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Logistics Support for Agro business in context of the Supply Chain of Perishables

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Abstract: Bangladesh economy is primarily dependent on agriculture. About 84% Of the total population lives in the rural areas and is directly or indirectly engaged in a wide range of agricultural activities. Agriculture contributes about 20.29% to the country's GDP (23%) About 43.6% of the labor force is employed in agriculture with about 57% being employed in the crop sector.

Bangladesh has resource endowments to develop agro-based industries. It has rich alluvial soil, a year-round frost-free environment, available water and an abundance of cheap labor. Increased cultivation of vegetables, spices and tropical fruits now grown in Bangladesh could supply raw materials to local agribusiness for both domestic and export markets. Progressive agricultural practices have improved marketing techniques. Modern processing facilities have raised the quality of agribusiness and expanded production levels significantly. Priority agro products are canned juices, fruits, vegetables, and dairy and poultry products.

Keywords: Agro food product, Supply chain management, logistics of the supply chain, Inventory management.

I. Objectives of the Study

Objective of this study is to develop a logistics activity mix which will result in the highest possible return on investment over time. Keeping the imperatives in view, the following proponents have been embedded in this paper:

- Snap of the main supply chains for agro food products and discussed the important features in Context of consolidation and distribution ;
- Status of harvest handling and cold storage logistics of the supply chain;
- Logistics management of the supply chains;
- Main causes of success of agro food products supply chains;
- Salient issues and impediments in enhancing performance of consolidation and distribution system for agro food products;
- To identify findings and observations of agro food products supply chains;
- Suggestions.

The key feature attributes of the supply chains are:

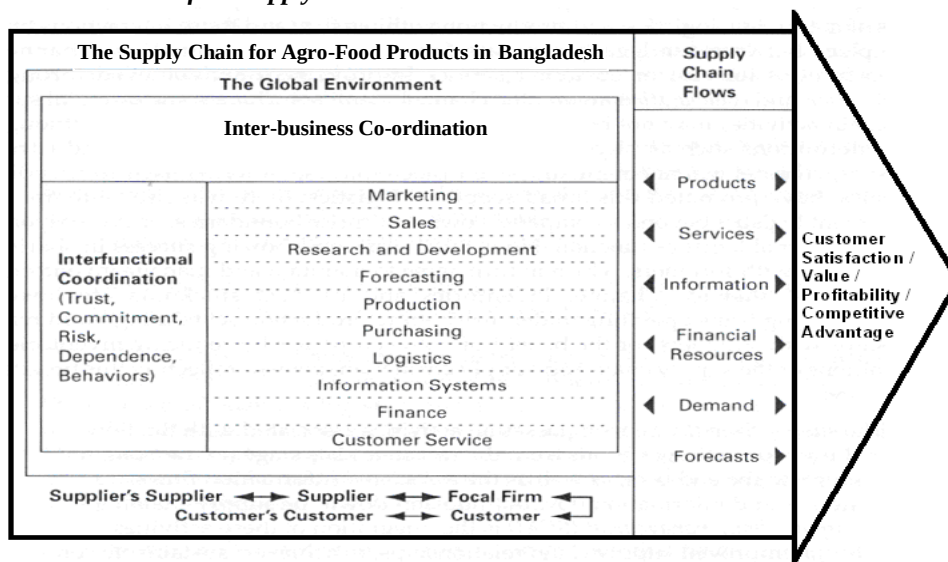


Figure 1: A Model of Supply Chain Management

- A. Maintain customer service standards:**
 - Supply chains determine customer needs and wants for logistics customer service;
 - Determine customer response to service;
 - Set customer service levels.
- B. Transportation:**
 - Supply chains select mode and transport service;
 - Consolidate freight chart;
 - Select carrier route;
 - Prepare vehicle scheduling;
 - Choose appropriate equipment;
 - Process claims document
- C. Inventory management:**
 - Supply chains formulate raw materials and finished goods stocking policies;
 - Prepare short-term sales forecasting;
 - Determine product mix at stocking points;
 - Determine number, size, and location of stocking points;
 - Formulate just-in-time, push, and pull strategies;
- D. Information flows and order processing:**
 - Supply chains prepare sales order-inventory interface procedures;
 - Use appropriate order information transmittal methods
 - Follow ordering rules

II. Post Harvest Handling and Cold storage Logistics of the Supply Chain

Post harvest handling and cold storage logistics are a collection of functional activities (transportation, inventory control, etc) which are repeated many times throughout the channel through which raw materials are converted into finished products and consumer value is added. Because raw material sources, plants, and selling points are not typically located at the same places and the channel represents a sequence of manufacturing steps, logistics activities recur many times before a product arrives in the marketplace. The following figure exhibits post harvest handling and cold storage logistics

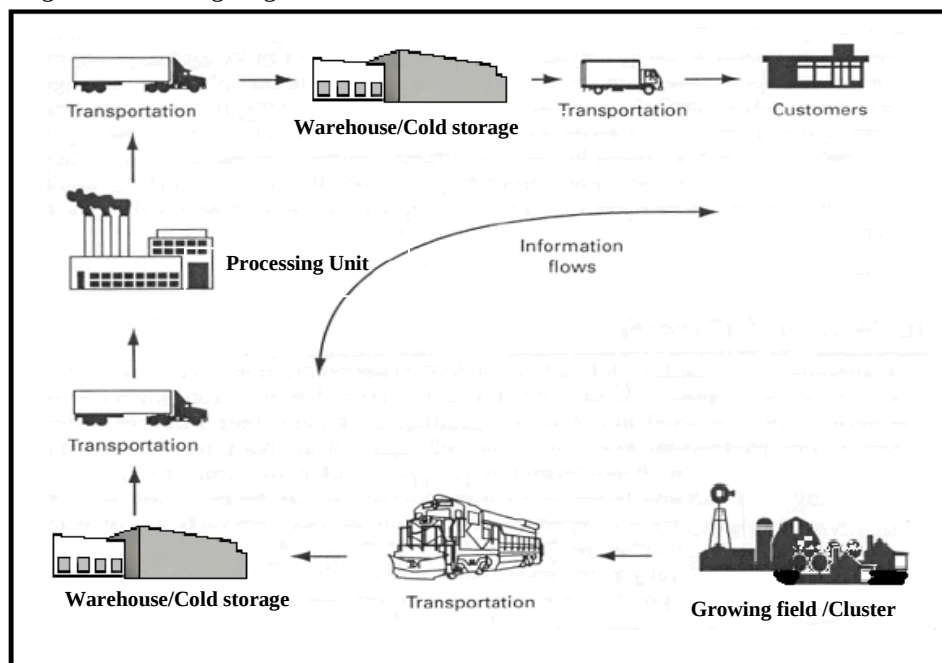


Figure 2: Graphic view of Post-harvest handling and Cold-Storage logistics

A single firm doing business of agro food products in Bangladesh is not generally able to control its entire product flow channel from raw material source to points of the final consumption, although this is an emerging opportunity. For practical purposes, the business logistics for the individual firm has a narrower scope.

In Bangladesh physical supply channels agro food products are impeded by time and space gap between a firm's immediate material sources and its processing points. Similarly, the physical distribution channels have also the time and space gap between the firms' processing points and its customers. Due to the similarities in the activities between the two channels, physical supply (more commonly referred to as materials management) and

physical distribution comprise those activities that are integrated into business logistics. Although it is easy to think of logistics as managing the flow of products from the points of raw material acquisition to end customers, for many firms there is a reverse logistics channel that are managed as well. The life of a product, from a logistics viewpoint, does not end with delivery to the customer. Products become damaged, or nonfunctioning and are returned to their source points for disposition. Packaging materials may be returned to the shipper due to environmental regulations or because it makes good economic sense to reuse them. The reverse logistics channels are utilized by the supply chains. The supply chains terminate with the final disposition of a product. The reverse channels are considered to be within the scope of logistics planning and control.

III. Successful Consolidation and Distribution System of Perishables

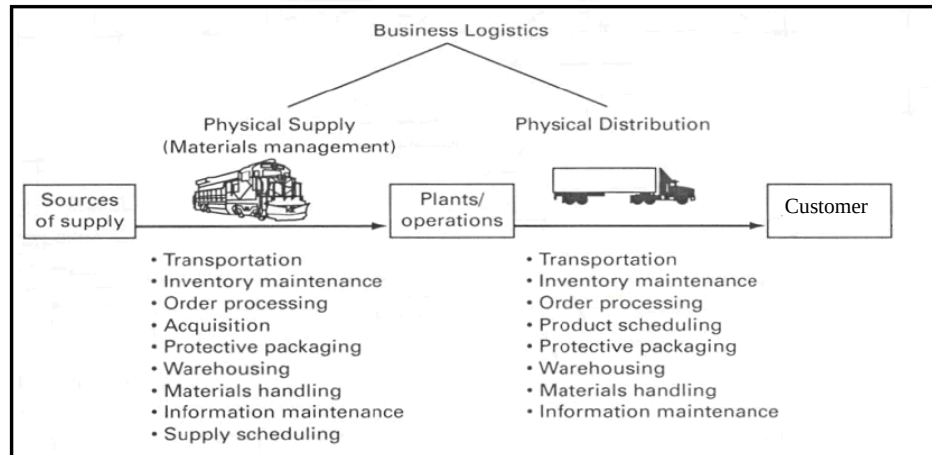


Figure 3: Logistics activities of Agro Products

The main causes of success are:

- Agribusiness firms set customer service standards
- It determines customer needs, wants concerning the products and sets customer service levels.
- For transportation agro firms select appropriate mode and transport service ;
- It consolidates freight chart and select carrier route;
- Prepare vehicle scheduling;
- Choice appropriate equipment;
- Process claims document

For Inventory management

- Firm formulates raw materials and finished goods stocking policies;
- It prepares short-term sales forecasting;
- Determines product mix at stocking points;
- Determine number, size, and location of stocking points;
- Formulate just-in-time, push, and pull strategies;

For order processing

- Business firms prepare sales order-inventory interface procedures;
- Use appropriate order information transmittal methods;
- Follow ordering rules;

For storage

- Agro firms determines space;
- It prepare stock layout and dock design;
- Do warehouse configuration and accordingly
- Complete stock placemen.
- For materials handling these firms appropriate equipments;
- It follows equipment replacement policies, order-picking procedures and stock storage and retrieval.

For purchasing/ procuring raw materials

- the Group selects supply source ;
- It prepares purchase timing and quantities.

For its products protective packaging are designed for handling, storage and protection from loss and damage agro firms specifies aggregate quantities ,sequence and time of production ,schedule supplies for production/operations .For information maintenance Information collection, storage and manipulation, data analysis and control procedures are followed.

IV. Market responses and adjustments- Lesson Attributes

Major marketing themes of the agro products are:

- To focus on transactions to building long-term, profitable customer relationships. Companies focus on their most profitable customers, products, and channels.
- The company offer to deliver a constantly needed product on a regular basis at a lower price per unit to capture the customer's business for a longer period.
- For gaining market share the company emphasizes on building customer share by offering a large variety of goods to existing customers.
- They train the employees in cross-selling and up-selling.
- The company's marketing is facilitated by the proliferation of special-interest magazines, TV channels, and Internet, news groups.
- For creating customer database, the company collects sales data about individual customer's purchases, preferences, and demographics and profitability.
- Companies apply data mining techniques to discover new segments and trends hidden in the data.
- The company heavy relies on communication tools such as advertising or sales force to blending several tools to deliver a consistent brand image to customers at every brand contact.
- The company thinks intermediaries as customer, treating them as partners in delivering value to final customers.

V. Salient Issues and Impediments

SME Agro food manufacturers observe that the customers increasingly expect higher quality and service and some customization. The customers perceive fewer real product differences and show less brand loyalty. They obtain extensive product information from the Internet and other sources, which permit them to shop more intelligently. They are showing greater price sensitivity in their search for value.

SME manufacturers in Bangladesh are facing intense competition from domestic and foreign brands, which is resulting in rising promotion costs and shirking profit margins. They are being further buffeted by powerful retailers who command limited shelf space and are putting out their own store brands in competition with national brands. For this store-based retailers are suffering. Small retailers are succumbing to the growing power of giant retailers and 'category killers. Store-based from catalog houses, direct-mail firms, newspaper, magazine, and TV direct-to-customer ads home shopping TV and e-commerce on the Internet. As a result, they are experiencing shrinking margins. In response, entrepreneurial retailers are building entertainment into stores with coffee bars, lectures, demonstrations, and performances. They are marketing an experience rather than a product assortment.

VI. Major findings and observation

A. Sector Performance

Production of the food items in 2011-2012 and 2012-2013(up to February, 2013) exhibits the following:

Agro products	Production	
	2011-2012	2012-2013(up to February ,2013)
Food grains	34.11 million metric ton	37.04 million metric ton
Milk	2.37 million ton	1.89 million ton
Meat	1.26 million ton	1.27million
Eggs	5742.40 million pieces	4211.00 million pieces
Fish	2.90 million metric ton	3.10 million metric ton

Source: Bangladesh Economic Review-2013.

Business logistics is a relatively new field of integrated management study in comparison with the traditional fields of finance, marketing, and production. It is that part of the supply chain process which plans, implements, and controls the efficient, effective flow and storage of goods, services, and related information from the point of origin to the point of consumption in order to meet customers' requirement. In business, logistics support ensures to get the right goods or services to the right place at the right time and in desired condition while making the greatest contribution to the firm.

Govt. sources and Bangladesh Economic Review-2013 articulate that there are about 0.80 million cottages, small and medium enterprises in Bangladesh of which about 30 percent are agro food industries. In 2011-2012, cottage, small, medium and large enterprises produced goods worth Tk.6, 25,707 million while these enterprises in 2012-2013 (up to February, 2013) produced goods of Tk. 6, 85,218 million.

The main supply chains for agro products in Bangladesh have been snapped in the following paradigm:

Name of the of Industries	Name of the Products
Mondal Agro Industries Limited	Yellow Potato, Used Pet Bottle, Molasses
Golden Fisheries & Agro Industries	Fresh Vegetable, Fresh Fish.
Intercon Agro Limited	Agro Based products, Organic Fertilizer & Organic Pesticide, Fresh Vegetable.
Chowdhury Agro Industries	Food, Fertilizer.
Surovi Agro Industries Ltd	Hybrid Seed, Gypsum Powder.
Northern Agro Services Ltd (NASL)	Organic Fertilizer, Food
BEXIMCO Bangladesh	Fresh Garments, garments stock lot, Finish Leather & goods.
PARTEX Group(Food group)	Spices, Beverages.
BD Foods Ltd.	Spices, Food.
Shajib Corporation	Spices, Beverages.
ACI Group	Food, Beverage.
Ship N Shore Shipping & Trading	Handy Craft, Garments, Agro Products
BRAC	Food, Milk products.

VII. Suggestions

1. We should follow the model of supply chain management in a systematic way;
2. Physical supply and physical distribution should be well Managed;
3. Customers demand should be considered;
4. Transportation cost, Inventory cost, ordering cost and packaging cost should be controlled;
5. Management should ensure logistic support for the supply chain of perishable item.

VIII. Conclusion

- Transportation in the supply chain system is essential because no modern firm can operate without providing for the movement of its raw materials or its finished products. This importance is underscored by the financial strains placed on many firms by such disasters as a national railroad strike or independent truckers' refusal to move goods because of rate disputes. In these circumstances, markets cannot be served, and products back up in the logistics pipeline to deteriorate or become obsolete.
- Inventories are also essential to logistics management because it is usually not possible or practical to provide instant production or ensure delivery times to customers. They serve as buffers between supply and demand so that needed product availability may be maintained for customers while providing flexibility for production and logistics in seeking efficient methods for manufacture and distribution of the product.
- Order processing is the final key activity. Its costs usually are minor compared to transportation or inventory maintenance costs. Nevertheless, order processing is an important element in the total time that it takes for a customer to receive goods or services. It is the activity triggering product movement and service delivery. Although support activities may be as critical as the key activities in any particular circumstance, they are considered here as contributing to the logistics mission. In addition, one or more of the support activities may not be a part of the logistics activity mix for every firm. For example, products such as
- Protective packaging is a support activity of transportation and inventory maintenance as well as of warehousing and materials handling because it contributes to the efficiency with which these other activities are carried out. Purchasing and product scheduling often may be considered more a concern of production than of logistics. However, they also affect the overall logistics effort, and specifically they affect the efficiency of transportation and inventory management. Finally, information maintenance supports all other logistics activities in that it provides the needed information for planning and control.

In group discussions with the agro food business firms the following benefit attributes were derived:

- Error rates of less than one per 1,000 orders;
- Logistics costs of well under 5 percent of sales;
- Finished goods inventory turnover of 20 or more times per year
- Total order cycle time is five working days;
- Transportation cost is one percent of sales revenue or less.

References

- [1]. Bangladesh Economic Review-2013;
- [2]. SME Report-2013;
- [3]. Profiles of the Agro food Industries
- [4]. Azim. Syed, Market Strategy and Agro business Development (2009);
- [5]. Ahmed R, Supply Chain Management and SMEs (2010).
- [6]. Andersen, O. and A. Buvik (2001) Inter-firm co-ordination: international versus domestic buyer seller relationship. *Omega*, the International Journal of Management Science 29: 207-219.
- [7]. Boehlje, M., L. Schrader and J. Akridgel (1998) Observations on formation of food supply chains. In: *Proceedings of the third international conference on chain management in the agribusiness and the food industry* edited by G. W. Ziggers, J. H. Trienekens and P. J. P. Zrbier. Wageningen
- [8]. Buurma, J. S. et al. (2001) Developing countries and products affected by setting new maximum residue limits (MRLs) of pesticides in the EU. The Hague: Agricultural Economics Research institute (LEI). Cok, M. L., T. Reardon, C. Barrett and Joyce Cacho (2001) Agro industrialization in emerging markets: overview and strategic context. *International Food and Agribusiness Management Review* 2 (3/4): 277-288.
- [9]. Farina, E.M.M.Q., and T. Reardon (2000) Agrifood Grades and Standards in the ExtendedMercosur: Their Role in Changing Agrifood System, *American Journal of Agricultural Economics*, 82(5): 1170-1176.
- [10]. Grievellink, J. W., L. Josten, and C. Valk (2001) State of the art in food: the changing face of the worldwide food industry. Amsterdam: Elsevier.
- [11]. Gaisford, J. D. and W. A. Kerr (2001) Economic analysis for international trade negotiations: theWTO and agricultural trade. Northampton: Edward Elgar.
- [12]. Handfield, R. B. and E. L. Nichols (1999) Introduction to supply chain management. N.J.:Prentice Hall.
- [13]. Itharattana, K. (1996) Market Prospects for Upland Crops in Thailand, Working Paper 21, CGPRT Center, Bogor.
- [14]. Jaffee, S. M. (1994) Contract farming in the shadow of competitive markets: the experience of Kenyan horticulture. In: *Living under contract, contract farming and agrarian transformation in sub-Sahara Africa* edited by P. D. Little and M. J. Watts. Wisconsin: University of Wisconsin Press.
- [15]. Kurt Salmon Associates (1993) Efficient Consumer Response: enhancing consumer value in the grocery industry, Washington DC: Food Marketing Institute.
- [16]. Lambert, D. M. and M. C. Cooper (2000) Issues in supply chain management. *Industrial Marketing Management* 29: 65-83.
- [17]. Lazzarini, S. G., F. R. Chaddad and M. L. Cook (2001) Integrating supply chain and network analyses: the study of netchains. *Chain and Network Science*, 1 (1): 7-22.