A, medium as grade B and small as grade C etc.), colour and texture. This will help in pricing of commodities based on quality. This is exactly how the milk model works where the milk is tested for the fat content at the aggregation level itself.

Fourth, customised value chain models should be developed for domestic marketing, external trade and the processing sector. Awareness of potential marketing channels for customised and value added products should be imparted right at the farmer and/ or the FPO levels.

Conclusions and Way Forward

OG so far has not been effective in stabilising the prices of TOP, presumably because the scheme is still unfolding. However, for realising the envisaged goal of transforming the value chains of these vegetables to stabilise their prices and augment farmers' income, this scheme should assume a mission mode and not be treated like any other regular agricultural schemes of the ministry.

First, storage facilities including cold storages need to be multiplied. However, since the government imposes stocking limits especially on onion and potato traders as and when the prices rise, private players are hesitant to invest in storages. To recall, when stocking limits were imposed on onion wholesalers and retailers in September 2019, it proved to be ineffective in controlling the prices that went beyond Rs. 100/Kg mark in several cities of India in December-2019. The government should pave the way for deregulation of prices by amendments in Essential Commodities Act and stocking policies. This can potentially boost private investment in storage facilities, thereby enabling the farmers to store their produce during glut seasons and market in the lean seasons. For better outcomes, the storage facilities can be further linked to e-NAM and electronic Negotiable Warehouses (e-NWR) by inviting farmer collectives and FPOs, to participate on these digital platforms.

Second, reforms in the APMC should expand the scope of direct purchase from farmers and FPOs, and potentially ensuring a more symmetric price transmission between the consumers and farmers. Though this has already been envisioned under e-NAM, the programme is still evolving. For a commodity to move from one state to another, several levels of mandi fees and commission is added, which escalate the retail prices of the commodities without imparting any value addition to the product, and / or increased benefit to farmers. Hence reforms in APMC laws should lend focus on: (i) ramping up the existing infrastructure of the APMC premises, especially via the Agriculture Infrastructure Fund (AIF) for APMC mandis as announced during 2021-22 Union Budget; (ii) lowering of the commissions and mandi charges; and (iii) fostering competition within the agricultural marketing system.

Third, strategies for creating enabling conditions for agri-processing facilities to flourish, need to be prioritised. These will not only help to boost the demand of value added products but will also help to create new jobs. Tying up these units with farmers

via contract farming, and /or FPOs, may encourage that these units resort to direct buying from the farmers instead of procuring raw materials from the mandis when prices are low, so that farmers may benefit from such alternative marketing arrangements.

To sum up, creating competitive, inclusive, scalable, and financially and environmentally sustainable value chains, at least for the TOP crops, to begin with, should be the aim of OG. This would require substantial investments in strengthening the backward and forward linkages along the value chains. Private investments for setting up aggregation centers, storage facilities, processing units etc., can play a crucial role in this regard.

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Blending Rural Enterprises with Modern Supply Chains: Some Imperatives

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'India lives in her villages', said Mahatma Gandhi in the 20th century. This maxim holds well even today, in the 21st century, as two-thirds of our population lives in rural areas. Rural economy in India contributes as high as 46 per cent of the national income and rural sectors employ a whopping 70 per cent of the nation's workforce.

Though the Indian economy continues to be predominantly rural, as a result of the all-round progress achieved on various socio-economic fronts, character of the rural demography has undergone a significant transformation since independence. Seven decades ago, the rural masses were a symbol of poverty, illiteracy and hunger, but today, an aspirational rural class which is literate, skilled and eager to participate in a modern economy, is a face of an emerging rural India.

What augurs well with this positive transformation in the rural demography is a fact that demand for the rural products is experiencing a steady increase due to multiple factors such as the liberalised economy, higher disposable incomes, diversified preferences of consumers, evolved supply chain logistics, disruptive innovations, etc. This presents an excellent opportunity for the rural farm and non-farm enterprises, which, owing to their wide range of product offerings, can play a dominant role in the domestic and global supply chains.

On the flipside, however, over 86% of the farm-holdings are small and an overwhelming majority of the rural non-farm enterprises operate informally and on a micro-scale. As a result, rural enterprises face multitude of problems such as poor access to finance and technology, lack of a level playing field, adverse terms of trade, domination by traders, risks due to aberrations in market demand and prices, absence of a risk mitigation mechanism, etc. This suppresses their true economic potential.

A few critical transformative steps are therefore suggested in the following paragraphs to empower the rural farm and non-farm micro-enterprises to unleash their latent economic potential by taking advantage of the emerging economic opportunities and upgrading themselves to blend seamlessly with the modern supply chains:

First, farmers and rural producers have a unique ability to supply natural, fresh, handcrafted and niche products having a distinct geographical, social, cultural and seasonal characteristics and growing demand in the domestic and overseas markets. Systematic efforts are therefore necessary by all stakeholders to capitalise on this strength by identifying high potential products in the rural clusters, skilling and capacity building of the primary producers and their collectives, promoting value addition to products, re-orienting production processes to align with modern supply chains, infusing efficient technologies across value chains, ensuring finance and incentives, developing local infrastructure and logistics, launching sustained initiatives for branding, marketing and exporting, etc. This would help expand commercial opportunities for the primary rural producers.

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Second, due to the absence of economies of scale and paucity of capital, rural farm and non-farm producers suffer on account of low productivity, quality and efficiency. They also face a double whammy at the hands of unscrupulous local traders who sell inputs and raw materials to them, on credit, at high effective prices, but buy raw products from them effectively at sub-market prices. Some studies suggest that the primary producers realise only around 30-40 percent of the consumer price, while a major share is garnered by the secondary and organised value chain players. Adopting a collective approach to various enterprise level activities can therefore be an effective strategy for the small producers to beat this vicious cycle. They can form producers' companies or cooperatives to take care of members' requirements such as inputs, technology, finance, machinery, processing, logistics, transport, market, etc. on a collective basis. Aggregation would help in attaining economies of scale, optimisation of costs, adoption of superior technology, improvement in productivity, quality and efficiency, value addition, collective bargaining power, etc., leading to competitiveness and higher returns for the primary producers. Various stakeholders therefore should endeavour to support formation and strengthening of collectives of rural producers.

Third, adoption of efficient technology is an imperative for enterprises to maintain productivity, quality and efficiency. However, in case of the rural micro-enterprises, investment in a costly technology often proves unviable. Moreover, as the quality norms are not scrupulously followed in case of the rural products, their mainstreaming in the modern supply chains poses a challenge. Therefore, an important step towards infusing a technology and quality culture in the rural production system would be to set up 'technology cum quality hubs' in rural clusters. Hubs may operate on a commercial 'pay and use' basis. This would help in improving the access for rural enterprises, local innovators and rural start-ups to modern technologies, equipment, digital solutions, quality testing and certification and training facilities. Technology and research organisations, corporates, start-ups, collectives, etc. can be incentivised to set up commercial technology and quality hubs in the rural clusters.

Fourth, taking advantage of the inability of the primary rural producers' to hold the produce or process it due to adequacy of scale and capital, organised players buy unprocessed products from the primary rural producers at a lower price, and after doing a little value addition, sell in the market at a premium, making higher profits. Primary producers thus have a little control over the high value cash flows in value chains. In order to deepen the involvement of the primary producers in premium value chain activities, the producers companies or cooperatives need to involve themselves in activities such as processing, storage, marketing, etc. As initially the producers' collectives may not have adequate resources to make capital investments in value addition infrastructure, government may come forward to create and lease out the same to producers' collectives by charging a user fee. Government may also incentivise the organised value chain actors viz. processors, exporters, start-ups, etc., to set up such infrastructure for use by the primary producers and their collectives on commercial terms, and possibly with an arrangement to buy the processed produce. Similar approach can be adopted for developing other economic infrastructure in rural areas for enhancing the ease of doing business.

Fifth, as majority of the rural enterprises are generally managed by the first- generation entrepreneurs and employ untrained manpower, their ability to transform and adapt in tune with requirements of the modern supply chains gets restricted. Serious efforts are

therefore required to develop multifarious and modern enterprise management skills in rural enterprises in critical areas such as business planning, finance, technology, quality, IT, production management, marketing strategies, customer centricity, statutory compliances, governance, etc., besides the soft skills for business communication, networking, conflict management, collaborations, environment, social and gender issues, etc. It would also be immensely useful to evolve an enterprise incubation system comprising apprenticing, business counselling, mentoring, etc. for the rural enterprises, like the system available for start-ups.

Sixth, in a fast digitising financial and governance ecosystem, government agencies and financial institutions are increasingly relying on the data analytics based faceless systems to verify and analyse the information on individuals and entities as available from the national databases such as Aadhaar, PAN, IT, GST, payment system, credit scores, etc., for taking financial decisions. But, unfortunately, a majority of the rural enterprises operate informally, transact in cash, do not maintain financial accounts or use financial technology, and, therefore, hardly create the verifiable financial data trail. In the absence of the verifiable data, it might become increasingly difficult for the rural enterprises to access facilities available from the government and financial institutions. Therefore, as a part of the national financial education framework, rural entrepreneurs should be imparted the practical financial skills on aspects such as financial planning, financial management, business accounting, banking, statutory compliances, digital finance, etc.

Seventh, as majority of the rural enterprises are informal and unregistered, granular information is not available on them. Government and developmental agencies therefore find it difficult to design, implement and precisely target the developmental programmes for them. Formalisation and registration of rural enterprises would help in assigning the unique identity to individual enterprises and their mapping, maintaining a database, understanding of their precise needs, designing appropriate interventions, fine targeting of schemes, etc. formalisation would ease their access to various institutional services such as training, bank finance, incentives, marketing and export promotion, etc. Regular flow of information from the formal rural enterprises would also help in realistic assessment of their contribution to the national economy. The Common Service Centres (CSCs), established under the e-governance initiative of the government, may be roped in to expedite the process of registration of the rural micro-enterprises.

Eighth, enterprises in the organised sector have formed their representative bodies such as federations, associations, etc., to facilitate continuous interaction with members, government and other stakeholders, on issues relating to policy, incentives, trade facilitation, regulation, etc. However, such forums are almost non-existent in the case of rural farm and non-farm enterprises. As rural enterprises have certain inherent weaknesses relating to scale, capital, technology, quality, competitiveness, etc., which hinder their growth and competitiveness, it would be advisable to encourage them to form the sectorial self-regulatory organisations (SROs) to help develop policies, support mechanism and commercial prospects for the rural enterprises.

Expeditious implementation of the suggested transformative framework through a concerted action by the government, technical organisations, developmental entities, financial institutions, private sector, start-ups, etc. to create the modern, technology-driven, market oriented and competitive rural enterprises and make our dream of '*atmanirbhar bharat*' a reality.

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Strengthening of Agri-Value Chain through Farmer Producer Organisations

Palak Jain* and Surekha Malkhed**

Abstract

Farmer Producer Organisations (FPOs) were conceptualised in 2011-12 with an objective of mobilising farmers into member-owned producer organisations, to enhance the production, productivity and profitability of farmers, especially small and marginal farmers. As of August 2021, there are a total of 204 FPOs in Gujarat of which 117 FPOs are promoted under the PRODUCE Fund and 87 under PODF – Interest Differential (PODF-ID) Fund. These FPOs are engaged in production of crops such as groundnut, turmeric, castor, wheat, dairy, cotton, etc. Of these crops the spice production is particularly significant due to higher return per unit and employment generation. Gujarat contributes significantly to the production of spices and possesses potential to make India a leading exporter in this respect. An efficient supply chain ensures remunerative prices to the producers and simultaneously deliver maximum satisfaction to the end consumers.

The present study aims to find means of strengthening these FPOs towards achieving the Agri-Value Chains. The study comprehends the existing value chain mechanism for selected crops in Gujarat and analyse role of its participants, produce and efficiency. Further, it intends to study the role FPOs currently play in strengthening these value chains in a manner through which the number of intermediaries reduce and the share of profit of the producer increases. It further analyses the underlying causes of varied levels of progress of differently situated FPOs within Gujarat by examining the viability of the existing business models followed for the select crop and assess the possible scope of improvement for the same.

Introduction

India has come a long way in the field of agriculture since independence – from being a country with insufficient food resources to a net exporter of agriculture and allied products to the world. This self-sufficiency in food sector has translated into a significant contribution to the GDP, almost as high as 20 percent. As per the second advance estimates of 2020-21, the total foodgrain production of India is estimated to be at least 303.34 million tonnes[1]. Correspondingly, the production of horticultural crops, such as

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[1]Second Advance Estimates of 2020-21, Foodgrains, Dept of Agriculture, Cooperation and Farmers Welfare, Directorate of Economics & Statistics, Ministry of Agriculture and Farmer's Welfare, https://agricoop.nic.in/sites/default/files/Time%20Series%202%20AE.%202020-21%20English.pdf [last visited 22-07-2021].

fruits, vegetables, aromatic and medicinal crops etc., has also been showing a rising trend with the estimates being as high as 329.86 million tonne for the FY 2020-21[2] (Source: Ministry of Agriculture & Animal Welfare).

Doubling of farmer's income remains at the core of development of agriculture sector. Based on the trends in income from 1983-84 to 2011-12, Chand et al (2015) concluded[3] that the majority of farm households in the country would remain below poverty level unless they adopt high-income earning avenues and augment their incomes through non-farm activities. Several studies and policy documents[4] have highlighted the need for diversification towards High Value Crops (HVC). HVCs such as vegetables, fruits, and spices can play a significant role in enhancing the income of the farmers due to their commercial nature. However, these crops occupy only 19 percent of the Gross Cropped Area. It has been estimated that the average productivity of HVCs after adjusting for cropping intensity variations was estimated as Rs. 1,41,777 per hectare, as compared to Rs. 41,169 per hectare of staple crops. With this differential in productivity, shifting one hectare area from staple crops to commercial HVC has the potential to increase gross returns upto Rs. 1,01,608 per hectare."[5]

Agriculture GDP is heavily weighted in favour of high value produce as evident from the fact that as much as 75% of the agricultural GDP value comprises of it. Recent studies highlight that this segment is increasingly favoured by small and marginal producers because it is labour intensive, offers quicker returns and can engage a higher proportion of women (especially dairy activities). Therefore, there is immense potential to accrue high returns from non-cereal sub sectors, such as horticultural crops especially for small and marginal producers. This is also in line with vision of "faster and more inclusive growth".

State of Agriculture in Gujarat

The State of Gujarat is one of the fastest growing States in India. The economy of Gujarat is dependent on Agriculture with over 50 percent of the total land being utilized for agriculture. Gujarat has an appreciable CAGR of 10.97% over the last decade[6]. Thus, prosperity of the State is closely linked to the development of the agriculture and allied sectors.

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[2]Second Advance Estimates of 2020-21, Horticultural Crops, Dept of Agriculture, Cooperation and Farmers Welfare, Directorate of Economics & Statistics, Ministry of Agriculture and Farmer's Welfare, https://static.pib.gov.in/WriteReadData/specificdocs/documents/2021/jul/doc202171541.pdf [last visited 22-07-2021].

[3]Supra Note 3.

[4]NITI Ayog Policy Paper, https://agricoop.nic.in/sites/default/files/NITI% 20Aayog%20 Policy%20 Paper.pdf

[4]Jain Rajni & Ramesh Chand, Technical Report of the Project on Total Factor Productivity and its Determinants in Indian Agriculture, ICAR National Institute of Agriculture Economics and Policy Research, New Delhi (2016).

[6]*Gujarat records Highest Decadal Growth Rate of 10.97 percent, reports ASSOCHAM*, The Economic Times

Though Gujarat agriculture has shown promising performance since 2000s, there are several challenges that remain to be addressed to facilitate a sustainable development of agriculture in the state. Major challenges and tasks for the agriculture sector in Gujarat includes – lesser share of agriculture and allied sectors in total state income; less public investment in agriculture; inadequate marketing reforms; insignificant exports of value added agri-products, etc.

While the area under horticultural crops has increased in absolute terms, indicative of the process of diversification of agriculture towards high value, the need is to introspect on the pace of such diversification, the effectiveness of the current value chain and ways to enhance the production as well as productivity for these crops in the State, given their potential to increase the income of the farmers. Further, although exports and domestic prices have increased consistently, the impact of this rise has not reached small and marginal farmers through remunerative prices because of constraints in marketing channels and infrastructures resulting in lower value of their output.

Seed Spice Crops – Cumin and Fennel

Table 1: Trends in Area and Production of Cumin

(Area in '00 ha. and Production in '00 MT)

Year	Gujarat		Rajasthan		India	
	Area	Production	Area	Production	Area	Production
2000-01	1159.4	625.9	1998.4	767.6	3157.8	1393.6
2001-02	1451.0	613.0	3815.3	1451.1	5266.3	2064.1
2002-03	2000.5	642.7	3212.0	704.8	5212.5	1347.5
2003-04	2030.1	820.0	2278.3	1209.8	4308.4	2029.8
2004-05	2081.4	1069.8	1595.4	690.9	3676.8	1760.7
2005-06	2692.2	1476.1	1351.1	522.4	4030.3	1998.5
2006-07	2592.2	1528.5	1498.2	236.6	4090.3	1765.1
2007-08	2624.6	1985.0	2154.8	663.6	4779.4	2648.6
2008-09	3565.0	2388.0	1691.4	427.3	5271.3	2830.0
2009-10	3117.6	2219.1	2038.5	805.3	5171.3	3039.4
2010-11	2928.5	2192.2	3306.3	1149.3	6250.9	4730.4
2011-12	3739.0	2833.0	4679.8	1778.4	8434.0	4626.5
2012-13	3739.0	2833.0	2200.0	1110.0	5939.8	3943.3
2013-14	3700.0	2800.0	3200.1	1650.3	6900.8	4450.3
2014-15 (P)	2667.0	2514.3	4347.8	1208.3	7015.6	3722.9
2015-16 (P)	2954.0	3009.4	5110.8	2008.5	8082.3	5032.6
2016-17 (Est)	2790.0	2250.0	4810.0	2602.0	7601.0	4854.8
CAGR (%)	5.15	10.95	4.80	6.52	4.82	8.72

Source: Spices Board of India, Socio-economic Review, GoG, Economic Review, GoR, MoA&FW, GoI

The trend is not uniform with respect to rise in overall production of cumin across India. However, Gujarat has managed to retain the position of having highest domestic output. Similarly, with respect to Fennel, Gujarat single-handedly contributes as much as 74.81 percent of India's total fennel production.

Table 2: Trend in Production of Fennel

Year	State	Area (In '000 Hectare)	Production (In '000 MT)	Productivity (In MT/Hectare)
2015-16	Gujarat	295.40	300.90	1.00
	Rajasthan	511.08	200.90	0.40
	West Bengal	1.46	1.50	1.00
2016-17	Gujarat	278.70	284.00	1.02
	Rajasthan	479.70	207.00	0.42
	West Bengal	1.50	1.50	1.00

Source: Ministry of Agriculture and Farmers Welfare, GoI

Potato

Unlike spices, which can be utilised only in a limited form, Potato is utilized in a variety of ways, such as, chips, wafers, flakes, flour, starch, and other processed food. Potato is one of the main commercial crops grown in India. Gujarat ranks fourth in India's potato production. Though Gujarat grows less than 10% of total potatoes produced in India, the State has a share of almost 27% in the overall potato exports from the country.[7] Recently, the farmers have started to engage in contract farming of Potato, thereby producing non-traditional varieties of potato.

Selection of Crops and District for Study

Gujarat has the highest productivity in potato, cumin and fennel. Thus, the present study focuses on the value chain of three crops, namely – Cumin, Fennel and Potato. All the three crops are significantly cultivated in the districts of Banaskantha, Patan and Sabarkantha. A field level analysis was conducted through field visit to the said districts.

Concept of Agri-Value Chain

A value chain in agriculture refers to the range of activities and set of actors that brings agriculture produce 'from farm to fork'. At each stage, some value is added to the product before it reaches the final consumer. Since 1990s, the emphasis on integrated agriculture and food supply value chains has increased. The traditional method of food production and sale is being transformed with increasing demand for processing, sorting, packaging etc. Generally, it involves a series of value-adding activities to generate value for consumers and simultaneously establishes horizontal links with value chains of other related products. Agriculture value chains in horticultural crops provide an alternative for the diversification of agriculture. This helps to secure high income, employment, foreign exchange earnings etc.[8] Case studies in the Indian

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[7]Potato Harvest Profile of Potato, https://agmarknet.gov.in/Others/profile-potato.pdf (last visited 16-08-2021),

[8]Saurabh Kumar & Aparna Sharma, *Agriculture Value Chain in India – Prospects & Challenges*, Discussion Paper, CUTS International, (2016), http://www.cuts citee.org/pdf/Agricultural_Value_Chains_in_India_Prospects_and_Challenges.pdf [last visited 10-08-2021].

context[9] demonstrate that farmers participating in value chains incur lesser transaction costs, face lower market risks and realize higher profits. Yet, there remain weak links in the value chains that need to be addressed for improving their efficiency and inclusiveness. A sound value chain has the potential to not only increase agricultural productivity, but also improve household welfare and build social capital.

Farmer Producer Organisations

FPOs were conceptualised in 2011-12 with an objective of mobilising farmers into member-owned producer organisations, to enhance the production, productivity and profitability of farmers, especially small and marginal farmers. While a single farmer could access only limited resources, the spirit of cooperation has led to collectivisation in FPOs which ensures access to greater resource, credit, capital and technological requirements.

Presently, there are a total of 206 FPOs in Gujarat of which 117 FPOs are promoted under the Producers Organisation Development and Upliftment Corpus (PRODUCE) Fund and 89 under PODF – Interest Differential (PODF-ID) Fund of NABARD. These are spread over districts of Banaskantha, Patan, Sabarkantha, Dahod, Narmada, etc.

The fragmentation of markets reduces competition and exposes the farmer to a cartel-like situation within the APMC. As a result, the farmer gets manipulated prices. If farmers could be aggregated, it would lead to increase in their collective bargaining power. Empowering farmers through market information can significantly help them take informed producing and selling decisions.

A unified state-wide or nation-wide market tends to make the market competitive and can smoothen prices over place and time. Value-addition through primary processing, packaging and branding also plays an important role in raising the returns. FPOs can play a significant role in this by reducing the inequities, politicization, while simultaneously increasing the bargaining power, price realization and access to resources.

Analysis and Findings

The observations gathered from field visits to the select districts and analyses of the relevant role of the FPO in strengthening the agri-value chain, thus helping the farmer in achieving the objective of Doubling of Farmer's Income are summed up below:

Spices – Cumin and Fennel

I. Caste Study - Rajeshwar FPO

Rajeshwar FPO was incorporated in 2016 with the support of its POPI – IFFCO. The FPO is located in the desert region of Vav where multi-season cropping could only become possible after the development of Narmada Canal. It initially started as a 'Kisan Club',

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[9]P.G. Chenappa, *Development of Agriculture Value Chains as a Strategy for Enhancing Farmer's Income*, Agricultural Economics Research Review 2018, 31 (1), 1-12.

limited to training on agricultural practices. Over time, the organization realized the need to have post-harvest management and marketing solutions for their produce. Membership of farmers in FPOs has increased form 525 years in year 2016-17 to 925 in year 2020-21. The FPO expanded its zone of activities by indulging in aggregation of produce. The company started procurement of cumin produce from the farmers at a rate which was at least Rs. 7-8 higher than the market price at Unjha Mandi. The company was also given a Processing Unit worth Rs. 5.5 Lakh, of which Rs. 5 Lakh was borne by IFFCO and Rs. 50,000 was invested by the company. The company facilitates collection, grading, sorting, cleaning and hand-packaging of the produce, thus fetching remunerative prices, which was not possible at the APMC Mandi. The company now engages in Futures Trade at NCDEX.

Observations on Rajeshwar FPO

- Availability of a Processing Unit has played the most critical role in increasing the price realization of the produce along with trading at NCDEX. This is because, unlike Mandi, where the rates are determined on ad-hoc basis despite processing, NCDEX has clearly laid down standards and grading quality. The remuneration may be as high as Rs. 2800 per quintal as against the market rate of Rs. 2500/-fetching a profit margin of at least Rs. 250 after deducting processing cost, transportation costs etc.

- One of the key reasons for the success of FPO in Futures trading is management of funds and aggregation cycle. The company has availed loan from Bank and working capital of Rs. 50 Lakh from NABKISAN for the purpose of procurement. The Processing Unit along with capital availability proves fruitful in trading with NCDEX.

- The key resistance of the farmers to engage with FPOs or trade through NCDEX is inability to receive same-day payment, which is possible at the Mandi, albeit lower one. The availability of capital to temporarily settle the payment to the farmer addresses this reluctance of the farmer. Any profit that is earned over and above this may be paid to the farmer later in the form of dividend. Thus, creating a win-win situation for the FPO as well as the farmer.

Other Support provided by FPO to farmers:

Input Procurement: The FPO at the outset tried providing inputs such as Seeds, pesticides, etc., of assured quality from brands, such as - IFFCO, Dhanuka etc., to the farmers at a rate lower than that prevalent in the market. However, farmers were reluctant to buy input from FPO as the same could be procured from market on credit, led the FPO to explore other alternatives to help the farmers.

Production Stage: Training on various Good Agricultural Practices is provided to farmers prior to sowing, in collaboration with IFFCO and Krishi Vigyan Kendra. Laboratory tests for soil quality are also provided and accordingly primary training is given. Until harvest, at least 4 such programmes are conducted at each stage of cultivation.

II. Caste Study - Banas FPCL

Profile of the FPO: Banas Farmer Producer Company Ltd., is an outcome of Reliance Foundation's *Bharat-India Jodo* program. It is a unique model of an FPO acting as a promoting institution for other nascent stage FPOs such as Chorad, Sami Vistar, etc. It currently has as many as 1275 shareholders engaged not only in aggregation and input supply but also in marketing, trading with NCDEX, etc. Recently, the FPO also inaugurated its own state-of-the-art Processing and Packaging Unit (Figure 1). It has obtained licenses of FSSAI, Seed Fertilizer, Pesticide, APMC, etc. The FPO also has linkages with IFFCO, OLAM, ITC, Reliance Retail, GujPro etc.

Figure 1: Processing unit of Banas FPCL

Observations on Banas FPCL

a. Working of the FPO

1. The FPO has a well-established network with the Farmers operating through daily updates of prices of commodities through WhatsApp groups and multiple collection centres, ensuring reduction in transportation costs for the farmer.

2. The FPO has established a custom hiring center which has a tempo, tractor, Rota-Weighter, Seedler, Thresher, etc. As a result, FPO has been able to recover significant costs of investments, simultaneously aiding farm mechanization, reducing costs incurred by farmers on hiring equipment through private players.

3. The FPO is engaged in trading of produce through NCDEX and has signed MoUs with secondary and tertiary processors which helps in better prize realization to the members as compared to other farmers. This eliminates the channel of middleman and directly connects with the wholesalers.

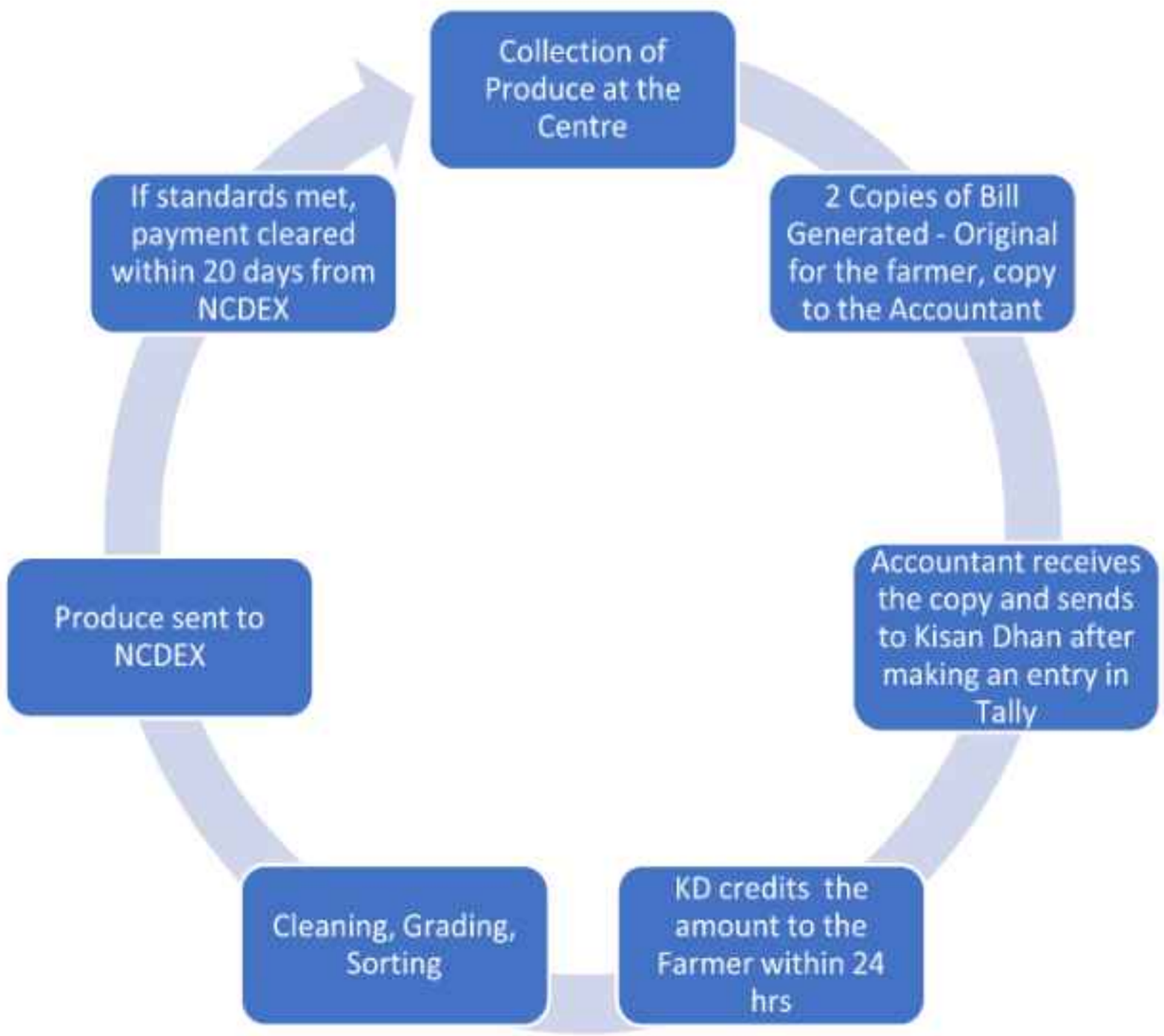
4. FPO provide quality input i.e. fertilizers, seeds etc., of companies such as IFFCO, Dhanuka, etc. Regular guidance by staff members is provided on soil and crop management, use of pesticides, fertilizers etc.

5. FPO has tied-up with Kisan Dhan, which provides innovative financing. The mechanism of credit is such that the payment is made to farmers within 24 hrs directly

from Kisan Dhan, thereby reducing the waiting period for the farmer and pressure on the FPO.

6. Banas FPCL is also engaged in effective packaging and sale of cumin to wholesalers for export and has the requisite FSSAI license. It has taken several measures to ensure quality, by investing in development of testing lab, obtaining necessary certifications, etc.

Figure 2: Aggregation Cycle at FPO



Challenges faced by FPO

1. While the procedure for obtaining primary licenses such as that of seeds, fertilizers etc., has been digitized and become more efficient over time, there is a multiplicity of regulations for secondary licenses. Need is to frame a uniform and single-window licensing system with uniform guidelines from BIS, FSSAI, State Government and Central Government, which will aid in promoting export.

2. The success of Banas Model may be attributed to sound financial management system. Quicker payment settlement system is important to encourage farmers to trade through NCDEX.

3. Multiplicity of laws and regulations at various levels – vertically, between Centre and State as well as horizontally, for PACS vis-à-vis FPC, there is a lack of convergence of various government schemes.

4. Lack of authentic local testing labs and certification agencies for export-quality goods. Samples are sent to facilities outside Gujarat, such as Bangalore, Pune etc.

Potato

I. Case Study – Viparamparik FPO

Vadgam based Viparamparik FPO was sanctioned in the year 2019 under the support of POPI - Sambhav Foundation. The FPO engaged in contract farming of potato on an experimental basis with a starch powder manufacturing company. The model of contract farming adopted by the FPO addressed several persistent challenges of the contract farming mechanism. Under this arrangement, the FPO played merely the role of a mediator and a monitor between farmers and the company.

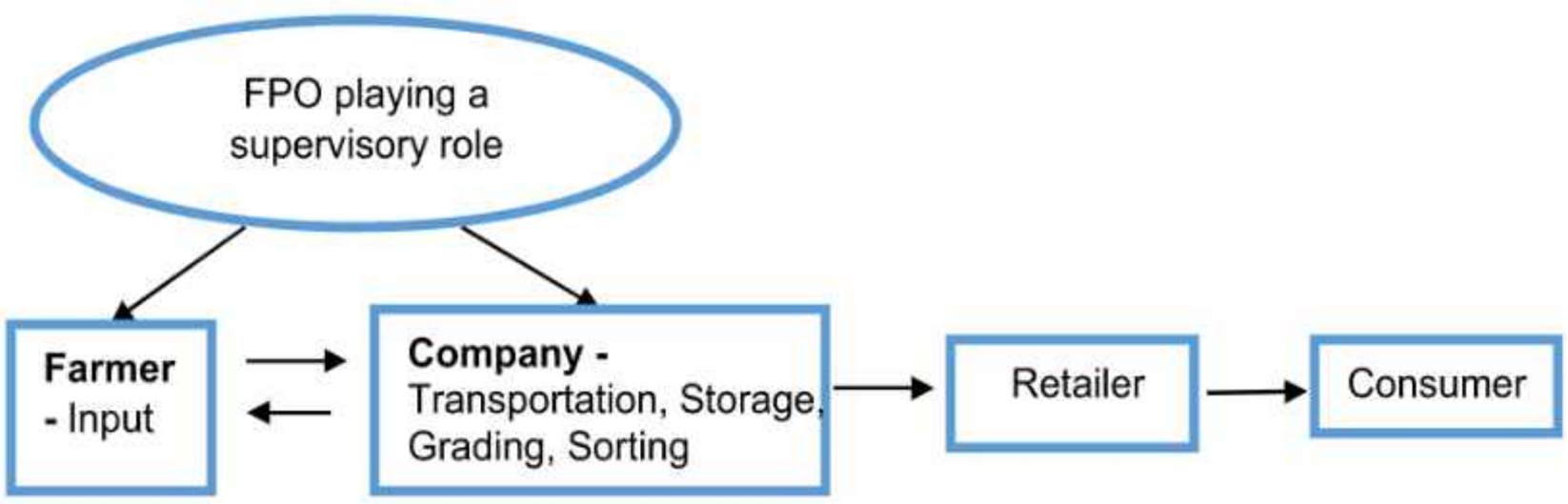
The farmers mostly cultivate Badhshah and Pokhraj variety in the region which are generally of 110-days cycle. The seeds for cultivation were provided by the contracting company. The farmers were required to pay 50 percent of the cost of seeds in the beginning and the balance was to be deducted at the time of final payment of produce. Other forms of inputs such as fungicide, pesticide, fertilizers are also provided by the company.

The sale price is fixed at the time of contract as per average rate of preceding five years quality grading. The FPO reported that the price was either more than the market value or equivalent. The year-wise fluctuations in the rate of potato being volatile, contract farming is beneficial in case of higher price. However, there is a risk of the market price in that particular year being more than the price fixed by the company (on the basis of average of last 5 years' rate).

II. Value Chain of the Commodity

The efficiency of Value Chain of the Commodity may be increased if contract farming is implemented. An illustrative flowchart of the arrangement may look as mentioned below (Figure 3):

Figure 3: Flowchart of Value Chain Involving Contract Farming



Constraints & Challenges

The study has identified various challenges and categorized them based on the nature of the challenges and stage of value chain.

A. Nature of Business Model – Shifting from an uncontrolled traditional buyer-seller model to an integrated structure improves the chances of realizing the results of policy

and financial interventions. From past studies it can be concluded that the selection of crop is based on various factors such as generational practice of growing particular crops, availability of seeds, climatic conditions, imitation of the crop selected by other farmers, etc. However, few farmers consider factors such as price secured for the crop in previous year, market and export demand, etc. The need is to establish value chain based on market needs. FPOs can help by providing farmers the technical know-how and economic understanding. This will ultimately help them in finding strong financial support from partners, while protecting farmers from possible exploitations of a buyer led model.

B. Input Level – (i) Non-Availability of Input on Credit: The FPOs are not able to provide inputs to the farmers on credit. As a result, the farmer is forced to buy costlier and low quality but on-credit inputs in the market. (ii) **Need to Promote Seed Production:** FPOs may engage in commercial seed production, however, one major concern in the practice of seed production is ensuring the sustainability and scalability. The FPOs require training and external support to carry out the activity for longer duration of time and increase diversity of seed types. **(iii) Uncertainties of Weather Conditions:** Unpredictable weather condition is a substantial risk in farming. FPOs with the help of KVKs and Agricultural University can play a potential role in educating farmers to better handle the risk.

C. Production Level – (i) Non-Availability of Custom Hiring Services: FPOs need to facilitate access to farm mechanization to the small and marginal farmers, with simultaneously creating revenue generating assets for the organization. The Government has launched several schemes to promote farm mechanization through Custom Hiring Centres. **(ii) Organic Farming:** Some of the factors which limit framers from adopting organic farming are - lack of willingness and motivation to switch to organic farming, fear of reduction in production, absence of assurance in obtaining a premium price, high input cost with low output, limited marketing, complex procedure of certification and chances of rejection, etc., **(iii) Soil Health Card & Need for Soil Testing Laboratory:** Farmers are not able to fully avail the benefit of the Soil Health Card scheme launched by the Gujarat government, due to various reasons. Setting up of independent soil testing laboratory by FPOs which provides customized recommendations to the farmer may be adopted but it requires substantial capital investment, which all FPOs may not be able to provide.

D. Governance & Legal Compliances for FPOs – (i) Need for Strong Technical Support & Financial Management Know-How: In case of Banas FPCL and Rajeshwar FPO, FPOs had received strong technical support from organizations such as Reliance Foundation and IFFCO – either directly, in the form of handholding support of a POPI or indirectly through trainings. The organizations have managed to pass on their business experience and resources along with connecting the FPOs with the relevant resource-persons. (ii) **Finance Management**: FPOs having sound financial management and investment skills, can venture into activities that are mutually beneficial for FPOs as well as the farmers. The focus should be to make the FPOs self-reliant and sustainable enough

to earn their own profits. (iii) **Convergence of Schemes:** There are several aspects that require convergence between Central and State level laws, regulations, notifications etc. Similarly, there are several regulations at the State level which have not been amended/modified to put FPO on par with PACS.

E. Post-Harvest Management – (i) Storage Infrastructure: FPOs which are in nascent stage of aggregation, lacked dedicated storage facilities. The produce was being aggregated at the residence of either the farmer himself or at the residence of BoD members. Thus, the storage space was inadequate leading to post-harvest losses and wastage of produce. (ii) **Cold Storage Infrastructure:** Though the State is a major producer of fruits and vegetables, inadequate post-harvest handling and cold storage facilities may lead to seasonal gluts and distress sales besides huge losses. Further, the setting up of cold chain infrastructure requires at least an investment of 4-5 crores. The government can play a role in this by enabling cluster-based approach of growing vegetables, fruits and flowers, particularly around urban agglomerations.

F. Marketing of Produce – (i) Dominance of *Arthiyas*: Many farmers shared that they have been depositing their produce to *arthiya*s since generations who readily provide immediate financial support in form of loans in case of need, hence it is very difficult for them to bypass *Arthiyas*. Therefore, farmers sell a proportion of their produce in the APMC Mandi (through *Arthiyas*) irrespective of their association with FPOs. (ii) **Grading, Sorting and Processing:** There is a need to develop a system of primary processing either at the farm itself or at a common collection/storage centre of the FPO through mechanisms such as hand-cleaning or through machinery. The cleaning and drying the produce before bringing it to the market will significantly increase the price realization both at Commodities Exchange (with a few more standards) as well as APMC.

G. Access to Finance – Major bottleneck to the FPOs is in availing of credit from formal Financial Institutions such as banks, in the initial stage. FPO faces the challenges of providing collateral against loan. While the concern of bank is understandable, it is essential to address this issue to ensure quicker access of finance to the FPO.

H. Access to Market Information – Market information needs to be more sophisticated than just price information. Price prediction for different commodities, supply-demand scenarios at different markets and in international markets should be regularly relayed to farmers. This needs effective broadband services and information transmission system that is conducive with ordinary mobile phones and not just smart phones.

I. Challenges with Online Commodities Exchange – (i) E-NAM Platform: The farmers reported that in order to avail the benefit of the scheme, the produce has to be taken to APMC Mandi, therefore, the fundamental objective of online trading is not achieved. Secondly, the infrastructure such as computers, internet facilities, sorting and testing facilities, trained staff members etc., is still nascent. Thus, intermediaries are preferred by both farmers as well as the traders for their critical role in credit, storage,

etc. **(ii) National Commodities & Derivatives Exchange [NCDEX]:** A study[10] conducted by IIM Ahmedabad has identified the following challenges to futures market, NCDEX: inefficient market, market settlement risk, high membership fee, lack of recognized warehouse, etc.

Recommendations & Suggestions

1. Integrated Value Chain: The value chain needs to be recreated in an integrated manner wherein the crop selection and cultivation is based on informed understanding of market and consumer needs.

2. Need for Convergence of Schemes: Since FPOs are based on the similar spirit as that of PACS, the need is to realign all the laws and regulations in accordance with the Union law's provisions. A dedicated FPO policy at the State level may go a long way in achieving the goal of 10,000 FPOs.

3. Gramin Agricultural Markets: FPOs may be encouraged to make use of Gramin Agricultural Markets (GrAMs) as they are linked to e-NAMs and are exempt from regulations of APMCs. GrAMs facilitate farmers to make direct sale to consumers and bulk purchase. Both forward and backward linkages are taken care of.

4. Conversion of Cooperatives to FPOs: The Union government has already expressed this vision in the Budget documents and the same may be implemented to ease the process of conversion of PACS into FPOs.[11]

5. Seed Production: FPOs should be encouraged to actively assume the role of seed-producers, rather than mere seed procurers/traders. This should be accompanied with the development of relevant skill of scalability and quality.

6. Aggregation Issues & the Involvement of SHGs: Aggregation issues like uniform quality, sorting and grading technology and appropriate storage needs to be resolved to infuse efficiency in processing and marketing. For FPOs which currently cannot afford processing units, the involvement of nearby Self-Help Groups (SHGs) may be assessed for the primary processing work.

7. Public Private Partnerships: Encourage private sector engagement through PPP Model for enabling farmers to move up in the value chain. The launch and development of common platforms through PPP model for all the stakeholders, including farmers, FPOs, traders, Mandis, Commodity exchange such as "AgriStack" may be envisioned[12].

8. Direct Engagement in Virtual Trade Fairs by APEDA: In the light of COVID related restrictions, APEDA has recently introduced the concept of Virtual Trade Fairs (VTF)

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[10]Kushankar Dey et. Al, *Farmer's Participation in India's Futures Market: Potential, Experiences and Constraints*, Centre for Management in Agriculture, IIM Ahmedabad,

[11]*Government Plans to Ease the Process of Converting PACS to FPOs*, Financial Express,

[12]Dr. G. R. Chintala, *Agri-value Chain Financing: Opportunities Ahead/Lack of Access to Affordable Credit*, NABARD https://nabard.org/auth/writereaddata/tender/1409201920Chairman_speech-VAMNICOM.pdf [last visited 17-08-2021].

with an objective to boost export potential of India's agricultural and processed foods, more specifically[13] – horticultural produce. This form of fairs should be continued even after the restrictions are relaxed.

9. Bank Linkage: A bank linkage model similar to SHG-BLP/JLG model may be adopted for FPOs to provide farmers access to finances in situations where no other collateral is available other than social collateral.

10. Penetration of Schemes: The Union and the State governments have launched several schemes and policy-initiatives to address the gap in basic services such as electricity supply for operating machinery and processing equipment, storage facilities, water and other technologies for irrigation, development of marketing channels and necessary infrastructure etc. Awareness and penetration of these schemes is to be ensured through door-to-door awareness campaigns, so that maximum number of farmers are able to avail the benefit of these schemes individually and collectively. The recent signing of the MoU between Central Warehousing Corporation (CWC), NABARD and Nabfoundation aims at bringing much required scientific storage and warehouse facilities closer to farmers affiliated to FPOs.

11. Skill Development: Currently, majority of the training sessions conducted by the FPOs are related to cultivation of crops and agriculture. FPOs may also provide skill development programmes for additional sources of income such as Animal Husbandry. In addition to this, training for subjects such as commercial negotiation, project management for post-harvest infrastructure etc. should be given.

12. Certification of Training: Farmers may be provided with certificates for all the trainings received through FPOs, KVKs, etc. Customized certification courses may also be developed by the Agriculture Universities. Farmer training certification may help in ease of availability of loan as it would demonstrate the knowledge of the farmer in the field and reduce the possibility of speculative risk for the banker.

13. Planning exit: For the entire model of FPOs to be successful and not suffer the challenges that exist with the PACS model, it is essential that the members themselves takeover the value chain, independent of the POPI and are also able to finance and run the same. The smooth transition to an independent entity and the performance indicators used to assess it must be well-defined in the business plan, underlying the intervention.

14. Suggestive Model: One District One Product (ODOP) model may be utilized to enhance the economies of scale of a particular produce, through creation of a network between multiple FPOs dealing with the same product and then be directly marketed by single body (such as GujPro) upto the levels of export. The scope of use of technology such as creation of Apps with the help of technical institutions may also be explored.

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[13]APEDA organizes first ever virtual trade fair to boost export potential of India's agricultural and processed food products, Ministry of Commerce & Industry, Press Information Bureau (PIB) https://pib.gov.in/Pressreleaseshare.aspx?PRID=1704072 [last visited 10-08-21].

15. Method of FPO Identification: It is suggested that FPOs may be identified on basis of the availability of a continuous land. This will also help in providing related soil analysis / inputs, a set of common crop type and to establish long term market linkage for selected crop types. Since the objective of formation of FPOs is to address the problem of small and fragmented landholding and farming practices, the focus areas could be more on specific crop types and developing economy on cultivation side.

16. Forward Linkage through Packaging, Branding, Trademark, etc.: Packaging plays an important role in ensuring the marketability and shelf life of the produce. The POPIs may help FPOs in developing quality packaging standards. It may also provide packaging and transport links to the FPOs. Simultaneously for products such as Cumin and Fennel, which have a distinct aroma, the scope of securing Geographical Indication (GI) Tag may be explored by Agricultural Universities. Parallelly, NABARD may provide grant support to FPOs along the lines of PACS as MSCs for brand promotion & market linkage

17. Single Window Clearance for Licenses: Providing a single window clearance would save time, increase convenience and provide a hassle-free experience to the FPOs.

18. Internship & Training: The training provided to the CEO may also include hands-on experience through apprentice/internship programs at other self-sustaining FPOs or in the offices of POPIs to enhance the effectiveness of learning.

19. Procurement by government agencies may be made through FPOs, preferably.

Conclusion

The Agri-Value Chain of horticultural crops, has the potential to enhance the income of farmers at a faster pace as compared to other food grains. To achieve this, FPOs can provide the necessary corporate support, bargaining power and means to achieve the economies of scale. Thus, the need of the hour is to achieve optimum efficiency in functioning of FPOs and utilize the organizations to create necessary forward and backward market linkages, retail tie-ups and other value-added mechanisms to increase the net profit accrued to the farmer in the value chain. While the Government, both at Union and State level has undertaken some praiseworthy policy initiatives – such as Agriculture Infrastructure Fund, Export policies, ATMA Schemes etc., FPOs should visualize the roadmap ahead.

Figure 4: Scheme for Enhancement of Farmer's Income

While the selected North Gujarat belt is considered to be relatively prosperous belt and the farmers have shown literacy in terms of Agricultural Best Practices and awareness to the benefit of export, organic farming, supervised contract farming etc., the road requires the farmers to adopt the role of 'agri-preneurs' and re-imagine the current linkages in the value chain. All the stakeholders should try to streamline the value chain, reduce number of intermediaries, cut down post-harvest losses and develop the necessary marketing strategies depending upon the product type. This should also adopt the necessary innovations in the agricultural sector. An integration of all stakeholders in the value chain will help in doubling the farmer's income while simultaneously have multi-sectoral impact of reducing risks in the market, preventing inflation in food products, boost exports and cater to the changing food patterns across the globe.

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