

Received : 07.04.2022 | Accepted : 31.07.2022 | Online published : 01.10.2022

https://doi.org/10.54986/irjee/2022/oct_dec/94-100

RESEARCH ARTICLE

Innovative Models Operated for Marketing of Horticultural Produces during COVID 19 Lockdown Period 1

R. Venkattakumar¹, T.M. Gajanana² and R. Venugopalan³

1,2&3. Pr. Scientists; Division of Social Sciences and Training, ICAR-IIHR, Bengaluru, Karnataka, India

Corresponding author e-mail : venkattakumar.r@icar.gov.in

ABSTRACT

A study was conducted to document the innovative models that were operated by formal and informal organizations to help the farmers/sellers to market their horticultural produces during lock down period 1 of COVID 19 Pandemic, especially in and around Bengaluru City, Karnataka, India. This paper discusses in brief about 10 such models selected using snow ball sampling procedure, operated by development departments (2), farmers producers organizations (FPOs) (2), voluntary associations (2) and private organizations/ players (4). This paper also brings about the monetary benefits realized by 75 such farmers/sellers, who benefitted through such models. Further, innovations adopted through these models towards organizing marketing of farmers' produce also are discussed here. Based on the understanding of such models, a strategic model has been proposed for reference during similar situations by the stakeholders.

Key words : Marketing; Horticultural produces; Innovations; Lock down period 1; COVID 19 Pandemic.

During the lock down period 1 of COVID 19 Pandemic (approximately during April, May and June, 2020), the farmers, in India, as sellers of their produce, faced difficulty in marketing due to restrictions on logistics. The buyers and aggregators could not move freely to collect the produce produced by the farmers/sellers. Further, a study by *Srivastava and Shivaramane, (2020)* also indicated that the lockdown, imposed nationwide to curb the spread of COVID-19 pandemic, disrupted the economic activity and adversely affected the income of most households. The consumption pattern shifted from non-essential to only essential commodities. This, in turn, was likely to have implications on consumption of high value commodities like fruits and vegetables resulting in decline in consumption of such commodities thereby indicating that there is a need to create demand for such commodities, which have a direct bearing on nutrition security of the people.

In such a scenario, horticulturists had a tough time to reach the consumers with their perishable commodities, especially fruits, vegetables and ornamental crops. However, certain players such as

development departments, voluntary associations, farmers producers organizations (FPOs) and private players operated in their own unique way to help the farmers in marketing. An attempt was made to document such innovative models that operated, and draw certain lessons that can be suggested as strategies to be adopted by the stakeholders during similar such disaster situations.

This paper brings out information about such models, especially the roles played by various players, innovations adopted by them, lessons that can be learnt etc. Based on the understanding of such innovative models, a strategic model that can be referred by the stakeholders is also suggested.

METHODOLOGY

A systematic scout was made to explore the models that operated in Karnataka during the period of lock down 1 of the COVID 19 Pandemic. After coming to know about such models that were operated especially in and around Bengaluru city, Karnataka, India through snowball sampling procedure, a survey was made with the stakeholders such as operators

and farmers through personal or telephonic interview method. There was different kind of players. These players may conveniently be classified as state-run development departments, voluntary associations, farmers producers organizations (FPOs) and private players.

The models operated by The Horticulture Producers Marketing and Processing Co-operative Society Limited (HOPCOMS) of Department of Horticulture (DoH), Government of Karnataka (GoK); and Karnataka State Mango Development and Marketing Corporation Limited, Karnataka were the development departments-initiated models. Palamner FPO (though the location of this model was Palamner, Andhra Pradesh, it was partly operated in Bengaluru city apartments also because of its proximity to the city) and Puthari FPO were contacted to document these models during lock down period 1. Similarly, the models that were operated by voluntary associations such as University of Agricultural Sciences (UAS) Alumni Association (Based at Bengaluru city), and Apartment Association in Bengaluru (HSR Lay out) were also documented. Apart from these models, those operated by private players such as TENESIRI Vegetables, Shenoy Fruits, Village Story and Kamalam (Dragon) fruit model were also documented. It is very important to note that there was no comparison among these models as each of these models was operated in unique situations and such situations were very much specific to these models. A total of 75 farmers were contacted during the survey, either through personal interview or telephonic interview mode, apart from

contacting the office bearers of these models, to collect general information about the models. The following Table 1 shows the number of farmers/ sellers, who were contacted during the survey.

A structured and teacher-made interview schedule was prepared and administered to collect the requisite information from the operators as well as the farmers. The data, thus collected was tabulated and analyzed through percentage analysis, mean and paired 't' test.

RESULTS AND DISCUSSION

This part discusses about various models as listed in the research methodology part including information about innovations adopted by these models and additional benefits realized by the farmers/sellers as a result of participating in such models during COVID 19 lockdown period 1.

Initiatives by Development Departments :

HOPCOMS Model, Karnataka: The Horticulture Producers Marketing and Processing Co-operative Society Limited (HOPCOMS) is the marketing wing of Department of Horticulture (DoH), Government of Karnataka (GoK), involved in procurement and marketing of horticultural produces produced by the member-farmers of this society. It procures produce from the farmers and sells through its sales outlets established at different parts of the state. During the lockdown 1 of COVID 19 pandemic in the country, HOPCOMS came out with an innovative marketing model not only for the member-farmers but also for other farmers, who cultivate fruits and vegetables, by issuing special passes for marketing. The farmers who got the special pass supplied fruits and vegetables to HOPCOMS. HOPCOMS in turn supplied these products to more than 90 government/ private institutions such as factories, hospitals and hostels. HOPCOMS got a profit of Rs.1.5 crores by supplying horticultural produces to these institutions.

Apart from supplying to these institutions, HOPCOMS had a tie up with more than 2500 associations of apartments in Bengaluru. Through video conference mode, it collected demand for fruits and vegetables from these apartments and accordingly supplied the produce. Every day sales were ranging from of Rs.45000/- to Rs.60000/- during April 2020. HOPCOMS also sold the horticultural produces through its sales outlets and the sales through these outlets was double during the lock down period, over the normal period. Table 2 shows the additional benefit

Table 1. Number of farmers surveyed through different models (N=75)

Models surveyed	Contacted farmers
Initiatives by development departments	
HOPCOMS model, Karnataka	18
Mango Development Corporation model, Karnataka	7
Initiatives by FPOs	
Palamner FPO model, Andhra Pradesh	6
Puthari FPO model	10
Initiatives by voluntary associations	
UAS Alumni Association model	7
voluntary association of apartments (HSR lay out)	5
Initiatives by private players	
TENESIRI Vegetables model	5
Village Story model	6
Shenoy Fruits model	6
Kamalam (Dragon) fruit model	5
Total	75

Table 2. Benefits realized by farmers through initiatives by development departments

Crops	Net Price realized*		Benefits realized during lock down period (Rs./kg)
	Previous year (Rs./kg)	Lockdown period (Rs./kg)	
<i>HOPCOMS Model</i>			
Coconut	10	21	11
Tomato	6	9	3
Beans	32	38	6
Capsicum	32	41	9
Cabbage	9	11	2
Ridge gourd	29	37	8
Onion	7	11	4
Brinjal	12	16	4
<i>Mango development corporation model</i>			
Alphonso	72	86	14
Mallika	53	66	13
Totapuri	15	18	3
Neelum	32	28	-4
<i>Puthari FPO model</i>			
Grapes	60	80	20
Papaya	3	7	4
Banana	3	9	6
Pineapple	4	12	8
Cabbage	3	7	4
Chilli	5	7	2
Pumpkin	3	9	6
Watermelon	4	9	5
Tomato	5	12	7
Mango	61	87	26
Sweet potato	6	9	3
Elephant foot yam	6	12	6
Yard long bean	25	27	2
<i>Palamner FPO model</i>			
Mango	6	12	6
Ridge gourd	12	20	8
Tomato	3	8	5
Cabbage	3	9	6
Gongura (a green veg.)	18	27	9
Palak	13	12	-1
Bottle gourd	8	7	-1
Raw banana	22	31	9
Chilli	15	22	7
Brinjal	13	15	2
<i>UAS Alumni Association model</i>			
Grapes	51	69	18
<i>Apartments association model</i>			
Papaya	12	21	9
Banana	47	56	90
Guava	64	64	0
Kamalam (Dragon) fruit	92	161	69
<i>TENESIRI Vegetables model</i>			
Cucumber	7	12	5
Beans	38	47	9
Tomato	8	14	6
Ivy gourd	23	27	4

Chilli	48	49	1
Capsicum	48	57	9
Radish	13	17	4
<i>Shenoy fruits model</i>			
Watermelon	1	2	1
Guava	64	58	-6
Kamalam (Dragon) fruit	116	116.66	0.66
Papaya	6	7	1
Rambutan	76	85	9
Lemon	31	35	4
<i>Village story model</i>			
Cucumber	2	2	0
Tomato	13	17	4
Guava	33	36	3
Grapes	98	117	19
Custard apple	78	97	19

*Arrived at after accounting for transportation charges

realized by the farmers during lock down period by supplying to HOPCOMS. It was ranging from Rs.2/kg for cabbage to Rs.11/kg for coconut. The innovations that can be learnt from this model are assessing demand through video conference mode and having tie-up with apartments and government/private institutions for supply of horticultural produces.

Model operated by Karnataka State Mango Development and Marketing Corporation Ltd.: Karnataka State Mango Development and Marketing Corporation Limited is a unit of GoK, acts as a development department towards promotion of mango development and marketing activities through various schemes run by the state. During the lockdown 1 of COVID 19 pandemic in the country, the Corporation came out with a model in order to support the mango growers of the state, especially in marketing their produces. The Corporation collected the demand from the consumers and supply details from the mango growers. Through the B2C (business to consumer) portal operated by the Corporation, the consumers registered and made order by online payment. The mangoes supplied by the farmers in pre-packed boxes supplied by the Corporation were distributed by the General Post Office (GPO) of Bengaluru through a unique marketing tie-up. The farmers were paid after the delivery and the GPO also was paid towards transportation charges. More than 1000 tonnes of mango were sold through this model. The quantity that remained after delivery to the consumers was supplied to the apartments in Bengaluru at a sale price fixed on mutual consensus.

Based on such experience, the Corporation was also planning to have a tie-up with FLIP KART for

marketing of mangoes collected from Mangaluru, Dharwad, Davanagere and Belagavi districts of Karnataka, so that marketing problem during such Pandemic situations can be managed effectively. The innovations that can be learnt through this model are having a B2C portal for assessment of demand and payment and having tie-up with GPO for product distribution and other organizations exclusively work for marketing such as FLIP KART. Table 2 shows the additional benefits realized by the farmers during the lockdown period, which ranged from Rs.-4/kg for Neelum variety to Rs.14/kg for Alphonso.

Model operated by Puthari FPO, Kodagu, Karnataka:

Puthari Farmers Producers Organization, Kodagu is an FPO functioning in Kodagu district of Karnataka to extend diversified services to the farmer-members from the district. This FPO is being promoted by *Krishi Vigyan Kendra (KVK)*, Gonikoppa, Kodagu, Karnataka, which is functioning under the administrative control of ICAR-Indian Institute of Horticultural Research (IIHR), Bengaluru. The KVK extends technological backstopping to the FPO for its services to the farmer-members and also provides space for doing business activities in agriculture.

During the lock down period, the supply chain was disrupted and the consumers of Kodagu district were suffering from lack of supply of fruits and vegetables. Understanding this situation, the FPO initiated tie-up with horticulturists of 8 taluks in Karnataka, who could supply their produces to FPO, procured the produce and supplied to the consumers at the premises of KVK. Based on this experience, KVK gave a regular space for the FPO to operate a Rural Mart. Also, the FPO initiated contract farming of vegetables through farmers who had tie-up during the lock down period. Table 2 gives the details of the additional benefits realized by the farmers by selling their produce through FPO during the lockdown period. Such benefits ranged from Rs.2/kg for chilli and yard long bean to Rs.26/kg for mango. Entering agreement with farmers for contract farming and establishing an exclusive Rural Mart at KVK were the innovations that emanated from this model.

Model operated by Palamner Farmers Producers' Organization (FPO), Andhra Pradesh: Palamner FPO is serving its producer-members of Palamner taluk of Andhra Pradesh through different kinds of extension services like supply of inputs (seeds, planting material, fertilizers, plant protection chemicals, farm tools and implements) and procurement and marketing

of produces etc. The farmer-members (350-400) of this FPO had a tough time to market their produces, especially vegetables during the lock down 1 period of COVID 19 pandemic. The FPO helped these farmers through direct marketing.

Demand for vegetables was identified to supply to three companies situated in Palamner with about 7000 workers. The indent from companies were collected by the FPO and, in turn, informed to vegetable growers. The growers supplied vegetables to FPO. The FPO procured, graded, packed with the brand name of FPO and supplied to the identified companies. Better rate than the market rate was given to the farmers and with Rs.1/kg profit for the FPO, vegetables were distributed to the companies. Farmers were benefitted by no commission cost. As a result, farmers started diversifying cultivation of new vegetable crops such as green chilli, ladies finger, ridge gourd, bottle gourd, bitter gourd from merely growing tomato, cauliflower and cabbage. This happened due to the tie-up with the companies. Every day, around 3 tonnes of vegetables were supplied to the companies. Remaining vegetables were distributed to apartments in Bengaluru and also sold through road side stalls arranged by FPO.

Vegetable growers were also benefitted through the interest free COVID loans arranged by FPO from financial organizations. Further, the FPO was planning to establish primary processing centre and buy air-conditioned vegetable vending vans under Operation Green project of the Government of India (GoI). Table 2 shows the additional benefits realized by farmers by participating in this model, which ranged from Rs.-1/kg for Palak and bottle gourd to Rs.9/kg for *Gongura*, a green vegetable. The innovations that can be learnt from this model are sale of vegetables through the brand name of FPO and plans to establish primary processing centre; purchase of AC vegetable vending van through Operations Green project.

Models initiated by Voluntary Associations :

UAS alumni association model, Bengaluru, Karnataka: The alumni of University of Agricultural Sciences (UAS), Bengaluru, Karnataka started the UAS Alumni Association to cater to the technological backstopping needs of officials of development departments, farmers and other stakeholders through organizing scientific forums, dialogues, lectures and other such events. This organization also does extension services to the farming community.

Through the mainstream media, the office

bearers of this association came to know that the grapes harvested by the grape growers in and around Bengaluru are being wasted due to lack of access towards market facilities during the lockdown period 1 of COVID 19 pandemic. In order to support the grape growers during such crisis situation, the office bearers of this association took initiative to link the farmers and consumers. They made a press release through newspapers and electronic media about direct marketing of grapes to the consumers in public lay outs and apartments. They arranged transport for supply of the harvested grapes through group of grape growers and made them to sell in different apartments and lay outs directly. By this arrangement, both the farmers and consumers were benefitted. Around 400 tonnes of grapes were sold through this arrangement during April and May 2020. The additional benefits realized by the farmers during the lock down period through this model was Rs.18/kg (Table 2). Here, the innovation that can be learnt is the effective utilization of print and electronic media towards awareness creation. On these lines, Agri War Room of University of Agricultural Sciences (UAS), Raichur, facilitated by Agricultural Extension Education Centre made an attempt to link farmers to market (Reddy and Hiremath, 2020). The farmers thus linked to market, could realize higher producer share (63.33% against 57.62% in case of fruits and 56.92% against 53.68% in case of vegetables).

Model operated by apartment association in Bengaluru, Karnataka: During the lock down period 1 of the COVID 19 pandemic, there was a problem faced by the consumers to get the fruits sold. In order to overcome this problem, an arrangement was made by the volunteer persons (One of the Scientists of ICAR-Indian Institute of Horticultural Research (IIHR), Bengaluru and a retired bank official), who reside in and around 30 apartments located in HSR layout within a radius of 7 kilo meters, to get the demand from the public and quantity that can be supplied by the farmers directly to the apartments. The communication was made through e-mail over Google spread sheets. Initially, the group of farmers themselves supplied the fruits. Then, delivery boys were engaged to supply the fruits on commission basis. Online payment was made to the farmers after collecting the money from all the consumers who gave the demand. Table 2 depicts the additional benefits realized by the farmers through this model in supplying fruits to these apartments. The innovations that can be learnt from the model are

use of Google spread sheets for arriving at demand and supply and engaging delivery boys for supply on commission basis.

Models initiated by Private Players :

Model operated by TENESIRI vegetables, Karnataka: TENESIRI Vegetables is a private initiate to link the sellers, buyers and consumers of vegetables through its specially developed mobile app. It helps in collecting the orders from both the buyers and consumers and informing the demand to the sellers. This initiative serves both the commercial vegetable growers and organic vegetable growers. The commercial vegetable growers were linked by B2C model of the app, whereas the organic vegetable growers were linked through the B2B (business to business) model of the app. The organic growers were mainly from Belagavi region and the commercial vegetable growers were from Chikkaballapur and Hoskote region of Karnataka. During the lockdown period 1 of the COVID 19 Pandemic, this organization helped many vegetable growers, who registered through the app to sell their produce without any problem. Table 2 shows the additional benefits realized by farmers through this model, which ranged from Rs.1/kg for chilli to Rs.9/kg for beans and capsicum. The innovation that can be learnt from this model is use of special mobile app to link the growers for B2B and B2C models.

Model operated by shenoy fruits, Karnataka: Shenoy Fruits is a private venture, which operates as a wholesale business organization for procurement of fruits for registered farmers and farmers producers organizations (FPOs). It procures produce of the registered farmers and supplies to the retailers for further sale, with the help of cold-chain operators. It procures all kinds of fruits from farmers of Tamil Nadu, apples from Shimla and Kashmir, Avocado from Kodagu region of Karnataka, Guava from Mysore and supplies to retailers located in Mangalore, Karnataka and such of those in Kerala. During the lock down period 1 of COVID 19 Pandemic, this arrangement was successful in helping the fruit growers without facing any difficulty. Table 2 shows the additional benefits realized by the beneficiaries of this model during the lock down period, which was observed to the tune of Rs.9/kg for rambutan. The innovation that can be learnt from this model may be procurement and supply of produce with the collaboration of cold chain partners.

Model operated by village story, Karnataka: Village story is yet another private initiative to unite together

Table 3. Significance of benefits realized by farmers through different models

Model	Net price (Rs.) realized during previous period (Average)	Net price (Rs.) realized during COVID 19 lockdown period 1(Average)	Per cent increase in net price realized during lockdown	t-stat value
Initiatives by Development Departments				
HOPCOMS model	19.20	23.8	23.96	2.10**
Mango Development Corporation model	43.3	65.2	50.58	2.83**
Initiatives by FPOs				
Puthari FPO model	25.61	39.39	53.81	4.35**
Palamner FPO model	9.69	15.5	59.96	4.45**
Initiatives by Voluntary Associations				
UAS Alumni Association model	51.43	67.43	31.11	3.03**
Initiatives by Private Players				
TENESIRI Vegetables	25.25	28.63	13.39	1.83**
Village story model	44.80	53.80	20.09	2.17**
Sheony Fruits model	67.25	64.38	-0.04	2.34**
Direct Marketing (Kamalam fruit)	57.00	74.89	31.38	1.39 ^{NS}
Overall	32.45	40.90	26.04	5.28**

**Significant at 5% level of probability through paired 't' test analysis

the farmers, buyers and consumers. This initiative has its own face book, WhatsApp and Instagram applications, which have more than 25000 clients. The profile of clients includes all the stakeholders of agriculture. The clients interact among them based on their business interest and needs and thereby, benefit each other mutually, through their transactions. During the lock down period 1 of COVID 19 Pandemic, this arrangement was successful in helping the fruits and vegetable growers without facing any difficulty. Table 2 shows the additional benefits realized by the beneficiaries of this model during the lock down period, which was observed to the tune of Rs.19/kg for grapes and custard apple.

Model operated by farmers of kamalam fruit, Bengaluru, Karnataka: Kamalam fruit (dragon fruit) is gradually becoming a preferred fruit crop for cultivation by farmers in Karnataka due to its demand from health-conscious consumers. One such farmer is Mr. Prasad, Sira, Karnataka, who has started dragon fruit cultivation based on the demand from Mumbai markets. Usually, he sends the harvested fruits from his farm and that of nearby 5-6 farmers to Mumbai market for an average price of Rs.75/kg. Due to the lock down period 1 of COVID 19 Pandemic, they were not able to send the fruits to Mumbai market. In such scenario, purchase of fruits by an IT employee through direct contact method mooted the idea of supplying fruits to apartments. Hence, they identified a

group of apartments as target community and supplied fruits (weighing 300 g and above) for Rs.130/kg, after grading, packing with their own brand. After grading, the fruits weighing below 300 g were supplied to bakeries for Rs. 200/kg. Accrual of profit through such direct marketing made them to go further step ahead for contract farming with about 100 farmers, in order to sustain this model. Also, there is a move through this initiative to establish a processing unit exclusively for Kamalam fruit towards preparation of bars, jam and powder etc. The farmers were getting an additional benefit of Rs.55/kg by selling Kamalam fruit through this model. The innovations that can be learnt from this model can be "selling the fruits through own brand", "grading the fruits and targeting consumers based on the grades" and "establishment of processing unit for preparation of products from Kamalam fruit".

Similarly, some innovative individual farmers in Raichur district of Karnataka established their own retail outlets for sale of sweet oranges and through this model the farmers could get a produce share of up to 93.33 per cent. Another model was by NGO which could facilitate marketing of watermelon, sweet orange and papaya. The direct marketing of these fruits and vegetables could fetch up to 90 per cent of the consumer rupee (*Hiremath and Reddy, 2020*).

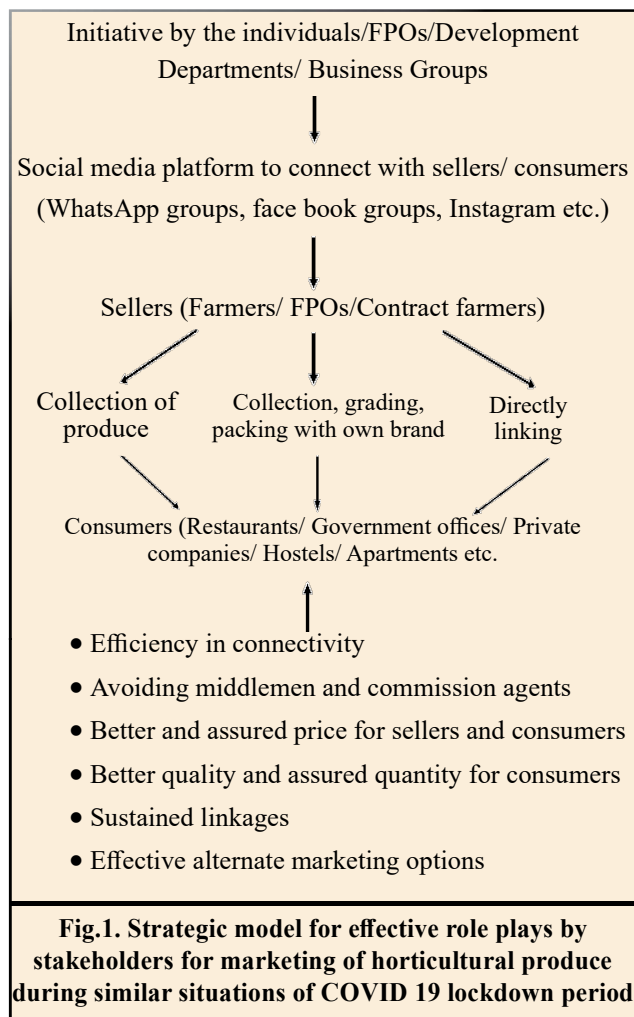
It could be understood from Table 3 that there was significant difference in benefits realized by the farmers

through different models, except for direct marketing (Kamalam fruit) model. The overall results showed that on an average 26% increase in net prize realized was observed with significant paired 't' test value.

CONCLUSION

An understanding of the models operated by various players for marketing of fruits and vegetables produced by farmers helps in generalizing certain conclusions for further analysis. These models very effectively utilized social media (WhatsApp, face book, instagram etc.) to communicate among the farmers (sellers) and consumers i.e., both B2B and B2C business models. These models identified appropriate sellers (farmer groups or FPOs) for procurement of the produce such as fruits and vegetables. They targeted hostels/ business organizations/ restaurants and apartments. Some of them made contracts/ agreements with sellers (farmers/ FPOs) as far as fixation of price of the produce is concerned. In some cases, common online platforms operated by these players connected the stakeholders of both B2B and B2C transactions. Some of them started grading and packing the produce in their own brand name and distributed in order to create trustworthiness among the consumers and also create awareness among the sellers/farmers about grade-based pricing for higher realization of returns. The sellers (farmers/ FPOs) were given assured and better price than the market price and consumers were assured with supply of quality produce. The sale price was fixed after thorough discussion with the sellers (farmers/ FPOs) and the consumers. The sellers (farmers/ FPOs) were also benefitted by avoiding middlemen and saving on commission charges and unauthorized deductions. Apart from the use of social media, print and electronic media were also effectively utilized to popularize the business activities of the models. Based on the analysis of different successful models, a common strategic model was arrived-at, which can be referred for effective role play by formal and informal institutions and farmers for marketing of horticultural produces during the similar situations of COVID 19 lockdown period 1(Fig.1).

Acknowledgements : Authors acknowledge the ICAR-Indian Institute of Horticultural Research (IIHR) for funding the research.



CONFLICTS OF INTEREST

The authors have no conflicts of interest.

REFERENCES

- Hiremath, G.M. and Reddy B.S. (2020). Direct marketing in agriculture: Emerging innovations in COVID period for fruits and vegetables, In: Institutionalizing COVID period innovations in agricultural marketing (Edited by P. Chandrashekhara, V. K. Jayaraghavendra Rao & Manoj Kumar Agrawal), CCS NIAM, Jaipur, 87-96.
- Reddy, B.S. and Hiremath, G.M. (2020). Linking farmers to market: Marketing of perishable commodities during lockdown period, In: Institutionalizing COVID Period innovations in agricultural marketing (Edited by P. Chandrashekhara, V. K. Jayaraghavendra Rao & Manoj Kumar Agrawal), CCS NIAM, Jaipur, 61-70.
- Srivastava, S.K. and N. Shivaramane. (2020). Income-induced effects of COVID-19 on the food consumption pattern of Indian households, *Agril.Eco.Res.Review*, 33 (Conference Number) :15-24.