

# PERISHABLE FOOD SUPPLY CHAIN CONSTRAINTS IN BANGLADESH\*

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## 1. Introduction

Efficient agriculture marketing is critically dependent on efficient transport system. Inefficient transport service coupled with poor storage, can lead to losses as certain crops (such as milk, vegetable, fish) deteriorate quickly over time. On the other hand many developing countries like Bangladesh suffer from monopolistic, low volume, and high cost transport and marketing system. Weak transport and marketing system are hindering agriculture development means country development. On the other hand vegetable are generally more costly to produce per hector than traditional crop. The value or quality of vegetable will decrease rapidly once they are harvested and will keep decaying when being delivered. The revenue of food supplier will depend on the condition of the products when they are received. Thus timely production and delivery of perishable foods significantly affect the supplier's revenue. In this paper it is tried to address present supply chain system of perishable product (especially vegetable) implication, difficulties to change the present system and suggestion for improvement of supply chain.

## 2. Present Supply Chain

Intermediaries make link between farmer and consumer. Number of intermediaries in the supply chain is a function of product type, accessibility of market, etc. Earlier studies on Bangladesh food supply chain claim that there are many intermediaries involvement and they are slicking off a major portion of the consumers' price as profit. There are five intermediaries in the major distribution channel. Short description is as follows.

**Faria:** Faria are small traders who dealt in product within three or four local markets and handled a small volume of product. They purchase product from farmer and sold that product either to the beparies or the consumer. They are usually landless labors or small farmers having no full time work on the farm (Tasnoova<sup>1</sup> et al, 2006). Their volume of business is small because they possess a little capital.

**Beparies:** Beparies are professional traders who purchase agricultural product form the farmers or farias in the local market or in the village. They handled larger volume of product than faria. Bepary sells their product to arathdar.

**Arathdar:** Arathedar serve as a fixed commission agent who have fixed establishment and operate between bepari (incase of paddy miller) and retailer and charge a fixed commission by providing storage facilities.

**Retailers:** Retailers are the last link in the marketing channel. They buy product from *beparis* through *arathdar* and sell them to the consumer.

Figure 1 shows the interrelationship between intermediaries of existing supply chain in Bangladesh. it is observable that a bulk amount of product are transferring from grower through Bepari. Bepari distribute his product to next player through Arathdar.

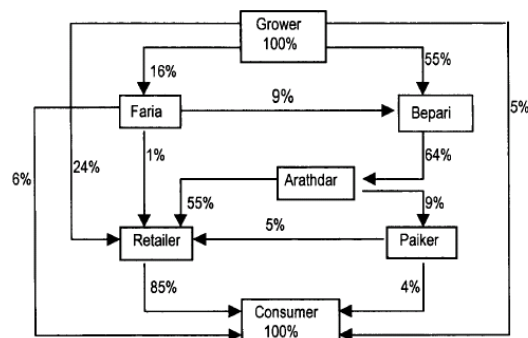


Figure 1: Typical existing food supply chain in Bangladesh (Sabur<sup>2</sup>, 1990)

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### 3. Function of Intermediaries

The important components of marketing functions at the intermediary level are transportation, storage, grading, financing, market information, pricing etc. detailed description of intermediaries are described as follows.

**Transport:** Intermediaries make connection between consumer and producer. They provide transport to carry locally produced agro-product to distant market. They do the all activities involved in preparation for consignment such as crating and loading. Transportation cost is high in Bangladesh. Intermediaries use different types of mode depend on the availability.

**Storage:** The storage function is primarily concerned with making goods available at the desired time. It creates time utility. Storage requirement is crop specific. Potato and paddy can be stored for many days. But vegetable need immediate transport to market. As vegetable and fruits are perishable, they need proper post harvesting treatment before reaching market. If seller cannot sell their product in same day, they need to storage these products for the following day.

**Grading:** Grading is one of the basic functions of intermediaries and it is defined as the classification of product according to some standard on measure (Kohls<sup>3</sup> et al, 1980). Grading is a determining factor of buying and selling price. Quality is determined by eye estimation. For fruits and vegetable grading is done by bairal.

**Packaging:** Packaging is an important job of intermediaries. Wastage largely depends on packaging. Packaging materials depends on type of crops. Fresh fruits and vegetables are generally packed in bamboo baskets, plastic crates, plastic bags, or nylon sacks for transportation, in Bangladesh. Sometime, they are transported in an unpackaged form. Binding and packaging is mostly done by bairal and in some case it is also done by bepari.

**Financing:** Financing is of crucial important for agro-product marketing like any type of product. The intermediaries face of lacking of sufficient finance. Sometimes intermediaries buy product from farmer on credit. 60% of intermediaries do operate their business by their self finance (Tasnoova<sup>1</sup> et al, 2006).

**Risk Bearing:** Risk bearing facilities are essential in any marketing activities. Insurance policy system has not been developed yet in Bangladesh. Matin<sup>4</sup> et al (2008) found that many farmers sell their mango field to bairal to shift risk and bairal bear all risk of the orchard. Intermediaries bear the risk of price variation.

### 4. Why Need Intermediaries?

Intermediaries are essential part of food supply chain in Bangladesh. They share profit with producer. But farmer in Bangladesh cannot avoid intermediaries for shifting their product to market. The reasons of dependency on Intermediaries are as follows.

**Small Scale Farm:** Small scale farming is better stewards of natural resource and contributes more to local community and economic development (Rosset<sup>5</sup>, 1999). The cultivation practice in Bangladesh is more or less small scale farming. The average size of land ownership is 0.6 ha (Weinberger<sup>6</sup>, 2005) and produce small amount of production. Intermediaries' involvement can be attributed to the fact that average farmer's marketable quantity is often small. It is not always economic to employ some shipping mode to transport for such small quantity to the marketplace.

**Lack of Education:** It is observed that education has negative impact on agriculture income. But education effect on nonfarm income (wage, trade etc) significantly in Bangladesh. Education is required to raise total income of farmer. Most of the villagers in Bangladesh are illiterate and they are not getting update information. Again also farmer have fear of marketing risk. They rely on intermediaries to send their product to market.

**Lack of Information Flow:** For efficient marketing system, information of current situation in market is a vital ingredient. Agro business is not out of this group. Marketing information helps producer to make rational decision. Producer can make decision on the basis of information on forecast of market demand and information on sales timing. This information can help not to market glut again it enables the producer about the harvest time. Again understanding consumer need help to improve harvesting method or produce desire type of crops. The most important information is price information which enables fair price of produced crop. The literacy level of farmer is very poor in Bangladesh. They can't read price in newspaper. Again most of the farmer can't afford television. Farmer gets information from trader or truck driver who come to buy crop which may be depend on traders benefit (Akand<sup>7</sup>, 2006). Most intermediaries get market information through market visits, personal observations and from fellow traders (Tasnoova<sup>1</sup> et al, 2006). Although Directorate Agricultural marketing, Government of Bangladesh is engaged in the task of regularly disseminating the market price of agriculture products in newspaper, weekly bulletins and on radio, no information about

price is available in their website. Presently FM radio, coverage is limited, broadcast daily market price.

**Limited Super Market:** The development of supermarkets is a recent addition in the domestic retail section of Bangladesh. To date, there are about 30 supermarket stores operating in the country as a whole, of which 22 are located in Dhaka. Although the coverage of supermarket chains is still very low, not even 1% of the retail sector. Since supermarkets continue to play a minor role in Bangladesh, most vegetable produce are sold either in the local markets, or to wholesalers who then transports the produce to the city markets, i.e., Dhaka. Consequently, production is little organized, and none of the farmers in our sample admitted participating in contract growing arrangements. Wholesalers and small traders are the major players in vegetable trade, capturing 96% of the market.

## 5. Negative Effect of Current System

**High Losses and Shrinkage:** Poor prepackaging and poor handling methods and marketing system causes high post harvest loss of the commodity. Postharvest losses vary greatly across commodity types, with the location of production and with the season of production. Postharvest losses in food grains in Bangladesh are reported at an estimated 15%, while in fruits and vegetables they are estimated at 20–25%. For highly perishable fruits and vegetables, these losses may go as high as 40% (Badrud-doza<sup>8</sup>, 2006). The absence of a well-developed marketing network and rapid transportation in the country also contributes significantly to high postharvest losses in fruits and vegetables. It is estimated that the loss of nearly 25-40% of the vegetable occurs due to rough prepackaging and improper post harvest handling, transportation, and storage practice (singh and chadha<sup>9</sup>, 1990). Postharvest losses which average between 24 and 40% in developing countries, and between 2 and 20% in developed countries are a major source of waste (Sirivatanapa<sup>10</sup>, 2004). Sharma<sup>11</sup> (1987) reported that post harvest losses of vegetable in Bangladesh could be as high as 43%. It was estimated that 1.26 million tones of Aman and Boro paddy gets wasted every year in Bangladesh (www.bangladeshnews.com.bd). A research of the Rural Development Academy (RDA) Bogra shows that the loss is 5.18 percent of the total production these two main crops.

**Intermediaries' Dominance:** Tasnoova<sup>1</sup> et al, 2006; Rahman<sup>12</sup> et al , 2006; matin<sup>4</sup> et al 2008 made field survey in different region in Bangladesh on different agri-product and found that intermediaries in the market were in small number but they were organized. So they dominate farmer and compel them to sell product at lower price as farmer has no way to bring back the product from market as it involved extra cost. Rahman<sup>12</sup> et al (2006) found their own survey that one of the main reasons for not getting good price is the involvement of local broker (dalal).

**High Transport Cost:** Transport cost varies depending on road quality, utilization of the loading capacity and trip length (Sieber<sup>13</sup>, 1998).

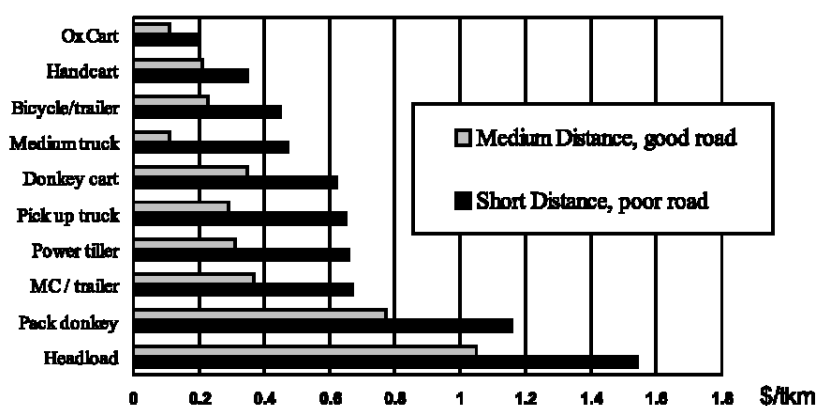


Figure 2: Transport cost of different vehicles in developing country (Sieber<sup>13</sup>, 1998)

Figure 2 represents the typical cost per ton per km of medium distance road (50 km) for good road and short distance transport ( 5 km) on poor road. According to Tasnoova<sup>1</sup> et al, (2006) about 10%, 40% and 50% of Farias used head loads, cart, and vans to carry their paddy. Carts and Vans are used by 40% and 60% of baparies for the transportation of paddy. About 10%, 13% and 77% of the miller used of carts, vans, and truck to carry their paddy. Farmer use head load and rickshaw van to carry the produce to market (Hossain<sup>14</sup>, 2004). From graph it can be seen that the cost for head load is maximum. By using proper transport service

the cost can be minimized.

**Price Difference:** Price increases with the increase of number of intermediaries. Price is less if there is less number of intermediaries. Matin<sup>4</sup> et al (2008) shows that price at outlet at distant market (Dhaka) become almost double higher than that at farm gate. Several studies on food supply chain in Bangladesh observed that marketing margin as a percentage of consumer prices were high. Sabur<sup>2</sup> (1990) showed marketing margin for eggplant and tomato was as high as 74%. Perishable product marketing depends on many intermediaries due to the absence of requisite infrastructure and cause huge delivery cost and physical wastage.

## 6. Conclusions

Perishable food distribution system is not sound in Bangladesh. Growers are not getting full benefit of high food price due to deficient access to market information and undeveloped infrastructure. There are insufficient well equipped wholesale market and many intermediaries between producer and consumer. Inferior communication and transport condition and inadequate financial and information service also contribute to frustrated distribution of perishable food. Direct intervention of government involvement in vegetable marketing is minimal. Price is determined by open bargaining by number of buyer attending in the market. Improving transport system and minimizing the number of intermediaries in supply chain can increase the profit margin of farmer.

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