

Strategies for strengthening farmer producer organizations in India based on the One District One Product scheme

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Farmer producer organizations (FPOs) have been pivotal in empowering Indian agriculture in recent years. The Government of India has taken several steps to help in the growth of FPOs. For example, it has initiated the 'One District One Product' (ODOP) scheme. In each district of the states, major commodities are identified which can be promoted through FPOs. The present study focuses on the experiences in Bihar, where abundant production of cash crops like makhana (about 85% of the world's production) has been achieved by the farmers (about 50,000 t of makhana). Despite the huge demand, makhana has been lagging in exports due to a lack of quality produce, skill, mechanization in harvesting and processing, and a near absence of value addition. In this context, integration of the ODOP scheme with FPOs can be a potential option to combat production constraints, facilitate marketing and export of the produce. This study proposes a strategy using a conceptual model, viz. technology–infrastructure–policy–export orientation (TIPE) model, that specifies the steps to be undertaken for better promotion of products through FPOs. A congenial ecosystem is necessary for the growth of producer organizations to provide a comprehensive solution with required policy backup and triggering factors that can contribute to the sustainable development of FPOs.

Keywords: Agriculture, cash crops, conceptual model, farmer producer organizations, Government schemes.

AGRICULTURE in India has been playing an important role in meeting almost all of the people's food requirements, and the production trend has achieved remarkable self-sufficiency. Nearly 70% of rural households still depend primarily on agriculture for their livelihood, with 82% of farmers being small and marginal¹. Agriculture provides food for our growing population, and crop products are used as raw materials in agro-based industries nationwide. India has major agro-climatic zones based on soil characterization, rainfall, temperature and topography; each zone has its own unique prospects. A significant relationship exists between soil, landform, climate and vegetation². Different climatic zones have different potentials with a skewed distribution of agriculture and resource-rich areas. Hence, the Government of India (GoI) has launched the 'One District One Product' (ODOP) scheme, with the primary purpose of harnessing the agro-climatic advantages, branding of produce for better promotion, focusing action for scale, establishing processing and value addition of specified

commodities and, most importantly, developing infrastructure for export. This scheme serves as the foundation for developing value chains and aligning infrastructure to support them. Several clusters of ODOP products may exist in a district, and an entire set of ODOP products may exist in multiple neighbouring districts throughout any given state. Each state will determine the agro-based items for a district. The ODOP product could be anything from cereal-based to a food product to a perishable agri-product produced in a specific area and allied sectors. The advantages of the ODOP scheme can be harnessed better through farmer producer organizations (FPOs) in India.

It has been globally identified that achieving agricultural growth through small and marginal farmers is an effective way for poverty reduction³. However, the challenges confronting small and marginal farmers are multifold. Small farmers often have weak bargaining power and suffer from non-remunerative cultivation and exploitation by the middleman in marketing of their produce^{4,5}. Major concerns related to small farm holders include (a) inadequate farming, insufficient extension services and low level of technology adoption, (b) lack of capital and poor business skills and (c) low income due to poor infrastructure and low market efficiency^{6–8}. For tapping the potential of small farmers, different farmers' collectives have been developed across

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the world. Such collectives in the form of FPOs are expected to provide small farmers with better information on modern agriculture technologies, investments, inputs, markets and Government policies. The collective effort is expected to reduce the problems associated with small holdings^{8,9}. In the long term, FPOs are essential institutions for the empowerment, poverty alleviation and advancement of farmers and the rural poor¹.

In this article, we discuss the status and importance of FPOs in India as well as in the state of Bihar, integration of FPO with the ODOP scheme; SWOT analysis of FPO, and strategies for better promotion of products through FPOs following the technology–infrastructure–policy–export orientation (TIPE) model.

Current status of FPOs in India

FPOs are farmers' collectives, with membership primarily comprising small/marginal farmers (70–80%). At present, India has approximately 5000 FPOs including Farmer's Producer Company (FPC) that have been formed over the last 8–10 years through various initiatives by GoI, including Small Farmers Agribusiness Consortium (SFAC), state governments, NABARD and other organizations¹⁰. Majority of the FPOs are in the emerging stage of their operations, with the shareholder membership extending from 100 to over 1000 farmers who require not only technical handholding support but also suitable capital as well as infrastructure facilities, including market linkages for sustaining their business operations. The number of FPOs registered differs widely in each state. Six states account for two-thirds of all FPOs registered in the country, with Maharashtra accounting for one-third of all FPOs. Apart from Maharashtra, the growth in the number of FPOs registered in Bihar, Odisha, Tamil Nadu, West Bengal and Uttar Pradesh was found to be maximum in the last three years. In addition to budgetary provisions for promoting and nurturing FPOs, the Odisha Government has ensured the help of international agencies to create a market ecosystem for them. Similarly, the Tamil Nadu Government has announced special incentives and concessions to encourage the establishment of FPOs in the state. The increased number of FPOs in Uttar Pradesh can be attributed to the exclusive FPO policy of the state, which aims to establish at least one FPO in each block. The Uttar Pradesh Government has also launched the country's first FPO portal, 'UPFPO SHAKTI', which has brought together farmers, producer groups, traders, the Department of Agriculture, and other State Government allied departments on a single platform. Most FPOs formed in the last two decades were registered after 2014, reflecting a more favourable policy environment created by a massive push for FPO promotion through various Central and State Government schemes. Maximum growth has taken place in the last three years, when 64.93% of the FPOs were registered¹¹ (Figure 1).

Progress of FPOs in Bihar

Bihar possesses rich, fertile soil with mostly flat land, two-thirds of which is arable. With a population of over 104 million, it is India's third most populous state, supporting almost 9% of the country's population with only 2.9% of its geographical mass¹². Bihar has almost 161 lakh farm holdings according to the Agricultural Census, 2011, of which about 147 lakhs are marginal farm holdings (<1 ha), while about 10 lakhs are small farm holdings (>1 to 2 ha). Thus, the marginal and small farm holdings collectively account for a huge 96.60% of the total farm holdings in Bihar. However, their share in the state's total operated area is 76% (ref. 13).

The Government of Bihar, with help from the Central Government, has launched several initiatives to establish FPOs in different parts of the state. In the FPOs, farmers are organized to market their products successfully to reap the equal benefit. Presently, there are more than 100 FPOs in Bihar which are sponsored by NABARD. These FPOs are working under the supervision of different NGOs. JEEVIKA (an initiative of Government of Bihar for Poverty Alleviation) has so far mobilized over 270,000 small farmers/producers into producer groups (PGs) focused on agriculture, dairy, poultry and non-farm activities. These PGs have emerged as critical platforms for collective training, aggregation and market linkage for a wide variety of goods¹³.

FPOs in Bihar usually deal with several agricultural commodities for marketing, and some of them are involved in arranging fertilizers and seeds, as well as organizing training programmes with the help of the line department and Krishi Vigyan Kendras (KVKs). Majority of FPOs are located in the Nalanda district of Bihar and are engaged in the marketing of vegetables like potatoes and onions. In 2016–17, FPOs in this district could help market 1230 MT of potato and 150 MT of onion. These FPOs are now planning to take this activity to a larger scale¹⁴. Most of the FPOs in Muzaffarpur district, Bihar, are engaged in the marketing of litchi, mango and green gram. The FPOs link the fruits and vegetables marketing with supermarkets, which facilitates

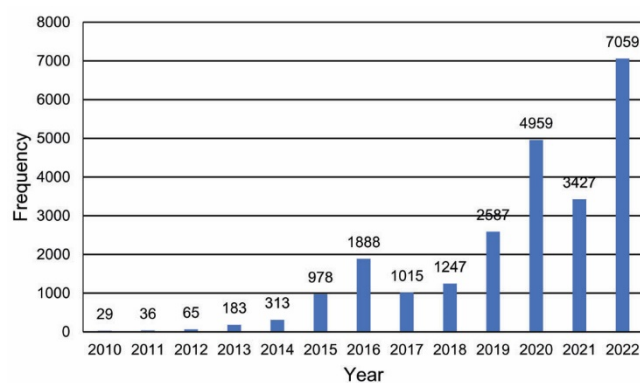


Figure 1. Farmers producer organizations (FPOs) registered during 2010–22 (ref. 11).

Table 1. Status of production of agricultural produce in the districts of Bihar under the One District One Product (ODOP)

District	ODOP	Production (t)	Export quantity (t) (India)	Major exporting countries
Araria Darbhanga Katihar Madhubani Saharsa Supaul	Makhana	50,000	17,535	USA, UAE, Nepal
Bhagalpur Madhepura Arwal	Mango	100,555	53,177.26	UAE, UK, Saudi Arabia, Qatar
East Champaran Muzaffarpur Sitamarhi	Litchi	165,595	125.37	UAE, USA, Nepal
Purnea Khagaria	Banana	90,884	110,871.87	UAE, Iran, Saudi Arabia
Samastipur	Turmeric	20,500	–	Bangladesh, Iran
Sheikhpura	Onion	30,276	66,655	Germany, UK, Japan
Patna Vaishali	Honey	–	–	USA, UAE
West Champaran	Sugarcane product	–	23,077	Indonesia, Afghanistan
Aurangabad	Strawberry	–	–	–
Siwan	Mentha	–	–	Bangladesh
Buxar Banka	Katarni rice	–	–	–
Beghusarai	Chilli	19,413	–	China
Bhojpur	Pea	65,700	–	Canada
Gopalganj	Papaya	300	–	Nepal
Jamui	Jackfruit	0.810	–	Germany
Jehenabad	Mushroom	2,000	–	France
Gaya			–	–
Kishanganj	Pineapple	59,883	–	The Netherlands
Lakhaisarai	Tomato	6,000	–	Bangladesh
Rohtas Saran				
Nalanda	Potato	576,645	–	Belgium, The Netherlands, Germany
Nawada	Betel vine	271	–	–
Sheohar	Moringa	–	–	–
Kaimur	Guava	10,600	–	USA, UAE, Kuwait
Munger	Lemon grass	–	–	–

Source: Authors' compilation from data sources^{15–18}.

increasing their production and marketing in nearby areas¹⁴. Winter maize has been one of the important commercial crops in north Bihar, and its further expansion depends on the efficient marketing of the crop. Almost all FPOs in north Bihar have concentrated their efforts on marketing maize. Makhana is another important crop widely grown in Bihar and is indicated as the main crop in six out of 38 districts under the ODOP scheme.

The ODOP scheme helps reap scale benefits in input procurement, common services and product marketing. This scheme encourages specialization and improved processing, marketing, branding and export, which also strengthen backwards and forward linkages, allocation of common facilities, incubation centres, training, research and development, marketing and branding, a huge percentage of which would be for ODOP products in Bihar. This scheme is being implemented across the state, and various

districts have been divided in accordance with it. Table 1 shows the district-wise production and export of agricultural produce in Bihar under ODOP^{15–18}.

Potential crops for the integration of FPOs and ODOP in Bihar

Makhana

Makhana is the dominant crop cultivated in six districts in Bihar, viz. Araria, Darbhanga, Katihar, Madhubani, Saharsa and Supaul. India produces almost 85% of the world's makhana, with the bulk of the production from Bihar (50,000 t). The remaining 15% of makhana production is from Japan, Germany, Canada, Bangladesh and China. Online marketing platforms and global marketing companies play

a major role in the export of makhana from Bihar. Several private firms, active in big cities like New Delhi, Mumbai, etc. are involved in the export of makhana. USA, UK, Australia, Bangladesh, Pakistan, and the Gulf countries like UAE, Qatar, Saudi Arabia, Kuwait and Oman are the major exporters of makhana from India (Figures 2 and 3). Despite its high potential, the amount of popped makhana exported from the country is small compared to marketing many other dry fruits such as almonds, cashews, etc. The major constraints are the low production of makhana due to lack of quality produce, lack of mechanization in harvesting and processing, and near absence of value addition in makhana, etc.¹⁹. In the international market, there is a good opportunity for marketing value-added makhana snacks. Presently, small-scale makhana processing industries work as an extremely unorganized sector. Therefore, FPOs can be promoted involving the farmers growing makhana, which will alleviate the existing problems¹⁹. Presently, only 35.07% of makhana is being exported from India to other

countries worth around US\$ 23 million (ref. 17). If the production can be enhanced by 20% through an integrated approach of FPOs and ODOP, the export can be increased by 40% worth about US\$ 32.2 million (Table 2).

Litchi

Bihar accounts for 45% of the total litchi production and occupies nearly 40% of the area in India. Litchi is the dominant crop cultivated in three districts, i.e. East Champaran, Muzaffarpur and Sitamarhi. The area under litchi cultivation and production has increased dramatically over the previous three decades due to rising demand and profitability. However, lower productivity, poor nutrient management, biennial fruit-bearing, low shelf life, and the lack of cold chain transport and cold storage facilities are the major constraints with litchi cultivation. Due to different ripening patterns in different parts of the country, litchi becomes available for a longer duration in the Indian market. The demand for litchi fruits from UAE (32%), Nepal (9%) and other countries (26%) is showing an increasing trend (Figures 4 and 5). However, no efforts are being taken by India to acquire the world market, where China is the main exporter at present. APEDA and NAFED are promoting the export of litchi to other countries, but more efforts are needed to capture a greater share of the world market of litchi through the integration of FPOs and ODOP. Presently, only 44% of litchi is being exported to foreign countries, valued at Rs 212.56 lakhs. According to the existing scenario (Table 2), integrating FPOs and ODOP may help enhance litchi production by 10% with an increased export of 10% to earn about Rs 233.76 lakhs.

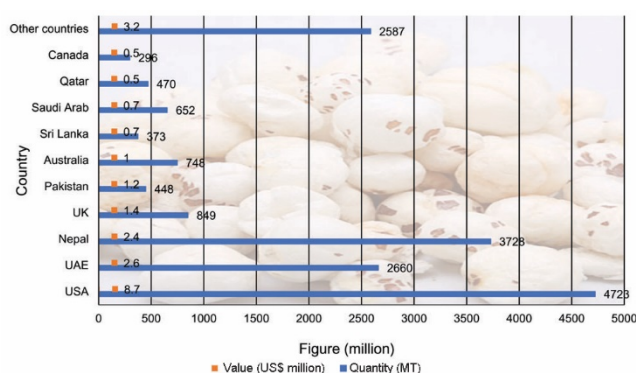


Figure 2. Export of makhana from India to different countries^{15,17}.

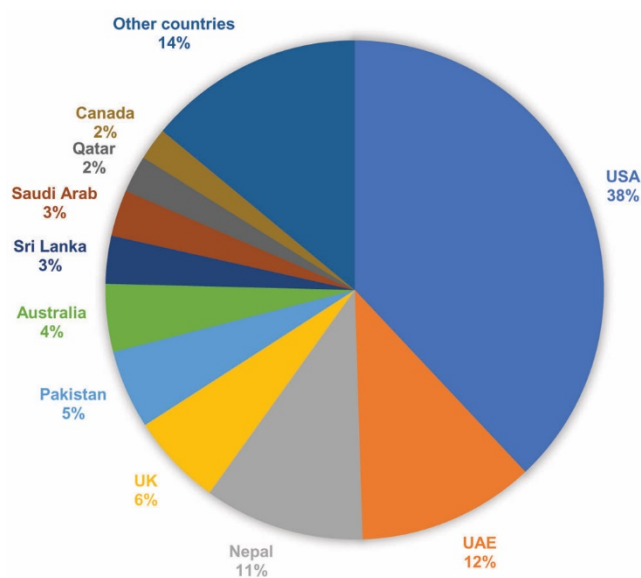


Figure 3. Share % of makhana export from India to different countries^{15,17}.

Mango

Bihar is India's fifth largest mango producer, with a share of 11%. Mango is an important crop grown in three districts

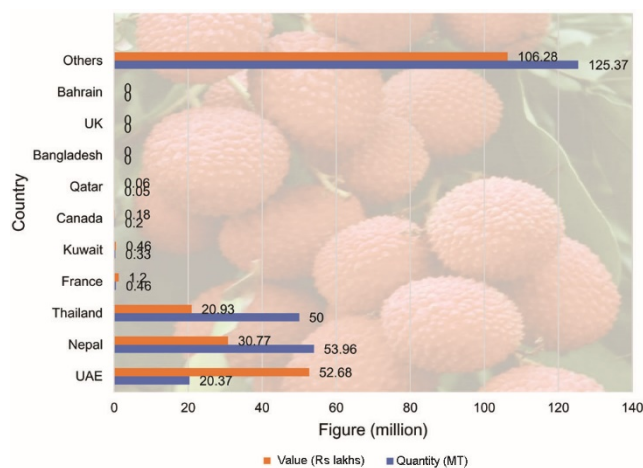


Figure 4. Export of litchi from India to different countries^{15,17}.

Table 2. SWOT analysis of FPO

Strength	Weakness
<ul style="list-style-type: none"> ❖ Producers can avail the benefits of economies of scale ❖ Employment opportunities at the village level ❖ Members' willingness in agri-business activities ❖ Group has more power to bargain with input suppliers, banks and other credit suppliers, and with buyers of their products ❖ Direct marketing of fresh produce ❖ Farmer Producer Company (FPC) has enough potential to expand its business to small towns and other geographic locations in the country ❖ Educated Board of Directors (BODs) and CEO and their dedication to work 	<ul style="list-style-type: none"> ❖ Farmers' reluctance to join FPOs. ❖ Inadequate business direction and planning. ❖ Conflicting interests and minimal participation of group members. ❖ Management and CEOs of FPOs are not efficient ❖ Poor infrastructure ❖ Input business – especially lack of supply of fertilizer ❖ Failure to initiate market collaboration with big businesses ❖ Lack of branding experience
Opportunity	Threats
<ul style="list-style-type: none"> ❖ FPO can be a means of Women's empowerment and community mobilization ❖ Processing and brand creation for produce ❖ Development of village economy ❖ Can link with multiple service providers ranging from public and private for support and better marketing ❖ Direct marketing to consumers ❖ E-marketing ❖ Export of quality produce to other nation 	<ul style="list-style-type: none"> ❖ Market risk and price fluctuations ❖ Competition from private companies and political interference ❖ Local trader's resistance to produce ❖ Domination by directors

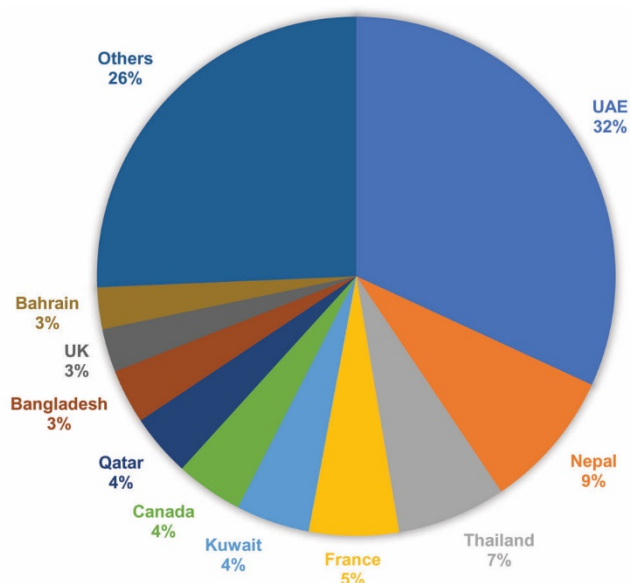


Figure 5. Share % of litchi export from India to different countries^{15,17}.

of Bihar: Bhagalpur, Madhepura and Arwal (Table 1). Several mango varieties like Maldah, Bombay, Jardalu, Jarda, Safeda, Sepia, Shukul and Gulabkhas are popular in the

state. Jardalu is a distinct mango variety from Bhagalpur. This variety has the GI tag for the region. It is distinguished by its light yellow skin and distinct special aroma. India is the world's largest mango producer; however, it exports less than 1% of its total production. The major mango exporting countries are the UAE (56%), the UK (11%) and Saudi Arabia (5%) (Figures 6 and 7). In recent years, the percentage share of the Gulf countries has decreased, mainly due to a consistent decline in the share of Saudi Arabia. The resulting gap has been filled by Asian countries, but India has significantly lagged behind in maintaining or sustaining its position in the global stage²⁰. The high standards of the phytosanitary certification system (such as the presence of pesticides, pests, aflatoxin, etc.) fixed by developed countries and the inability of Indian exporters to achieve them have resulted in India losing these premium markets. The exporters bear a huge risk and harvest big profits on successfully complying with the phytosanitary certification system. Adherence to safe export norms is important to have credible, sustainable export. Presently, only 36% of mango is being exported to foreign countries, whose value is Rs 44,548 lakhs. If the production can be enhanced by 20% through an integrated approach of FPOs and ODOP, it may increase exports to 20% to earn about Rs 53,457.6 lakhs (refs 15, 17, 21).

Banana

Banana is grown in approximately 2000 ha in districts such as Vaishali, Katihar, Kishanganj, Bhagalpur (Naugachia), Khagaria and Purnia in Bihar. Purnea and Khagaria districts

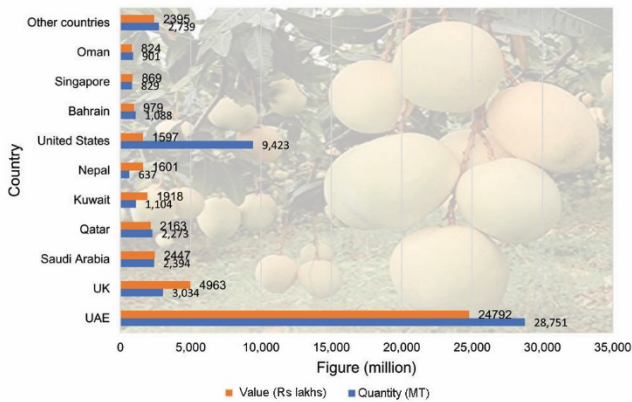


Figure 6. Export of mango from India to different countries^{15,17}.

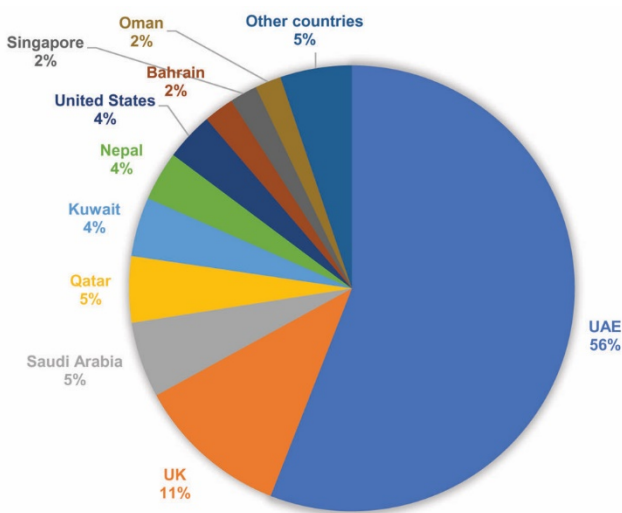


Figure 7. Share % of mango export from India to different countries^{15,17}.

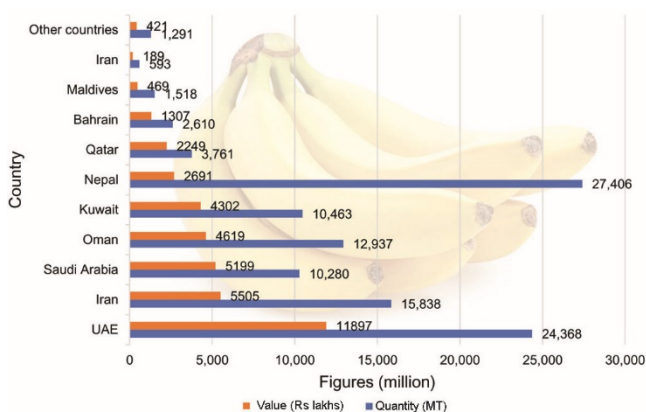


Figure 8. Export of banana from India to different countries^{15,17}.

are demarcated for bananas under the ODOP scheme. The different varieties of bananas grown in Bihar are Dwarf/ Cavendish, Alpon, Chinia, Chini Champa, Malbhig, Muthia, Kothia and Gauria. Although India is the world’s largest producer of bananas, its contribution to banana export is less than 1% of the overall output²². Major banana exporting countries are UAE (30%), Iran (14%) and Saudi Arabia (14%). India has a high potential for banana export, and focus should be given to increasing the production of high-quality bananas in order to match the quality standards of the importing nations. On the one hand, increased production is required to fulfil the growing domestic demand and keep a consistent supply for overseas markets to meet foreign exchange requirements. Presently, only 0.03% of banana is being exported to foreign countries with a value of Rs 38,848 lakhs (Figures 8 and 9). If production can be enhanced by 20%, then the export could be increased up to 10%, earning Rs 42,696 lakhs through the integration of FPOs and ODOP^{15,17}.

SWOT analysis of FPOs

A review of the literature as well as field surveys, including focused group discussions (FGDs) and personal interviews with the Board of Directors (BODs) and member farmers of the selected FPOs, SWOT analysis was suggested for assessment by the respondents. SWOT analysis is used to assess the existing situation in an organization before deciding on a new strategy. Essentially, the knowledge of strengths and possibilities assisted the FPOs in developing a strong understanding of the internal positive factors that need to

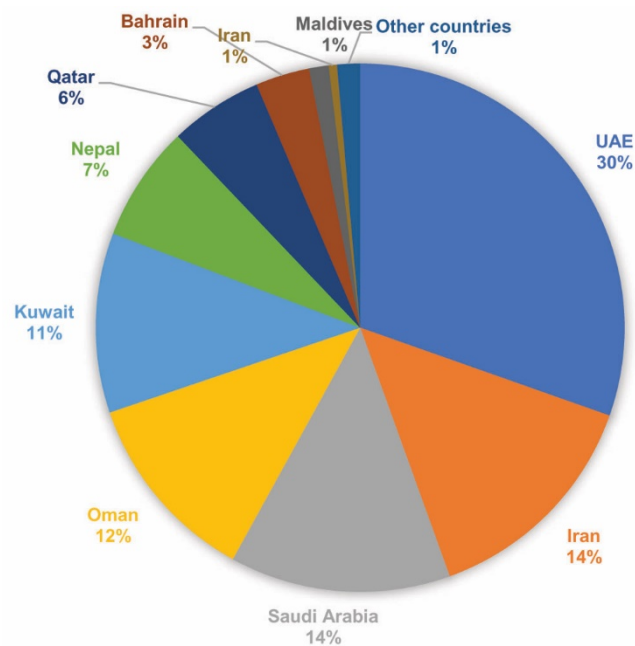


Figure 9. Share % of banana export from India to different countries^{15,17}.

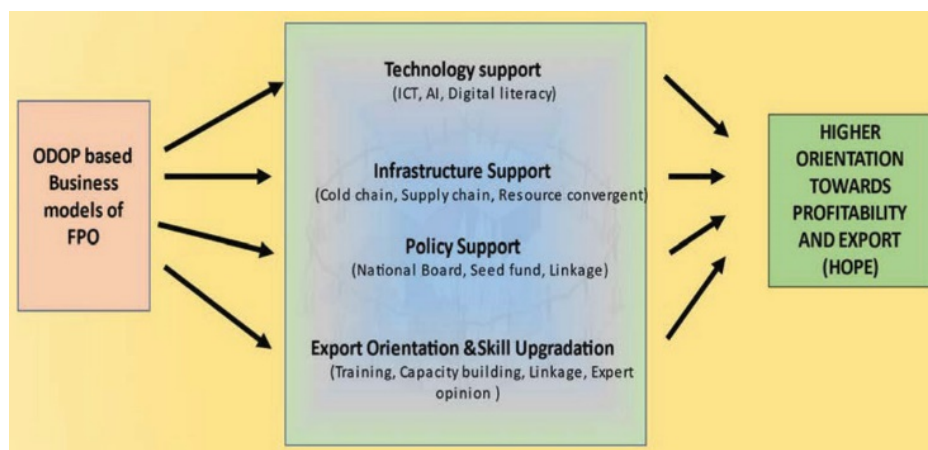


Figure 10. TIPE conceptual model.

be enhanced further. Similarly, knowledge of weaknesses and threats has offered important insights to prepare for external negative influences. Strengths are the internal characteristics of an organization that give it an advantage over others.

Strengths of FPOs include members' willingness to do agri-business activities²³, empowerment²⁴, livelihood enhancement opportunities²⁵, direct marketing of fresh produce²⁶ and various other strengths^{8,9,24} (Table 2). Weaknesses are the characteristics of an organization that place it at a disadvantage relative to others. The perceived weaknesses of FPOs are farmers' reluctance to join them²⁷, inadequate business direction and planning^{8,25}, etc. Opportunities can be exploited by any organization to its advantage. There are several such opportunities like FPO as a means of women's empowerment and community mobilization, processing and brand creation for produce. Similarly, threats could cause trouble for an organization. The threats for a producer organization are market risk and price fluctuations, competition from private companies²³, political interference and various other factors (Table 2). Several researchers have reported similar results^{8,9,23-27}.

Strategies for strengthening FPOs

FPOs are required to inculcate professionalism. This can be accomplished by expanding wider domestic and export markets. For this, FPOs are required to go for value addition, processing, packaging, quality management and branding in conformity with international standards. Even for the domestic market, FPOs can target niche consumers through these activities. Based on SWOT analysis, FGDs, and personal interviews with BODs, CEOs and member farmers of various FPOs, it has been ascertained that technology support, infrastructure support, policy support and export orientation are required for integration. So, a conceptual framework has been developed on the basis of which we will validate the TIPE model (Figure 10).

Technological support

IT-enabled services could help Indian farmers solve some of their problems. Using digital approaches and technologies can improve the effectiveness of agricultural extension services by decreasing transaction costs and improving the quality of the information provided²⁸. In many ways, digital technologies can assist in better tailoring various components of agricultural advice to the individual needs of farmers. Digital extension services can have an impact on smallholder households through a variety of mechanisms. First, they can reduce information barriers by providing personalized advice on which crops to grow in which seasons, the best types and quantities of inputs to use, and the best timing for various operations and input applications. Second, by providing transparent information on local market prices as well as credible brands and suppliers, they can connect farmers to new input markets. Third, providing transparency and additional supplier options can help farmers improve their bargaining power. Fourth, increased access to personalized information, as well as new technologies and inputs can boost commercialization. These mechanisms are likely to change the cropping patterns, rising input intensities, crop yields, sales volumes and income of farmers. Furthermore, farmers should have at least a basic level of computer and digital literacy. Investing in ICT infrastructure, promoting digital literacy among rural households and creating an enabling business environment for related entrepreneurial activities are thus important policy steps towards fostering agricultural innovation and equitable growth in the small-farm sector.

Infrastructure support

The most important requirement for the success of FPOs is the marketing of produce at a reasonable price. The long-term sustainability of FPOs requires collaboration with industry/other market players, large retailers and so on. In

addition, the FPOs must be treated as a Gramin Agri Market (GRAM), with the necessary marketing infrastructure owned and managed by them. Convergence of resources is necessary to develop farm-level infrastructure at the FPO level for cleaning, grading, sorting, assaying, processing, branding and transportation. This can be accomplished by establishing custom hiring centres for farmers (primarily a collection of farm machinery, implements and equipment for hire) for the benefit of shareholder members based on the fees levied on hiring of machinery. The development of district-level post-harvest infrastructure and the availability of cold storage would be beneficial. Rural micro-entrepreneurs need to be encouraged to reduce the burden on individual FPOs to have their own infrastructure in the initial phase.

Policy support

The economic viability and long-term sustainability of FPOs are to be ensured through the following steps. First, a National Board of FPO (NBFPO) must be set up to examine the factors affecting the promotion and development of FPOs, review the policies and programmes of the Central Government with regard to facilitating their promotion and development, and enhance the competitiveness as well as the impact of their enterprises. NBFPO would also help in networking and monitoring the progress of all the FPOs. Secondly, there should be a provision for an assured seed fund as a one-time grant for all registered FPOs based on specific criteria. It is possible to accomplish this by establishing a special purpose vehicle (SPV) with a corpus fund entrusted to NBFPO. Thirdly, each FPO must be linked to a KVK/agricultural university/development institution for continuous technical support and guidance. Fourthly, customized financial products could be developed in collaboration with banks to provide FPOs with easy access to short-term loans at subsidized rates as well as to provide insurance to them. The funding could be done based on the cash flow of FPOs rather than the existing provision of asset-based financing.

Export orientation and skill orientation

The sustainability of exporters' income is dependent on consignments being accepted by importing countries that have established a legally vetted system of safe food commodity import. Developed countries such as the US, European Union and Japan impose strict regulations such as registration, packaging and labelling, pesticide residue and aflatoxin content, fruit-fly regulations and labour standards. The problems associated with mango production, marketing, post-harvest handling, etc. are responsible for lower export and rejection of Indian consignments²⁹. During 2002–19, the USA refused 303 cases of Indian mango and mango products, accounting for 30.1% of the total world mango

export²⁰. The problems faced by firms in the Gulf countries are mostly due to uniformity in size and documentation procedures. It has become critical to generate knowledge through scientific research to structure food safety norms and policy alignment in response to changing global regulations. For better export-oriented quality, farmers should be aware of the required quality standards through training and capacity-building programmes with respect to (i) packaging and labelling guidelines, (ii) pesticide residue limit guidelines, (iii) chemical content restrictions, (iv) fruit fly-related rules, (v) uniformity requirements, (vi) labour standards and (vii) company and product registration. Adherence to safe export norms is important for credible, sustainable export. With the help of FPOs, it will be feasible to reach the target and maximize exports.

Conclusion

A congenial ecosystem is a must for producer organizations because they have to deal with the most vulnerable part of the agri-value chain, which starts from the farm and continues up to processing and the far-away markets, as well as exports. A critical ecosystem service that consists of emergency credit, consumption credit, production credit, retail services of inputs for agriculture and other agricultural production services is essential for small and marginal farmers. Due to poor quality product and the lack of significant value addition in makhana, among other factors, there is a major hindrance to the export of makhana as well as quality produce of litchi, banana and mango production. Value-added makhana snacks have enormous potential for international market development. Currently, there is an unstructured market for small-scale makhana processing. Thus, FPOs need to be strengthened with the required knowledge related to various farming practices as well as proper marketing channels and export facilities. Integration of the ODOP scheme with FPOs can be a potential option to combat production constraints and facilitate marketing and export of the produce. The cluster-based ODOP approach is expected to result in the formation of specialized FPOs that will be linked to markets, the agri-value chains, and in the export of commodities in the future. The promotion of the TIPE model will build the capacity of FPOs and help them with export-oriented production thus bringing sustainability.

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