



Local Food Systems and Farmers' Markets-an Exploratory Study

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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Short Communication

ABSTRACT

The local food systems and farmers' markets support the local economy, build relationships between producers and consumers, and promote social interaction along with the provision of fresh and nutritious foods. The local food systems cater to the three dimensions of sustainability viz. environment, economy, and society by providing access to fresh produce. Various models of local food systems are in operation, direct-to-consumer, direct-to-retail, farmers markets, and farm-to-school programs each with distinct features of operation. Consumers prefer local food markets as they perceive the locally grown food to be fresher and they like unique and special foods on offer at these markets. Policy support and capacity building of smallholder farmers on reducing the cost of cultivation, marketing skills, and knowledge of food safety regulations are essential. Farmers' markets are integral to local food systems and various models of farmers' markets are operational in different countries of the world. The mode of functioning and operational principles of a farmers market (Rythu Bazar) in the Telangana State of India has been described in this article. The participating smallholder farmers benefitted from higher price realization, an increase in earnings, and immediate cash receivables. However, the major constraint was inadequate storage facilities for leftover produce. The disruptions to food supply chains faced during the covid-19 pandemic have indicated that the farmer's markets were preferred by both poor and elite customers alike and thus the local food systems can provide resilience to the food systems. The SWOT analysis of the

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farmers' markets indicates a robust system with explicit strengths, and operational weaknesses, the opportunities are also many and with the suitable policy and affirmative action the threats can be addressed.

Keywords: Local food systems; sustainability; local economy; producer-consumer interaction; farmers' markets.

1. INTRODUCTION

The food that is produced and consumed within a short distance with a distinct social structure of small farmers and a short supply chain is considered local even though there is no generally agreed upon definition of local food systems [1]. The primary aim of the local food movement is to create a connection between food producers and consumers, to develop more self-reliant and resilient food networks; to improve local economies; or to affect the health and environment of a particular community.

A local food market provides a direct marketing outlet for local farmers and food processors and it may be set up in open-air markets on a seasonal and weekly or bi-weekly basis [2]. The definition of local food systems does not always refer to the geographic location of production to consumption but is best defined as local, based on the sale of produce by farmers directly to consumers at local farmers' markets, schools, hospitals, and institutions [1]. Local food systems can be considered economically viable, ecologically sound, and socially just alternatives to conventional food systems [3]. Local food markets are much more than the sale and demand for local food. They are a blend of supporting local economies, social interaction, relationships between producers and consumers, and nutrition and health [4].

The interest in the local food system is propelled by the desire to eat fresh food, has a short supply chain, and obviates the need for storage and travel over a long distance before reaching the consumers' plate. In the local food system the distance between producer and consumer is minimized [5].

The Local food system may be classified primarily as a farmer-to-customer and farmer-to-retail. Local food markets are characterized by small farmers who do their cultivation, packaging, marketing, and sale of a variety of products with relatively smaller supply chains. Based on the stage of the supply chain the consumer gets to know the origin of the product and thus builds a bonding with the producer [6].

Local or traditional food markets are a primary source of food distribution and purchase in many of the Low and Low Middle-Income Countries [7]. Enabling smallholder farmers' inclusive participation in local food-sector growth has significant potential to overcome the challenges, reduce poverty and improve livelihoods. The products sold in local food systems are generally fresh produce (vegetables, eggs, dairy and meat) and rarely cereals. The local food system caters to the three dimensions of sustainability, viz. environment, economy, and society by facilitating access to fresh produce grown by local farmers aiding in the development of the local economy and traceability of produce.

Local food systems offer the benefits of supporting the local economy and also reducing the climate change impact. There is an added advantage of fresh produce with longer shelf life and lower transportation costs. Vegetables mostly are heavy due to water and sourcing them locally helps to reduce carbon footprint. The Centre for Sustainable Systems at the University of Michigan [8] has made an estimate on the contribution of different components of food systems to the carbon foot print and it is indicated that food production is responsible for 68% of the emissions and transportation of the food 5.4% [9] and food accounts for 10-30% of a households carbon footprint [10].

Alam and Khatun [11] reported that cash support, timely availability of seeds and inputs to vegetable farmers is essential to ensure a steady supply of fresh produce to farmers markets for consumers. Reforms in marketing are needed for farmers to explore the sale of produce through avenues other than the agricultural produce mandis [12]. Mahaptra [13] opines that around 30,000 agri-markets in India are needed to give a fair deal to the small and marginal farmers who account for 85 percent of the total landholdings and hold about 40 percent of the total marketable surplus of perishables that can benefit both the consumer and producer.

The benefits of local markets to small farmers are two-fold, fair prices with immediate cash payments, and sale of small quantities [14].

Moreover, the results of a survey in the capital city of India (Delhi/ NCR) revealed that the majority of the people preferred to buy farm fresh vegetables as a matter of choice over stored produce from supermarkets [15].

2. TYPES OF LOCAL FOOD MARKETS AS DEFINED BY THE ECONOMIC RESEARCH SERVICE [16]

Direct-to-consumer marketing: the agricultural products are sold directly to consumers either through farmers' markets, roadside stands, or maybe a community-supported agriculture venture.

Direct-to-retail/food service marketing: the producers sell directly to buyers in the food business such as restaurants, supermarkets, or institutions, like schools, hostels, and hospitals.

Farmers' market: is a marketing outlet which may be at a make-shift or permanent location where farmers sell local food products to individual customers on a fixed day of the week the highlight being the sale of seasonal produce all year through.

Community-supported agriculture (CSA): This is a kind of marketing arrangement in which members purchase shares of a farmer's expected yield before planting. As per the arrangement agreed upon, the members' share is delivered by the farmers or it is picked up by the members themselves.

Farm-to-school programs: Farm-to-school programs are collaborative projects that connect schools and local farms to serve locally grown, healthy foods to improve student nutrition, educate students about food and health, and support local and regional farmers.

Benefits of Buying Local:

Economic

- Buying locally produced food helps especially smallholder farmers and provides sustainable livelihoods to the local community [17].
- Moreover, the farmers who sell in local markets can save on the additional value-added costs of safe storage, and costs incurred on the transport of produce to markets, in a way the middlemen who corner

some share from the sale of products are also done away with.

- Buying food locally results in more money to remain with the local farmers and provides more employment to the local population
- The sourcing and endorsement of local foods by restaurants, celebrities, and hospitals add value and creates a market for local foods
- Buying local food also ensures food and nutritional security in times of civic unrest, pandemic, and other similar disruptions to the agricultural sector in a country.

Environmental

- Eating food that is cultivated locally helps to preserve the small-scale farms
- It cuts down the distance that food travels i.e. food miles and also reduces fossil fuel consumption, air pollution, and amount of greenhouse gas emissions
- The local genetic diversity of cultivars can be preserved by sourcing local foods
- It is more likely that small-scale farmers use more environmentally safe production practices

Consumers' preferences for local food

- The quality of locally grown food is better
- Locally grown products are fresher
- Many customers develop a liking and taste for products on offer in local food markets
- Customers look for unique and special foods in local food markets

Capacity building of smallholder farmers for promoting local food movement

- Comprehensive training on cultivation practices to reduce cost and maximize yields
- Creation of small scale distribution network for the supply of local food to main markets
- Enhancing the marketing skills of farmers
- Value addition and creation of niche products to attract consumers
- Educating the farmers about food safety regulations

3. CONSTRAINTS/BARRIERS

The main constraint faced by farmers in local food markets is the low footfall of consumers as

most of them are habituated to do their food purchases from supermarkets offering a range of products for the family's needs.

Policy support/initiatives to strengthen local foods

- Creating food links with public institutions (schools, hostels, hospitals, and prisons) serves the dual purposes of nutrition education and supporting the local economy
- Ensuring that the farmers use more organic nutrients and lower the use of chemical fertilizers and pesticides would enable them to sell niche organic products
- Policy support is essential for incentivizing the use of organic manures, cutbacks on fertilizer and pesticide use in locally produced food
- Collective action for the production and sale of local produce by vulnerable communities needs capacity building and financial support
- Awareness programs need to be designed to create consumer demand for local foods that offer a fair price to producers and support the local economy
- Best practices of community-supported agriculture can help to design similar successful projects

4. FARMERS' MARKETS ARE INTEGRAL TO LOCAL FOOD SYSTEMS

The farmers' markets help to link consumers to local producers and hence can sustain the local food systems. These markets are an essential component of cities and rural areas contributing to the local economy, food systems, and community feeling [18]. Several countries have their models of farmers' markets. As a fairly successful case, the model of farmers' markets in India has been described.

5. MODELS OF FARMERS' MARKETS IN INDIA

Farmers' markets operate in many states of India (Punjab, Haryana, Rajasthan, Madhya Pradesh, Tamil Nadu, Karnataka, Telangana, Andhra Pradesh, and Odisha). The most characteristic feature of these markets is the absence of middlemen and other marketing costs where the sellers themselves do the loading and unloading of vegetables and directly sell the vegetables to the consumers.

6. FARMERS' MARKETS (RYTHU BAZAR) BEING OPERATED BY THE GOVERNMENT OF TELANGANA STATE, INDIA: CASE DESCRIPTION

Farmers' markets known as Rythu Bazar (RB) were established in the year 1999 in the erstwhile combined states of Telangana and Andhra Pradesh, India. RBs are a successful model of direct marketing of fresh vegetables and fruits daily to urban consumers mostly by the small and marginal farmers located close to cities. The seller farmers in the RBs are provided with basic amenities like water, raised platforms and sanitation facilities by the marketing department of the State Department of Agriculture free of any charge [19].

Objectives of Rythu Bazar:

The RBs were set up with the following broad objectives.

- To ensure remunerative prices to the farmers and provide fresh vegetables to consumers at reasonable rates fixed every day.
- Facilitate prompt realization of sale proceeds to farmers without any deductions.
- Curb malpractices in weighing and provide vegetables with correct weights to consumers.
- Provide a direct interface between farmers and consumers by eliminating intermediaries in trade.

As per the Telangana website of Agricultural Marketing Department of the Government of Telangana State (tsmarketing.in), Telangana has 47 Rythu bazaars functioning in different districts and the district-wise break up of the Rythu Bazars is as follows: Hyderabad (3), Adilabad (1), Badradri (Kothagudem) (2), Karimnagar (3), Khammam (5), Mahbubnagar(2), Mancherial (1), Medak (1), Nagarkurnool (1), Nalgonda (3), Narayanpet (1), Nizamabad (2), Medchal (Malkajgiri) (6), Rajanna (Sircilla) (1), Rangareddy (4), Sanga Reddy (2), Siddipet (1), Suryapet (2), Vikarabad (2), Warangal (3), and Yadadri Bhongir (1).

The information on daily, monthly, district wise, arrival of commodities, the maximum and minimum price of commodities, income entry, and expenditure entry is hosted on the site of Telangana Rythu Bazar information system maintained by the agricultural marketing

department of the state of Telangana. Information on number of days of functioning of Rythu Bazar, the available comparative statement of vegetable arrivals and prices are available for a period ranging from 2008 to the current year 2022 on the website of Agricultural Marketing Department of the Government of Telangana State (tsmarketing.in) [20].

An analysis of the RBs indicated that most of the farmers were marginal and small (2 to 4 acres of land) and were very happy to sell in the Rythu Bazar (RBs) rather than in the wholesale markets. Moreover, the participating farmers had benefited from the RBs and the profits were mostly utilized to create assets for the family. The farmers utilized credit from institutional sources by being members of savings and credit societies. On-farm improvements were carried out by digging wells and crop diversification was undertaken to augment income. The savings were invested in children's education and most of the farmers' reported being free of debts [19].

Rythu Bazar was rated by farmers as being beneficial in terms of higher price realization, increase in earnings, immediate cash receivables, and location advantage. However, the inadequacy of storage facilities was the constraint faced by farmers as reported by Dey [21].

Lack of space for sorting and grading, improper price fixation, wastage of produce due to inadequate cold storage facilities, and poor sanitation facilities were the major constraints faced by farmers. Farmers suggested improvements in sanitation facilities, proper stalls for the sale of produce, covered spaces, and road facilities for the transport of produce [22]. Perfect co-integration of market prices among the rythu bazars in Telangana state [23]. Lack of involvement of farmers in price fixation, poor sanitation and storage facilities, and improper allocation of selling space were some of the constraints faced by farmers using the Rythu Bazar scheme as reported by Chandak & Leua [24].

The following suggestions have been delineated by Srinivasa et al. [19] to improve the functioning of RBs.

- Creation of a network of RBs to encourage aggregation of more farmers in the physical vicinity to avoid long-distance travel

- Exclusive and subsidized transport arrangements for farmers bringing their produce to RBs
- Provision of dust-free, clean, and covered space to the identified RB seller farmers for the sale of produce in an ambient environment and a comfortable shopping experience for consumers
- Adequate water and electricity connection for maintaining hygienic conditions in the sale points

7. FARMERS' MARKETS STRENGTHEN THE RESILIENCE OF FOOD SYSTEMS

Farmers' markets play a key role in the resilience of food systems by connecting consumers to producers during disruptions to other supply chains. Disruptions due to climatic, economic, environmental, and political crises, war, and more recently the pandemic create a lack of access to food and an enormous hike in food prices. The local food systems can thus serve as a means to increase the resilience of the food systems. The closer the farms are to forks lesser the disruptions during times of crisis [25]. They can play an important role in the economic and social recovery post disruptions by managing the downstream supply chain as seen after the coronavirus pandemic [26]. The risk and spread of infections are high at the post-production and transitional supply chains as these are centered on densely populated urban and peri-urban areas. Farmers' markets were frequented by both affluent urban customers and food-insecure people during the pandemic.

During disruptions like the pandemic, open-air, outdoor shopping in farmers' markets is healthier than in grocery stores. The shortened supply chains also ensure food is handled by fewer people. Generally, nutrient-dense foods and freshly harvested produce are on sale in the farmers' markets which are very important for building immunity, especially during the pandemic.

The farmers' markets adapted well to the challenges imposed by COVID-19 by providing virtual sales through online platforms for connecting local food producers to consumers [27]. The short supply chains may be the most viable option during extreme events like the pandemic, meet the sustainability goals [28], and build the resilience of local food systems [29,30]. However, the overdependence on local food systems may lead to a food shortage [31]. The farmers' markets in the USA registered a 40%

increase in purchases during the pandemic through the use of the Supplemental Nutrition Assistance Program and Pandemic Electronic Benefits Transfer cards [30].

8. SWOT ANALYSIS OF LOCAL FOOD SYSTEMS AND FARMERS' MARKETS

An analysis of the strengths, weaknesses, opportunities, and threats (SWOT) of the farmers' markets has been presented in Table 1.

Besides the aspects listed in SWOT, the adaptation of local food systems to climate, political and other disruptions are very high. The supply chains and intermediaries have been depicted in Fig. 1 and it can be observed that the local farmers' markets depicted as the first model in the figure are devoid of intermediaries and the farmers and consumers have a direct connection and interaction compared to a long chain of intermediaries in other marketing models.

Table 1. SWOT analysis of local food systems and farmers' markets

Strengths	Weakness
Farm fresh produce	Price lower than wholesale markets
Elimination of middlemen	Fear of unsold produce
Immediate cash transaction	No storage facility for unsold produce
Prevents distress selling	No shelter from adverse climatic conditions
Lower rates for consumers	Transport problems
Shortened supply chains	
Rent free selling space	
Small quantities can also be traded	
Opportunities	Threats
High consumer preference for fresh local produce	Competition from online platforms
Low carbon footprint	Low volume of sales
Sale of value-added products	Low sales during the holiday season
Revival of traditional foods/recipes	Consumers' preference for fancy packaging
Family outing to introduce food production systems to children	Low prices during a glut
Develop marketing skills	Competition from super markets as consumers prefer one-stop shops
Soft skills for customer loyalty	Traders impersonate farmers
	Overdependence on local markets may lead to food shortages

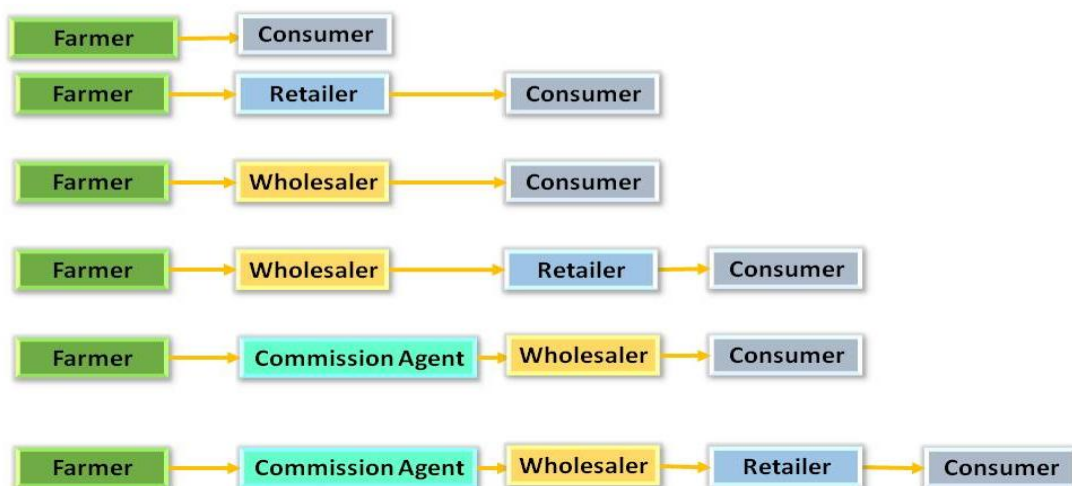


Fig. 1. Marketing models and intermediaries

9. CONCLUSIONS

The three dimensions of sustainability viz., environment, economy, and society are very well catered to by the local food systems and farmers' markets. The local food systems and markets are not bound by a rigid definition of the production and consumption of food within the same geographic location. The desire of consumers to eat fresh food from a short supply chain has provided the impetus to the local food systems and farmers' markets. Smallholder farmers' benefit from the local markets and it also helps in supporting the local economy. Farmers' markets are integral to local food systems and different models of farmers' markets exist in different countries. The Rhythu bazaar model of the farmers market of the Telangana state of India was described as a case of the rural-urban connection of consumers with the producers. The potential of farmers' markets to crisis-proof the food systems was established during the COVID-19 pandemic. Appropriate policy support to the farmers' markets will help in sustainable livelihoods for smallholder farmers.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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