STRUCTURE OF RURAL MARKETS FOR ACHIEVING VERTICAL COORDINATION IN THE INDIAN FOOD CHAIN

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Introduction

Indian food market is extremely fragmented, having large number of players both on the buyers and sellers side. Presences of large number of players do not necessarily mean high level of competition and efficiency as their size prohibits them to make necessary investment in production and procurement of the food materials. Presently there are too many intermediaries in the Indian food chain merely increasing the cost of agricultural produce without adding any value to it. Consolidation of the food chain is suggested to be one way of getting rid of this problem. The advantage of consolidation is that it will lead to the decrease in the number of intermediaries and subsequent decrease in the spread between farmer price and consumer price. In India generally farmers get 25% of the final consumer price compare to the developed and other developing countries in South East Asia where this percentage is around 60% -70%.

Developed countries like UK and US and developing countries like Thailand and Indonesia have witnessed both backward and forward integration in food business where seed companies invested in production and as well as in marketing of the produced output. In production front they introduced high quality seeds prudent farming technique, supplied farmers equipments and imparting training to the farmers. They also set up trading companies which developed markets both in their own country and abroad. In India there are number of obstacles in consolidation of agricultural food chain. Buying agricultural land is not easy for the corporate sector. In many state it is not allowed. Alternative arrangement like contract farming has been suggested but except for some limited success in poultry and soybean it has not really gain any momentum. So wholesalers are mainly dependent on open market purchase for procurement. Lack of road network and storage facilities means they are unable to procure items from far off places. This limits their size of the business. As wholesale and retailing is a low margin high volume business. Unless huge volume is transacted they will be unable to cover the fix cost of investment in building the supply chain. On top of this law like Agricultural Produce Markets Acts makes consolidation of business in agricultural market virtually impossible. Though Infrastructure and forward looking regulations are must for the growth of food and food processing industry in India, the importance of creating market for basic food items required for processing industry is not highlighted as much as it should have been. Development of market can lead to increased vertical coordination leading to consolidation along the food chain. It can lead to the demand for public funding of infrastructure necessary for agriculture and food processing.

Before starting the discussion on these issues let us explain what we mean by food processing. According to the Food and Agriculture Organization (FAO), processed foods can be of three types - primary, secondary and tertiary. Primary processed foods involve basic cleaning, grading and packaging. Secondary processing means modification of the basic product to a stage just before the final preparation. Tertiary processing leads to high value-added ready-to-eat products like bakery products, instant foods, etc. In this paper I will focus my discussion on the primary food processing mainly because a well functioning primary processed food is the base of the food processing industry.

Rest of the paper is organised as follows. Section 1 discusses what we mean by vertical coordination in food chain. Section 2 describes various arrangement of vertical coordination. Creation of rural markets, various factors that we need to consider in developing rural markets are discussed in section 3. Section 4 discusses the role of ICT in developing markets and section 5 concludes.

Section One: Vertical coordination

Vertical coordination means the synchronization of successive stages of production and marketing regarding quantity, quality, and timing of product flows. Methods of vertical coordination include open production (spot market), contract production, and vertical integration. In open production, a firm does not commit to selling its output before completing production. Spot prices coordinate sell of goods across the different stages of production. Contract production is the production of goods for future delivery. Before completing production, a producer commits to deliver a particular good to a particular buyer. Contract production involves more interaction between buyers and sellers than open production. Production contracts vary in control allocated and risk transferred across stages. In market-specific production contracts, the contractor and producer may negotiate delivery schedule, pricing method, and product characteristics. The contractor usually provides a market for the goods but engages in few of the producer's decisions.

In resource-providing contracts, the contractor provides a market for the goods, engages in many of the producer's decisions, and retains ownership of important production inputs. While this classification scheme is not unique, it provides a general framework for contract terminology. In vertical integration, a single firm controls two or more successive stages of vertical coordination. In vertically integrated firms, management decision dictates the transfer of resources across stages. Movement along the continuum of vertical coordination from open-market production to vertical integration represents the degree to which control of production has shifted to the contractor or integrator as more functions are transferred from the producer. While market-specific production

contracts, often referred to as marketing contracts, provide contractors with more control than open-market coordination, the control transferred across stages is usually minimal.

Section Two: Mechanism for Vertical Coordination

Till now we have stressed on vertical coordination for key requirement for improving food market and the food processing industry. To explain alternative forms of vertical coordination in dairy, oilseeds, wheat, poultry, fruits & vegetables industries, one must rely on the existence of market failures. In the traditional neoclassical theory, coordination through spot markets can take care of the individual objectives of many consumers, direct many valuable and limited resources to production, and motivate firms to produce the right products. But the above is true under the following assumptions that producers knew prices and production technology, consumers know prices and preferences and prices adjust to equate supply and demand for each good and everyone is maximising their utility.

Under these assumptions, prices allocate resources to their most valued use, and consumers prefer no other allocations given available resources and technology. In reality, however, firms have concerns about their ability to buy and sell the quantities they want at given prices. Buyers and sellers may not know the exact specifications of goods that they demand or supply. Buyers face costs associated with searching for adequate suppliers offering the most favourable prices, and sellers face costs associated with communicating the availability of products with specific attributes. Transaction cost economics analysis suggests that the main purpose and effect of contracts and vertical integration is to reduce transaction costs. Transaction costs associated with spot-market coordination include buyer costs of searching for suppliers offering preferred quality features at favourable prices and seller costs of determining prices and buyer preferences. Buyers and sellers can reduce some of these costs by entering into a contract arrangement before production is completed, but they can still encounter other types of costs. Ex ante (prior to reaching an agreement) contracting costs are costs associated with drafting, negotiating, and safeguarding agreements. Ex post (following an agreement) costs are costs associated with enforcing agreements and may require measuring damages or injury to a contract party, enacting penalties, and compensating an injured party.

Vertical integration may reduce costs of contracting and spot-market trading but may also introduce new types of transaction costs, including costs related to communicating information within a firm. Firms choose a method of vertical coordination based on a comparison of the net effect on transaction costs. Especially in India, vertical integration in agriculture is difficult to achieve because of the land ceiling acts which prohibit corporate acquisition of cultivable land. IN TCE

paradigm this means an infinite transaction cost. So out of the five commodities, vertical integration as a viable option is valid for poultry and diary only.

Transaction costs and the choice of vertical coordination method depend on characteristics of the transaction. The TCE paradigm places an emphasis on the degree of asset specificity in an exchange relationship, or the degree to which assets are specifically designed for a particular user. Once specific assets are locked into a relationship, they can be redeployed only at a great loss in productive value. Because relationship-specific assets have much lower value in other uses by other users, they reduce the number of potential trading partners. Hence, the investing party will be subject to hold up, or exploitative, opportunistic behaviour by the other party to appropriate the quasi-rents and generate above-normal returns. A decline in the number of buyers and sellers also can lead to small-number bargaining problems.

Some important questions crop up for researchers, policymakers, and market participants to ponder on. Will larger farms or processors generate new efficiencies in food production? Will they be better positioned to handle environmental and food safety problems? Alternatively, as we move to a system with fewer buyers of farm products, might farmers receive lower prices for their products? Do emerging contractual arrangements insulate producers from market risks? Do some arrangements introduce new risks? Will the new system provide opportunities for new farmers or existing small farmers? Or will most commercial farming be large-scale, industrialized enterprises?

Section Three: Creating Rural Markets for Vertical Integration

An efficient marketing system can provide better prices to producers and improve the availability of competitively priced quality produce to consumers. However, before considering whether to carry out improvements to markets and what type of improvements to introduce, it is important to be sure that markets, or lack of them, represent the main problem. Other causes of inefficient marketing could be poor roads, lack of knowledge about marketing among farmers, an inadequate quantity of products to attract sufficient traders.

Formal markets in rural areas play an important role in improving agricultural marketing. With increase retail competition by providing a convenient place where farmers can meet with consumers, reduce post-harvest losses by providing protection for produce from direct sunlight, rain, etc. Traders who buy produce from farmers for transport to urban markets experience significant costs in travelling from farmer to farmer to buy small quantities. This is not a major problem if farmers are situated close to major roads and traders simply drive along the road buying from each farmer. When farmers are at the end of poor quality local roads, however, traders lose considerable time and money in reaching them. Farmers are also at a disadvantage because they are more or less

forced to accept the price the trader offers. They cannot compare the price they are offered with the prevailing local price because there is no local market. Even if they have access to information about the prices in urban markets they cannot really use that knowledge to negotiate with traders because they have no realistic idea of the costs faced by the traders in travelling to their farm or village.

Markets, on the other hand, provide a location where all buyers and sellers can meet. Consumers can see the range and prices of produce on offer and make choices based on their preferences and income. Sellers can take their produce to one location rather than having to go from door to door. They can see how much of a particular product is on offer, compare the quality of their produce with that of other sellers, and set their prices accordingly. In order to achieve such benefits, however, markets must be situated in locations acceptable to both sellers and buyers. Existing market sites, or places where buyers and sellers meet informally (e.g. a plot of land at the side of the road), is usually the best places to construct new markets because they are clearly at locations favoured by the users. Unimproved markets usually lack any form of shelter. Produce is displayed and stored in the sun. Fruits and vegetables, for example, can be kept fresh by protecting it from the sun and by keeping it moist. This is not possible in markets that do not have either shelter or fresh water supplies.

As a first step towards identifying requirements for new or improved rural markets it is important to understand how prevalent marketing functions. Let us discuss some of the methods practiced in India.

a) Farm-gate purchases: Purchase of produce may be on an individual basis at the farm gate. Buyers go to the farm, usually at a pre-arranged time. In some cases, such as with fruit crops, the produce can be sold “on the tree” or “in the field” and the buyer arranges for its harvesting. In other cases the sales may be through marketing groups or cooperatives. The farmers in this case may wait for the trader at collection centre. Draw back of farm get purchase is producers cannot compare price of similar output. Advantage is it cuts back in the number of intermediaries which results in decrease in producer consumer price spread. Because of poor surface transport facility this method is mainly happen in places near town only. But this channel is most appropriate for fruits where checking quality is costly. Buyers and sellers can develop long term relationship. Producers can build up reputation for producing quality output and can charge a premium for it. Agriculture often suffers from varietals constraints. Oranges in Nagpur and Mangoes in Malihabad (UP) are instances where though there are ample productions during harvest time, processing has not taken off due to unreliability of process able varieties. Fostering relationships between processors & farmers will lead to productivity increase and improvement of quality and variety.

b) Local markets: These markets are usually for direct sales of small quantities of produce by farmers to village traders and rural consumers. Rural primary markets often form part of a network arranged on a periodic basis, such as on a specific day of each week. They are commonly organized at a central place in a village or district centre or beside a village's access road. In some instances, markets in small towns also provide an assembly function. This form of market is most prevalent in India. Commission agents collect output from this village level market and sell to district level mandis, who sells to large traders and wholesalers. This often led to high cost of procurement. Quality of the output cannot be guaranteed as outputs of various qualities are consolidated. Commission agents do not have and lack incentive of grading and sorting agricultural produce. This has a serious adverse effect in the food processing industry because grading output at the later stage of food chain is costly. It leads to high price and unreliable quality of the processed food. This leads to the vicious cycle of low demand, low capacity utilization, high per unit cost and low demand.

c) Assembly markets: Larger rural markets are found where greater quantities of produce are traded, either by the producers themselves or by traders. These "assembly" markets (gathering produce in larger quantities for onward sale to outside buyers) are often combined with local rural markets and are normally situated on main highways, other local main roads or near to ferries. Traders or collection agents working on behalf of urban wholesalers normally purchase produce. The market operations may be year-round or seasonal, depending on the types of crops being marketed.

d) Direct sales to urban markets: Farmers may also take their produce directly to urban areas, either to a retail market or to a wholesale market. Lack of surface transport infrastructure and as most of the Indian farmers are small and marginal this method has limited relevance in the context of India.
Issues to Consider in Developing Markets

For developing a market it is important estimating the levels of supply that could pass through new or improved markets. For existing markets the assessment can be based mainly on observing what is happening in the market. Where there is no existing market the assessment must be based on local supply and demand estimates and forecasts.

Supplies to a market and the type of market used vary depending on the type of local agriculture. For example, in areas where there is large-scale production of fruits and vegetables for urban areas, a new or improved assembly market may be required. In areas where production is primarily of export commodities, which usually have well-established independent marketing channels, only rural retail markets may be required.

Deciding on "catchments area" to be served by a particular market is a critical issue. This could be reviewed by looking at the production areas around the market. When an assembly market is being

planned, and farmers have access to public transport or small trucks, a longer distance could be assumed. If there are no other large rural centre near the market "catchments area" can have a radius as high as 50 km.

All rural planning depends on the availability of information. To decide on the catchments area geographic, demographic and sociological information about the area should be collected. Like population data (age composition, gender, migration, and mortality rates, annual growth rates); agricultural production data – areas and yields, location of agricultural production areas (irrigated and non-irrigated), forested areas, relevant studies on crop marketing, existing market channels, location of agro processing and storage facilities etc.

Checking market viability is important to ensure that they are economically sound. The market's impact has to be quantified, calculating costs and benefits in to see whether the capital and running costs are likely to be covered by the expected revenues. This depends on two factors: expenditure levels and the market's ability to attract traders willing to rent or lease space. The costs must be covered so that such ventures can be scaled up through out the country and should not depend too much on government subsidy. In order to achieve this, investments in physical infrastructure must be kept to a minimum by using low-cost construction methods. The market must also be evaluated in social and qualitative terms. An estimate should be made of the market's operational and maintenance costs. The market's benefits should be assessed and revenues forecast.

Another important issue is who should own the market. Will it be public of private? In theory it can be expected that public sector markets have public sector investment and public sector management. Private markets are independently established by private enterprise with private sector investment and private sector commercial management. In practice there are few markets which conform to one or other of these extremes. Many public sector markets are now managed by a managing authority controlled by a board of directors, which is often made up of representatives of private market users or businessmen. The markets are required to be self-funding and to operate with a commercial approach to accounting and financing. On the other hand, private company markets often require government assistance with land acquisition or with funding for the major capital investment required. Often the government sector then requires direct representation on the board of directors and compliance with some stated government objective (e.g. opportunities for small businessmen).

In nearly all markets, the marketing of agricultural products is dominated by the private sector. Wholesalers acting as merchants, commission agents or brokers carry out the buying and selling functions. However, in markets which use auctions the auction process is often carried out by the public authority or managing authority. Fruit and vegetable market in New Delhi license wholesalers to act as auctioneers with set fees for produce supplied by farmers. A difficulty with

this approach is that artificiality can be introduced if there are many auctions with relatively little produce and few bidders. The alternative approach, which is more widely used globally, is for the managing authority or its appointed agent to conduct auctions in central locations or for product groups.

Many markets, especially those with auction systems require some form of buyer registration in their market rules. This applies particularly where payments to the auction agent are to be on credit. Credit-guarantee schemes, which may be incorporated in market rules, can require registration of buyers, bank or other financial-institution guarantee, and a follow-up system of suspension in the event of default on payments.

Market rules can provide for dispute resolution procedures on quantities, grades, and prices. Disputes can arise between a supplier and a wholesaler, between one wholesaler and another, between a retailer and a wholesaler, or with service providers such as transport operators. Market inspectors appointed by government may be used to resolve these disputes. In a few cases market staff may be used. However, it is advisable that these disputes are resolved either by independent arbitrators or by industry associations. Traders associations need to develop a code of practice with which all members must comply. This code should include dispute-resolution arrangements. In these circumstances, market rules (and tenancy agreements) may state that all traders must be members of the traders association and comply with its code of practice.

Section Four: The Importance of ICT in Creating Market

For Rural Centric growth Information Technology can make a big impact in creating vertical coordination in Indian food chain. Updated knowledge about weather forecast, crop cultivation practices, post harvest technology, water management through satellite tracking, commercial information, market information for grains, fruits and vegetables, processed food, low cost technology, government schemes and policies on agriculture and agribusiness can be made easily accessible to rural masses through information technology development at Rural places. Maharatha Chamber of Commerce, Industries and Agriculture in Maharashtra has proposed setting up Gramin Information Centres (GIC) for providing latest information on technology and market access, which will enable farmers & Rural Food Processing Industries to plan their activities on commercial lines for realizing maximum value for their produce.

For the sustainability of the food industry it is important that it has well developed backward linkages. Information technology can play an important role in further strengthening of these linkages. Gramin Information Centre (GIC) can provide latest information on technology and

market access, which will enable farmers & Food Processing Industries to plan their activities on commercial lines for realizing maximum value for their produce.

The basic objective of the GIC includes the following:

- To develop a network of Agricultural business and food processing sector ultimately to work as network to supply technology information, market intelligence, prices, demand supply and international scenario.
- To assist the farmers and Food Processing Industries in their export efforts by providing information regarding rules and regulations, import duties, standards, specifications and negative list of agricultural produce of the importing countries.
- To provide information to farmers about various techniques in soil conservation, seed propagation, hybrid seeds, integrated pest management, integrated crop management, post harvest technologies and processing of the agriculture produce.
- To contribute to a more efficient marketing system by dissemination of information about prices and about fluctuations in domestic and global demand.
- To provide detailed commercially useful information in time.
- To develop institutional linkages.
- To create awareness and conducting training modules for rural masses on computers through information technology.

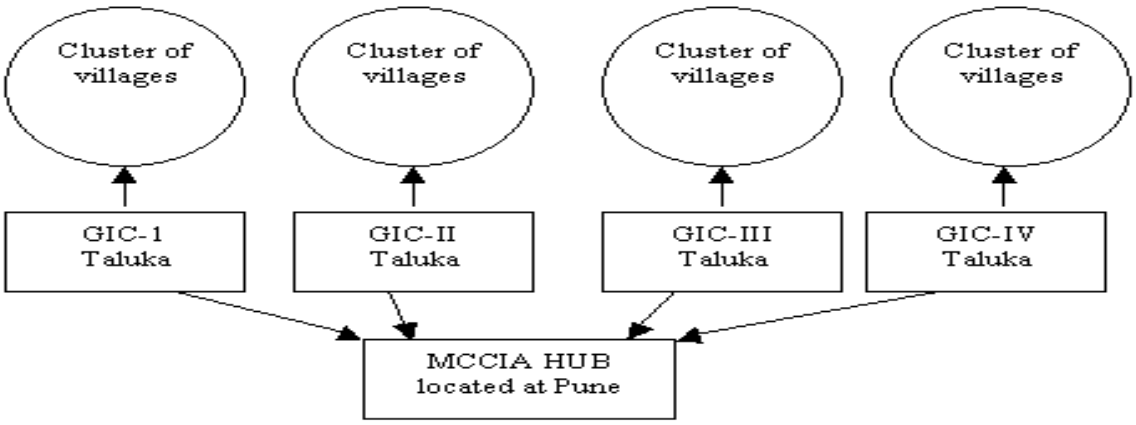

Figure 1: Gramin Information Centre (Taluka Level)

One GIC centre will cover about 20 villages with an average population of 3000 per village. The GIC is proposed to be located at the most convenient and approachable place at Taluka Level.

Section Five: Conclusion

One of India's major achievements has been self-sufficiency in food production. However agricultural sector which employs 57% of the work force is suffering from low growth rate for decades. If India wants to attain double digit growth rate it cannot be achieved without growth in agricultural and allied industry. Food processing industry has the potential of turning this sector into fast track of development. India's middle class segment will hold the key to success or failure of the processed food market in India. With higher level of income and increasing proportion of female work force participation will create demand for prepared foods. This is conducive to an expansion in demand for ready-to-eat Indian-style foods.

Retail outlets can create a market for processed food in India. Though India has well over 5 million retail outlets but the retailing industry is in primitive stage in the modern sense of the term. The first challenge facing the organized retail industry in India is the competition from the unorganised sector. Traditional retailing has established in India for some centuries. It is a low cost structure, mostly owner-operated, has negligible real estate and labour costs and little or no taxes to pay. They do not have the capability of investing in storage, creating network of procurement. Consolidations in retail chain are thus necessary to extract the gain from both size and scope and making necessary investment in storage and procurement. Creation of rural markets is a must to achieve this objective.

References

1. FAO AGRICULTURAL SERVICES BULLETIN Market Infrastructure Planning A guide for decision makers by John Tracey-White. Food and Agriculture Organization of the United Nations Rome 1999

2. Wholesale Market Guide - Food and Agriculture Organization of the United Nations.

3. CII-McKinsey Report on Food and Agriculture Integrated Development Action 1997.