CHAPTER III: LITERATURE REVIEW

The present research adopts a focus on the model-based literature scanning that addresses the current "supply chain practices" and problems encountered by the entrepreneur, policy makers as well as farming communities. An alternate term in the research literature is "supply network design" used by some authors to signify that supply structures are often more complex than that suggested by a chain. The present work has used these and other related keywords, and a limited review to articles that describe Agro Supply Chain Design Models. Food Supply Chain Design Models and practices are in a special class and distinct from general Supply Chain Design Models, due to the differences in cost structure, perishability, short shelf life and complications of intrastate, interstate and international logistics. The above activities involved interface of several legal setups, laws and by-laws, often overlapping and confusing in nature. These complexities further make the condition of food supply chain retarded and pathetic. With the above problems in mind, extensive research scanning was conducted by using library databases covering the major journals in management science, law, agriculture, and operations management.

This chapter reviews the recent conceptual literature concerning the concepts, theories, and the empirical literature consisting of studies made earlier on selected issues that need to be considered in designing policies and programs to improve SCM, Food SCM, and Backward Integration Strategy for Food Processing Firms, Policy and Legal Frameworks in India.

The thesis has made reviews of recent published literature on selected issues that need to be considered in designing policies and programs to improve farmer-to-market linkages in Indian agricultural setup. Since the "Green revolution" has received wide attention in the professional and popular press in the early 1980s, this study starts with a careful review of that literature, further taking into consideration the effect of post liberalization era of 1990 onwards. Yet expectations regarding the role of Foreign Direct Investment (FDI) in organized retail, Contract farming and deregulation of food supply policy remain controversial and debatable. The above apprehension has arisen due to lack of awareness on the part of Indian population in general and policy makers in particular.
The present study has made review of relevant published studies which have came up with pertinent findings in the area of agricultural linkages and sound policies for the law makers as well as administrators. Given the rapid pace of change in marketing systems in developing countries, primary emphasis is placed on researches since 2000. The literature review has been presented in the order of the following subject areas:

1. SCM
2. Legal Policy and the Modern Food SCM
3. Practice of Contract Farming in India
4. Strategic advantage of Food SCM and Backward Integration
5. Government’s Role in Promotion of Agriculture and Agribusiness
6. Public Distribution System (PDS) and Food Security
7. Environment Friendly Food SCM

After the review of the researches in the above subjects, the research gap has been identified.

3.1 SCM

Some important writings in the subject area are Reardon and Timmer (2006) on retail modernization.

The study of SCM is intrinsically collaborative (Bowersox et al. 1999), a cross channel, in-depth case study allows analysis at multiple layers within the chain and provide insight into human behaviour in the natural environment (Scandura and Williams 2000). Bedsides the above approaches, the area involves multidisciplinary and inclusive treatment.

Firstly, the model of supply chain as advocated by the Porter (1998), who describes the present business model saying single companies are not able to survive on their own; they can survive only as part of the supply or value chain in an increasingly competitive business environment. Christopher (1993) also stressed that it was the supply chain, which would bring true competitive advantage to companies, by satisfying customers’ needs and lowering operating costs. Therefore the role of SCM is critical in managing issues that arise across organisational boundaries, improving corporate competitiveness and profitability in today’s operating...
environment (Wood, 1997; BSR, 2001). Christopher (1998) emphasised that individual businesses no longer compete as solely autonomous entities, but rather as supply chain.

Secondly the definition of SCM is taken from Handfield and Nichols (1999) who have laid stress on material and information flowing up and down the supply chain, while Christopher (1992) has emphasised the role of upstream and downstream linkages, in the processes and activities that produce value in the form of products and services in the hands of the ultimate consumer. Porter (1997) has developed a model on the lines of improving quality, speed order fulfilment, and introduce new product and process technology. Ayer (2000) has explored the SCM in more than the physical movement of goods from ‘earth to earth.’ It is also information, money movement, and the creation and deployment of intellectual capital.

Particular attention was given to the economic issue of firm objectives and the advantages of complying with the legal policies of states. Additionally, the issue of a food processing firm’s vertical and horizontal size, the boundaries between a firm and its customers and suppliers, was addressed. Need and advantages of backward integration as a strategic tool for the benefits of food processing industries are focussed. An important concern in Indian agriculture is that while “front end” activities including wholesaling, processing, logistics, and retailing are rapidly expanding and consolidating, the “back end” activities of production agriculture have been continuously fragmenting as mentioned by Gulati (2008).

The challenges and the opportunities lie in linking the two ends and ensuring viable business opportunities for both farmers and agri-businesses, which will further strengthen the food sustainability of India in particular and global community in general.

Following this, the literature on strategy was reviewed. This literature builds upon the economics of industrial organizations while incorporating ideas from business management fields such as marketing, finance, and organizational behaviour. The SCM literature was then reviewed. SCM is a combination of strategy and logistic concepts.

The nature of a firm is impacting the authority and ability to resolve problems between activities arising from unforeseen contingencies when a contract was made (Tirole, 1993). Similarly, large multi-divisional firms are often legally a single entity,
but actually function as separate firms in their operations and management. This raises the issues in the managerial accounting field where practical analytical tools for achieving profit-maximizing behaviour are developed.

### 3.2 Legal Policy and the Modern Food SCM

The SCM literature defines a Supply Chain as a set of facilities, technologies, suppliers, customers, products, and methods of distribution (Arntzen et al., 1995). However, the basis of SCM is logistics as opposed to accounting or strategy. Logistics has been defined as the process of planning, implementing, and controlling the efficient, cost-effective flow and storage of raw materials, in-process inventory, finished goods, and related information from point-of-origin to point-of-consumption for the purpose of conforming to customer requirements. (Lambert and Stock, 1993)

Logistics is the mechanism allowing a supply chain of multiple entities, whether divisions within the firm or entirely separate legal entities, to be managed as a single, profit maximizing firm.

Although the strategic concept of a value-chain and the logistics concept of SCM appear to be very similar, there are notable differences. Logistics is the efficient coordination of material and information flows between customers and suppliers in a supply or value-chain. Strategy exploits and configures relationships among players in the value or supply chain to achieve sustainable competitive advantage. Engaging in a logistics strategy of SCM is an overt strategic choice by a firm to change its value-chain. A fundamental barrier to the application of SCM, as well as other new managerial techniques, is the traditional organization of most firms (Sloan, 1989). Firms and supply chains are made up of separate production, distribution, and sales organizations often with conflicting objectives. To alleviate these conflicts, firms and managers must view their activities as a continuous flow of both products and information with the focus being to accelerate them (Sloan, 1989). This focus on product and information flows is often depicted through the concept of a pipeline.

Scott (1995) has carried research on marketing of smallholder crops in developing countries which has traditionally been strongly supply-driven, focusing attention on ‘finding market outlets while paying scarce attention to consumers’ demands. Most early studies on international trade refer to coarse grains and staples and focus on the efficiency of traders and collectors networks. Chain cooperation was
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usually limited to the delivery contracts, considering external relations within the framework of interlocked transactions and sub-contracting arrangements (Glover 1990; Key and Runsten 1999).

3.3 Practice of Contract Farming in India

There have been some studies of the contract farming system in India recently. Describing mainly the contract system and operations of the companies, most of the studies have looked at the economics of the contract farming system in specific crops, compared with that of the non-contract situation and/or competing traditional crops of a given region, e.g. in gherkins (hybrid cucumber) in Tamil Nadu (Chidambaram, 1997), in Karnataka (Subrahmanyam, 2000), Andhra Pradesh (Haque, 1999; Dev and Rao, 2004), in tomato in Punjab (Bhalla and Singh, 1996; Haque, 1999; Rangi and Sidhu, 2000), and in Haryana (Dileep et. al., 2002). It is found that contract production gave much higher (almost three times) gross returns compared with that from the traditional crops of wheat, paddy and potato in case of tomato (Bhalla and Singh, 1996; Rangi and Sidhu, 2000), and tomato and onion in the case of gherkin (Chidambaram, 1997) due to higher yield and assured price under contracts. Besides the above kinds of studies, a wide definition of contract farming is provided by FAO typically flexible enough to match to any kind of contract farming scheme, which seems to be the most officially used categorization in the literature.

Dr. Sukhpal Singh (2000) has suggested various institutional mechanisms for agricultural development in India. In his paper published under the title “Understanding Practice of Contract Farming in India: A Small Producer Perspective”, he examines the nature, problems and potential of contract farming (CF) in India from the perspective of small and marginal producers, under commercialized and globalised agriculture as small farmers with holdings of less than 2 ha accounted for 82 percent of all operational holdings in 2000/01, and 39 percent of the total area. Contract farming figures are given as an institutional arrangement for agricultural development in the fields of inputs, product exchange, and product upgrading, the last referring to research and innovations (Christensen, 1992).
3.4 Strategic advantage of Food Supply Chain and Backward Integration

Referring to meeting Quality Requirements by using contracts, Henry, Rachael E. Goodhue, and Leo K. Simon (2011) write that often processors and other buyers want the agricultural output they purchase to possess specific quality attributes. This can be met with the use of Contract Farming.

There is a rich, interdisciplinary literature devoted to managerial decision making. The notion of firm strategy surfaced about 20 years ago as a factor to consider when evaluating decisions (Shank and Govindarajan, 1993). Strategy became the fundamental ingredient for evaluating firm decisions as a result of Porter's (1980) work. Elevating the importance of strategy, Porter (1980) argued that non-quantifiable strategic concerns often are more important than quantifiable costs and benefits derived from cost analysis or managerial accounting data. Porter successfully rooted strategic analysis into firm decision-making.

The value-chain concept and its strategic role were also introduced by Porter (1985). A value-chain represents the collection of activities that firms perform in different functional areas. Porter (1985) also argued that one firm's value-chain is linked with value-chains for its buyers and suppliers. This established the notion that a firm, legally defined, does not operate as an isolated entity. To be successful, a firm's strategy must consider buyer and supplier relationships. Furthermore, competitive strategy, whether deliberately chosen or not, should enhance the entire supply chain to achieve a sustainable competitive advantage.

The literature review has expanded on Porter's ideas of the value-chain. Oster (1994) includes the industrial organization field's notion of vertical linkages. According to Oster (1994), firms have incentives to develop vertical linkages which, in effect, extend the firm's managerial boundaries. These incentives include taxes and regulatory issues, transaction-cost savings opportunities, and improved access to information. From a strategic perspective, information access and transaction costs are the relevant issues. A successful vertical linkage does not require or imply ownership. It does, however, require profit maximizing behaviour across the relationship. In other words, the vertical relationship must be managed as if it were a single firm regardless of the equity stakes.
A pertinent point for contract farming to be more successful as a mechanism is desirable only if the crop is perishable, non-bulky, perennial in nature, needs heavy processing and strict quality adherence as mentioned by Goldsmith (1985). Further the Food Processing Demand Drivers is illustrated in figure 3.1 below, which is developed in line with the drivers of SC Model

![Figure 3.1 Food Processing Demand Drivers](image)

### 3.5 Government’s Role in Promotion of Agriculture and Agribusiness

Gulati (2005) attributes the success of Green revolution in India to the price incentives provided to farmers, the dynamism of the national research system and the availability of credit and inputs such as improved seeds, canal irrigation and fertilizer. The success of this coordinated approach demonstrated that even in a country as diverse as India, the government can play an important role in setting the agriculture sector on a high growth path. The role of government is further laudable in promotion of agro processing industry.

A recent study (World Bank 2005) draws attention to the concentration of benefits of Minimum Support Price (MSP) announced by the government of India in a few states where wheat and rice procurement was high. Nonetheless, food security
and hunger remain a problem particularly in rural areas and in less-advanced states. Besides, under nutrition of children continues to be pervasive with 53.2 percent of children under five falling in this category by international standards (World Bank 2006).

Jackson (2006) has synthesized various chain-relevant views in terms of their impact on government policy and vice-versa. Although much of the contemporary research addresses market failure and the associated role of government towards the firm and the market, the above subject and the backward linkages of food processing organizations have rarely been addressed in the context of supply chains.

Cramer (2005) reports on a survey of multinational firms that sought to impose corporate social responsibility throughout their supply chains. Firms reported that the first step in doing so was identifying the supply chain, and that this was easier for firms serving niche markets than “mainstream” markets. Subsequent steps involved formulating and imposing standards on suppliers, which was again easier in differentiated markets. Cramer, J.M. (2005) also concluded that agro-food supply chains were easier to identify and standardize than industry-based ones, due to ease of tracing back to the raw material. Third party certification services play a significant role in Cramer’s sample of firms, particularly in differentiated product delivery. However, the causality is not clear, in that differentiation may indeed be enabled by certification, rather than inviting it as an improvement in SCM.

3.6 Public Distribution System (PDS) and Food Security

The concept of food security is heavily depending on the government food policy and advancement in technology of food supply. Further the concepts of food security have undergone considerable modification in recent years. Food buffer stock and stability in supply are considered good measures of food security till the seventies and achievement of self-sufficiency was accorded high priority in the food policies of India.

Food consumption and calories intake of the weaker section groups is now given paramount importance in assessing food security. Historical Evolution of food security and evaluation of the concept of buffer stock policy and its implications, have been studied by Acharya K.C.S. (1983). The above study has covered various issues
relating to provision of food security system in India. It was noted that price stabilization was beyond the capability of the buffer stock policy, and therefore suggested to include coarse grains in the buffer stocks. But it is not practicable of their high preservation costs in the warehouse.

### 3.7 Environment Friendly Food SCM

A number of authors have referred to the green supply chain over the past decade due to emerging environmental management topics. The growth in this green supply chain literature extends back to the early 1990s with the advent of corporate environmental management, environmentally conscious manufacturing strategy, and SCM literature (Zhu and Sarkis, 2006). Holt and Ghobadian (2009) examined the level and nature of greening the supply chain (SC) in the UK manufacturing sector. In addition the work explores the driving forces behind environmental behaviour, the specific management practices that result, and the relationships between them. Hu and Hsu (2010) explore factors that are critical for implementing green supply chain management (GSCM) practices in the Taiwanese electrical and electronics industries relative to European Union directives, and extract 20 critical factors along four dimensions (supplier management, product recycling, organization involvement and life cycle management).

Trowbridge (2001) distinguished between internal and external drivers for the implementation of GSCM at a chip manufacturer. Internal drivers include the willingness to improve risk management due to potential interruptions in the supply chain, and the collaboration with suppliers to find alternative materials and equipment that minimize environmental impacts. External drivers include customers, investors and non-governmental organizations.

Rao (2007) investigated the concept of greening the supply chain initiative in the Philippine context with the help of an empirical survey. This work provides insight into how the Philippine SME population is dealing with environmental matters in a generic sense. Reinhardt (1998) observed that ultimately environmental quality can only be ensured through governmental regulation, as the environment is a public good. People and especially companies will not spend any more on environmental issue than is required to achieve their own maximizing economic goals, as these investments would not benefit themselves in total. So the need for green practices is
often not just a matter of choice, but is required by law. Lee and Rhee (2007) developed four types of environmental strategies: reactive, focused, opportunistic, and proactive. Reactive strategies are applied for low levels of environmental responsiveness, focused strategies are applied for high levels of environmental management, opportunistic strategies are applied for a medium level and proactive strategies are applied to the latest environmental practices. Hervani et al. (2005) identified more than 40 metrics to measure the environmental performance of a company, ranging from air emissions to energy recovery and recycling.

Vachon and Klassen (2006) extended the "collaborative paradigm" proposed by a number of experts like Dyer and Singh, (1998); Chen and Paulraj, (2004); Cachon and Fisher, (2000); Lee et al., (2000) beyond a supply chain score operations. They divided green practices into two dimensions of environmental collaboration and monitoring. Pun et al. (2002) investigated the critical processes and factors that affect Environmental Management System (EMS) planning and proposed a five stage EMS planning framework starting from strategy formulation to system implementation and evaluation.

Holt et al. (2001) identified seven categories of green supply chain initiatives for improving an organization’s environmental performance: governments, trade associations and sector bodies, partnership groups, individual companies, business support organizations, not-for-profit green business-support organizations, and green business clubs. Bowen et al. (2001) analyzed the relationship between supply management capabilities and green supply practices and identified internal drivers for implementing green supply policies (strategic purchasing and supply, corporate environmental proactivity, and supply management capabilities). Bowen et al. (2001) also analyzed implementation patterns of green supply and found three types of green supply, including product based green supply and advanced green supply. Ravi and Shankar (2005) analyzed the barriers of reverse logistics activities using the Interpretive Structural Modelling (ISM) methodology. Kannan et al. (2008) proposed an integrated model which analyzed and selected green suppliers based on their environmental performance using ISM and Analytic Hierarchy Process (AHP) modelling.
They concluded that adoption of GSCM practices in different industrial contexts is not uniform across the four industries. Sheu et al. (2005) proposed a multi objective programming model which optimizes the operations of both forward logistics and corresponding used-product reverse logistics in a given green-supply chain and presented a case study in which the proposed model improves the aggregate net profits by 21.1%. Sarkis (2003) presented a strategic decision framework to evaluate Green Supply Chain alternatives using an analytical network process.

Walker et al. (2008) reviewed the literature and identified the factors that drive or hinder organizations to implement green SCM Initiatives; these include internal drivers such as organizational factors, and external drivers such as regulation, customers, competitors, society and suppliers. Based on interviews conducted at seven different private and public sector organizations, they further identified the internal barriers such as cost and lack of legitimacy, as well as external barriers such as regulation, poor supplier commitment and industry specific barriers. Rao and Holt (2005) observed that greening different phases of the supply chain leads to an Integrated Green Supply Chain, which in turn leads to competitiveness and better economical and operational performance. Lee (2008) identified the main drivers for companies to participate in GSCM practices as buyer influence, government involvement and green supply chain (GSC) readiness. Wee and Quazi (2005) identified seven critical factors in their research into environmental management: top management commitment; total involvement of employees; training; green products/process design; supplier management; measurement; and information management.

3.8 Research Gap

It is quite clear that the studies reviewed so far in the field of Food SCM and their legal aspects through backward integration have although covered different aspects but are very limited in number. Majority of these studies referred to were either related to some aspect of Food, SCM in general or about a particular Food SCM in a state of the country. None of the study, so far reviewed, was specific in discussing different ways of adding value in the Food SCM through backward integration and improving the legal setup in the given
state of affairs. In view of the limitations of the studies and the developments that have recently taken place at the national and international level, a new set of studies are needed to explore the emerging opportunities through Food supply chain. There remains a wide gap for taking up fresh research in the area of Food supply Chain Management for Backward Integration especially in the present context for policy interventions and reform in the legal framework.

References


7) Baumann Pari (2000), Equity and Efficiency in Contract Farming Schemes: The Experience of Agricultural tree Crops, Overseas Development Institute


