Inclusive Development in Agri-Commodity Value Chain: Role of Institutions and Institutional Models

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Abstract
In the twenty first century, Indian agriculture has moved beyond self-sufficiency and it is globally oriented “industry” with inter sectoral linkages. In spite of modern technologies and policy support, the agricultural value chains are experiencing various bottle necks, (e.g.), lack of sufficient quantity and acceptable quality of raw material, adoption of the appropriate technology and practices, meeting working capital requirements for processing and operations, delivering strong marketing efforts, sharing benefits across the chain and sustainability issues. These bottle necks are primarily because of lack of efficient value chains that minimise and address the issues of information asymmetry and high transaction costs. The present paper examines the evolving environment for agri commodity businesses, identifies issues and challenges, and explores various institutional arrangements that have emerged over the years to address the above challenges. The study offers lessons and opportunities for intervention for institutions and policy makers that may help in better designing of agri commodity value chain in developing countries.

Keywords: Agribusiness, Value Chain, Institution, Inclusive growth, India
JEL Classification: Q10, Q13, Q16
Paper Classification: Conceptual/Theoretic Paper

Introduction
In recent times, Indian agriculture is transforming drastically into technology driven, innovation guided and business oriented “industry” that incorporates agrarian production, agri-science, and agribusiness. It associates firmly to the national and worldwide economy. Numerous individuals who work in farming really don’t take a shot at farming but they do agribusiness. In the changing times, the agribusiness offers many opportunities for growth particularly for the value driven chains.

Simply put, a value chain is a sequence that involves production, processing and marketing activities, where products undertake various activities of the chain in a particular order and, with each of activity, the product gains value. A typical agricultural value chain covers all the actors along the chain and involves the whole range of activities that are required to transform a product
from the initial input-supply stage, traversing through various phases of production, reaching markets and finally delivering goods to consumers.

![Diagram of a generic value chain](source)

**Figure 1. A generic value chain (Source: UNIDO, 2009)**

Such value chains cannot work in isolation and requires support not only from vertical players but also horizontal actors. With changing times, these chains have also seen a large number of changes at various levels and there is a need for adaptations and upgradation of existing chains and emergence of newer value chains.

**Transformation in Agribusiness Environment**

In recent times, it has been observed that the inputs like land and water have become limiting factors. The land ownership is becoming more fragmented and the average land holding size is showing a decreasing trend. This has made it essential for an intense focus on science and technology for increasing crop yields which has led to the need for numerous modern inputs for increasing production. As farmers see the advantage in using new technologies for increasing production and profits, there is a growing demand for latest state-of-the-art technologies including the harnessing of the potential of biotechnology. Labour becomes increasingly scarce and expensive in rural areas and this gives an impetus to labour-augmenting or labour-substituting technical change. There is a movement away from labour-intensive agriculture and towards capital use.

The growing off-farm food demand due to urbanization and the increasing use of externally purchased cash inputs has led farmers to commercialization, or producing for the market. A clear manifestation of this is the growing marketed surplus of the farmers. This growth in marketed surplus has led to substantial development of agri-commodities businesses - for handling this huge marketed surplus: including procurement/ purchase, transport, storage, processing, and marketing, as well as providing services such as finance, information and management. Commercialization has also led to diversification in the production and there is a shift to high value crops/ products such as fibres, spices, vegetables, fruits, flowers and livestock products. This has stimulated the development of various agri-commodity value chains.
The rapid growth in the incomes of the people resulting from economic liberalization and globalization is causing big changes in food consumption patterns. There is a shift away from staples such as cereals, and towards other foods such as livestock products, vegetables, fruits and edible oils (Gandhi & Zhou, 2010). It can be seen that the urban consumer expenditure on both livestock products and vegetables & fruits has crossed that of cereals in the last decade. This has created a substantial need to cater to these new demands. With the large and growing population, this is leading to huge new opportunities for agribusiness development.

Apart from the change in the consumption mix, there is also a growing demand for processed, branded and packed food of assured quality. Consumers are demanding convenient, processed and ready-to-eat foods, and food services. This is leading to numerous new opportunities for agribusiness development. Besides, as incomes rise, there is a reduction in the consumer price sensitivity in food. With consumers willing to pay high prices for quality food products, convenience, and food services, the scope and profitability of numerous agribusinesses involved with this has increased substantially. This includes national and international firms engaged in producing quality processed foods and various food services including fast foods.

The economic and agricultural transformation is leading to substantial increase in the rural incomes as well a huge expansion in rural demand and participation of rural consumers as buyers in the market. Thus, the rural areas are turning not only into large producer bases but also large consumer bases. With general growth and development there is huge strain on transport, ports, power, and other services. These substantially limit agribusinesses which need to connect to distant rural areas. Changes in agri-food systems affect the capacity of agro-industrial enterprises along with impacting input agribusinesses and production systems. Therefore to compete, all big and small agribusinesses have to innovate, reduce costs and bring in efficiency in its processes, builds in relationships with the chain partners while being more receptive to consumer needs.

Fit between the Existing Value Chains and Changing Agribusiness Environment

Over the years, agri commodity value chains have evolved but due the constraints and policy lacunae the chains have become inefficient and less profitable. Further, there have been drastic changes in Indian agribusiness and this call for redesigning agro supply chains. CII-McKinsey (1997) has indicated that there is tremendous scope and potential for development of agri commodity value chains in India. However, it has numerous constraints to its growth and development. These have been brought out by Gandhi and Jain (2012), Gandhi, Kumar and Marsh (2001); Boer and Pandey (1997); Gulati, Sharma, Sharma, Das and Chhabra (1994); Kejriwal (1989) and Srivastava (1989). These include the following:

<table>
<thead>
<tr>
<th>Production Constraints</th>
<th>Processing Constraints</th>
<th>Marketing Constraints</th>
<th>Financial Constraints</th>
<th>Policy Constraints</th>
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<tbody>
<tr>
<td>o Seasonality and Short period of availability -</td>
<td>o Obsolete technology</td>
<td>o Limited market size/</td>
<td>o Requires more working capital</td>
<td>o Processed/ packaged foods considered</td>
</tr>
<tr>
<td>o Fragmented supplies,</td>
<td>o Poor Efficiency and Quality</td>
<td>o Nascent markets</td>
<td>which is hard to get and involves higher interest rates</td>
<td>luxuries and they are taxed heavily - affects the economics</td>
</tr>
<tr>
<td>o Perishability</td>
<td>o Poor capacity utilization because of seasonality</td>
<td>o Changing customer preferences</td>
<td>o High investment requirements for latest technology</td>
<td>o Many special regulations – e.g. MPO</td>
</tr>
<tr>
<td>o Inferior quality, inappropriate varieties, residues</td>
<td>o Inappropriate for export and high value markets</td>
<td>o High costs for product and brand development</td>
<td></td>
<td>o Squeeze between input price support and output price control</td>
</tr>
<tr>
<td>o Competing markets- feed, fuel</td>
<td>o Limited market size/</td>
<td>o Long inefficient supply chains, small retail stores</td>
<td></td>
<td>o Ad hoc export and import controls</td>
</tr>
<tr>
<td></td>
<td>o Nascent markets</td>
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These constraints can be addressed through better designing of agri-value chain supply through effective institutional mechanisms/arrangements. The better designing can be done by incorporating elements of effective institutions as well as the learnings from various models that have been attempted to achieve better performance. The present paper is an attempt in this direction.

**Institutions, Innovations and Models: A Literature Survey**

The institutional approach to study economic problem originates from the works of Ely and Commons (Marothia & Phillips, 1985). Their approach was different from classical and neo classical approach that is based on utility and voluntary exchange of utility maximising individuals (Marothia & Phillips, 1985). This approach refers to the “institutions” as “working rules” that decides the course of collective action and order the relationship among individuals within society.

New institutional economics (NIE) use various approaches to justify and understand institutions, (see North, 1997; and Drobak & Nye, 1997). Property rights and transaction costs are two very well recognised approaches. While property rights argues for allocation of rights to a property or common pool resource to internalise the conflicts externalities (Coase 1937, 1960), transactions costs approach argues for minimising the costs of exchanges or transactions to do so. Coase (1960) argued that the excessive government involvement might prove inefficient if property rights are well established. He also argued that in absence of transaction cost, private property rights seem to be most efficient system for governing land use. In other cases, transaction cost approach is suggested.

Transaction costs refer to all costs associated with the creation, use and change of an institution. According to North (1997), an important challenge is to evolve institutions that minimise transaction costs and create incentives that favour collaborative solutions which utilise cumulative experiences and collective learning. Williamson (2000) classifies the institutions into two groups - “micro” and “macro”. The macro institutions are considered the rules of the game or the humanly devised limitations that models political, economic and social interactions. It includes the informal constraints – customs, traditions, taboos, sanctions, and codes of conduct; and formal rules – constitutions, laws, property rights. The micro institutions are the institutions of governance – market, quasi-market and hierarchical modes of contracting, or of managing transactions and overseeing activities such as economic activities through.

**Innovative Institutional models for Agri commodities Value Chain: Features and Analysis**

The literature and the experiences have highlighted some critical success factors or objectives for efficient performances, that can be used for examining these models and approaches (see Gandhi & Jain, 2011; and Gandhi, Kumar & Marsh, 2001). They are:

1. The effectiveness in organizing production and procurement from numerous small and marginal farmers in cost efficient manner.
2. The adoption of modern technology and practices by the producers to ensure required quantity and quality of the raw produce at a reasonable cost
3. The use of modern processing technology for producing quality products, along with meeting high fixed capital and working capital requirements.
4. The delivery of strong marketing effort in meeting consumer demand and compete in open nascent product markets for processed agri-foods

5. Bring commitment, sustained benefit to the main stakeholders including producers, consumers, supply-chain members and investors by creating an organization with appropriate ownership, management and control structures.

**Research Gaps**

The challenges and complexities arising from constraints mentioned above on the one hand, and the need for their continued growth with multiple objectives including efficiency, profitability, sustainability and contribution to rural and small farmer development on the other, creates the demand for innovative approaches and institutional models for the organization of this agribusiness activity in India. Fortunately, many models and approaches have emerged and can be evaluated to provide lessons to design an efficient agri commodity value chain. Following section gives a brief overview of the models (see Gandhi & Jain, 2011 for details)

**Research Objectives and Methodology**

The present research aims at studying various models that are in practices, prepare case studies on them and draw lessons from the various models. Further, an attempt is made to draw elements of effective institutions from existing literature (particularly New Institutional Economics) and analyse how can existing models be adapted in changing times. The clubbing of the two may help draw a road map for effective institutional framework for creating effective agri-commodity value chain.

The unit of analysis is various value chain models (e.g. Amul). The research uses case studies to critically explore the challenges associated with agribusiness development and understand the structure and implementation framework along with performance of various models. The case studies are prepared using secondary data and complimented by field visits to understand various models’ functioning and execution. The secondary information is collected through literature available in form of books, journals, newspapers, magazines, online databases and internet. The information so collected is analysed through descriptive and tabular methods to draw various conclusions along with new insights.

**Lessons and Key Takeaway from Case Studies and Field Visits**

An attempt has made to compare and evaluate different models (see Table 1). As can be seen, the strengths vary substantially across the models. Whereas Amul and ITC e-choupal are strong in reach to small farmers, Suguna and Pepsi are strong in ensuring adoption of the right technology for quality and quantity. Nestle, Pepsi and Amul are strong on investing in modern processing technology as well as at delivering a strong marketing effort to reach a huge food market. Amul is strong on commitment and benefits to all stakeholders, Suguna is good at it too, and Pepsi is reasonably good.
### Table 1: Broad Comparison of Different Models on Performance Parameters

<table>
<thead>
<tr>
<th>Agri Business Model</th>
<th>Unique Feature</th>
<th>Reaching numerous small resource poor farmers &amp; procuring quantity</th>
<th>Ensuring adoption of good technology by farmers for quantity &amp; quality</th>
<th>Use of modern processing technology &amp; meeting the capital requirements</th>
<th>Delivering strong marketing effort</th>
<th>Organization of ownership/management and control to bring benefits to all stakeholders</th>
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<tbody>
<tr>
<td><strong>Milk and Milk Products</strong></td>
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<td></td>
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<tr>
<td>AMUL</td>
<td>Institutionalised Cooperative Culture,</td>
<td>Strong</td>
<td>Reasonable</td>
<td>Strong</td>
<td>Strong</td>
<td>Strong</td>
</tr>
<tr>
<td>Nandini</td>
<td>Cooperative with more powers to district union</td>
<td>Good</td>
<td>Limited</td>
<td>Limited</td>
<td>Reasonable</td>
<td>Good</td>
</tr>
<tr>
<td>Nestlé</td>
<td>Commission agents internalisation</td>
<td>Limited</td>
<td>Reasonable</td>
<td>Strong</td>
<td>Strong</td>
<td>Limited</td>
</tr>
<tr>
<td>Heritage</td>
<td>Reverse Logistics</td>
<td>Good</td>
<td>Limited</td>
<td>Good</td>
<td>Good</td>
<td>Limited</td>
</tr>
<tr>
<td>Mother Dairy</td>
<td>Government run model on lines of AMUL</td>
<td>Limited</td>
<td>Limited</td>
<td>Good</td>
<td>Good</td>
<td></td>
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<tr>
<td><strong>Poultry</strong></td>
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<tr>
<td>Suguna</td>
<td>Providing Newer Source of Livelihoods</td>
<td>Good</td>
<td>Strong</td>
<td>Strong</td>
<td>Good</td>
<td>Good</td>
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<td><strong>Food Grains</strong></td>
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<tr>
<td>ITC e-Choupal</td>
<td>ICT Adoption to address Information Asymmetry, and Asset specificity</td>
<td>Strong</td>
<td>Limited</td>
<td>Strong</td>
<td>Strong</td>
<td>Limited</td>
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<tr>
<td>Cargill</td>
<td>Hub and Spoke Model, One Stop Solution</td>
<td>Limited</td>
<td>Reasonable</td>
<td>Strong</td>
<td>Limited</td>
<td>Limited</td>
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<tr>
<td><strong>Spices</strong></td>
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<tr>
<td>APMC Unjha</td>
<td>Modern Semi Government, Immediate Cash Payment for Produce</td>
<td>Reasonable</td>
<td>limited</td>
<td>Reasonable</td>
<td>Strong</td>
<td>Limited</td>
</tr>
<tr>
<td><strong>Fruits and Vegetables</strong></td>
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<tr>
<td>Safal Market</td>
<td>Online</td>
<td>Limited</td>
<td>Limited</td>
<td>Good</td>
<td>Limited</td>
<td>Limited</td>
</tr>
<tr>
<td>HPMC</td>
<td>Government Run Model, Competitive, Capacity Problems</td>
<td>Reasonable</td>
<td>Limited</td>
<td>Good</td>
<td>Poor</td>
<td>Poor</td>
</tr>
</tbody>
</table>

(Continued)
As shown in Table 1, cooperatives have often done better in bringing benefits to the rural poor, sometimes with the assistance of NGOs as intermediaries. The AMUL and similar cooperatives have cut transaction costs for itself on three counts—information asymmetry, opportunism and asset specificity—by evolving grass root institutions and governance structures which harmonise exchange relations across parties. As indicated in Table 1 above, the AMUL cooperative model is one promising approach that ensures benefits to small farmers and provides them ownership of the enterprise. However, the cooperative models require overcoming political, legal and managerial limitations.

The evaluation of various models reveals that for the better adoption of technology, not only provision of best available technology is required, but its best implementation is must. Amul though a follower in good technology, implements it on mass basis and put it in use in a much better way. The reason seems age old trust and experience with the system. Other private models may have superior technology but it is difficult for them to know the adaptability in first place. With experience and limited scale of McCain Foods and Pepsico seem getting good results. One very good thing noticeable is in Suguna model, is that, it uses of sophisticated technology for processing and burden farmers with use of very basic knowledge in chick care. So, the important thing which come out of the study on this aspect is there is enormous need of modern technology but adaptability and applicability of it is more crucial.

Various models procure agri-produce from their respective farmers and have good processing technology to generate various useful products. Private players like Pepsico, McCain Nestle and Suguna had excellent processing technology. But when it comes to HPMC, Nandini and other players, the raw material quantity and quality hinders them from getting to heavy capital intensive processing technology. HPMC plants work at only 15-20 percent of their capacity which stops them from upgrading much. It is Government body so they are still putting in money to have better processing technology. Amul uses good processing technology and keep on upgrading it to increase its range and quality of product.

Little information is available about the modernization of processing technology adopted by modern agri value chains agroindustries. There is gradual upgradation of facilities at processing plants of agroindustries to produce products that matches the markets. AMUL earlier was making only few milk products and mainly concentrated on pouch milk, milk powder and ice creams. But with changing consumer preference it moved to whole range of products like srikhand, chaas, chocolates, flavoured milk etc. Similarly, Pepsico used to make chips only but now makes other products with potato as well. McCain, Suguna etc., are adding on its present facilities to have more products. ITC, HPMC and other players are also modernising their processing facilities depending upon their need and market demand. APMC is not in processing agri-produce, but it
is modernising its system of procurement and transaction. A very good example here is APMC Unjha. Thus, it appears that private players are way ahead in processing technology upgradation but AMUL also competes well. The others players are market prone and will modernise with growing market.

It is very difficult to compare models on basis of their efficiency in fulfilling their working capital requirements. The models under study needs to have best of the distribution and marketing strategies and channels for implementing those for effective outcomes. It has been found that Amul use very simple but highly effective advertisement campaigns as compared to star studded campaigns of Nestle or Pepsico. It keeps the tag of grass root player intact and is highly successful. Other players have got their presence felt and created supremacy in their respective niches. The potential of Indian market is huge in terms of growth and expansion thus there is little place for everybody. But one can say that Amul, Pepsico, ITC and Nestle models are highly successful in marketing strategies for their produce.

Ownership, at times play a very important role in performance of the models because the producers are first constituent of the supply chain and the ownership and operational freedom have important effects on any human being. Amul model gives both ownership and operational freedom to the producers. There is little bit of control through village society but it is mutual control, just like SHG. This control also is well compensated by higher value of the produce and continuous procurement. In contract farming models, the ownership is up to procurement and certainly not till the product is processed and sold in the market, but assured purchase and high income compensated this drawback. Quality is very important for companies due to their market obligations so the control is somewhat with company. This brings about quality and productivity enhancement along with experiencing high cost inputs. So it depends upon the area, the type of crop/commodity, the culture and parties to actually determine the best model and it will not be right to say that the model with which ownership remains with producer is good.

It has been found that the supply contracts with small farmers are rarely formal and there is lack of legislation in this regard. Most of the contracts are non-enforceable in India – as elsewhere in developing countries – remaining agreements that are only morally-based. In order to make contract farming a win-win case, there is a need of longer-term relationships between agro-industries and farmers through transparent contract terms, fair pricing, effective extension, and good marketing. The institutionalisation of process of exchange between the producers and private party through newer governance mechanisms and public private partnership may yield benefits. Pepsico, Mcain and ITC have shown the potential of such arrangements. It is critical that alternative agro-industrial models are encouraged and receive strong Government backing, especially those models which contribute positively to rural employment, poverty alleviation and sustainable development.

Conclusions and Suggestions

If the development objectives of agri-commodity businesses are to be served, small farmers must benefit from this growth, and the landless should at least benefit indirectly. The study highlights that the good institutional models must address the critical issues of information asymmetry, opportunism and asset specificity—by evolving grass root institutions and governance structures which harmonise exchange relations across parties. Further, in order to make contract farming a win-win case, there is a need of longer-term relationships between agro-industries and farmers through transparent contract terms, fair pricing, effective extension and good marketing.
The public sector and policy makers can undertake the following policies to improve the institutional environment, thereby facilitating the formation of large number of institutions and organisations. Farmer Producer Organisations may act to enhance small farmers’ integration in agri commodity value chains in the following ways:

- Better access to timely and adequate finance
- Utilise scale to procure inputs at lower prices
- Enable market linkages
- Farm mechanisation through integrated production
- Build capacity in production/processing/marketing
- Collate produce and more selling power
- Improve infrastructure and telecom networks
- Stimulate private market information systems:
- Promote commodity exchanges:
- Integrate marketing and value chain aspects into existing extension systems:
- Introduce and enforce standard marketing contracts
- Promoting partnerships between small producers and agro-businesses or commodity wholesalers
- Help small farmers to comply with market standards and supermarket requirements
- Enhancing the management capacities of small farmer associations
- Legal Support and facilitation

**Limitations & Scope of Further Research**

The study draws lot of its information through case studies, complimented by field visits. The information so collected is subjective in nature, and may involve bias on various counts. Models from different subsectors are difficult to compare, e.g., Amul model for milk compared with ITC e choupal. This has been done due to dearth of good innovative models in a sub sector. The paper broadly aims at theory building and test if the critical success factors, as identified by the literature are really important for the effective performance of institutional models.

The present study can be extended further with inclusion of other models. Further, the models can be compared using primary data involving farmers, processors, marketers and consumers. The outcome of the study can then be statistically justified.

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**Author’s Profile**

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