

Study on Development of Food Security, Packaging and Marketing of Agro-based Products in Bangladesh

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Abstract: Agriculture is the utmost significant sector of Bangladeshi economy, contributing 19.6% to the national GDP and contributing employment for 63% of the population. Faced with constant productivity and market pressures, the “new agriculture” needs new tools to improve its competitiveness and innovation power. One of these tools is the promotion of food security, packing and marketing. Though the productivity has improved in agricultural sector but due to poor post-harvest management and processing have hindered in self-sufficiency in food. It has been observed that 30% of the horticulture product spoiled or damaged due to poor post-harvest management and processing which ultimately affected the agro-based industry. This further aggravated during years of bumper harvest. Though Bangladesh has improved in agro productivity but agricultural industry is lacking in proper post-harvest management and marketing due to poor management. Considering potentialities Bangladesh may try to improve the agro marketing system with the help of modern technology and concept, modern agro marketing information services and agricultural cluster system such as Agribusiness Complexes, Agro-industrial Park, Agro-export Zone etc and make our agro-based industry a profitable and export oriented. Besides Cooperative marketing, market orientation and innovations can contribute agro market development. The present study analysis some contemporary strategies and policies that the country can evolve and implement on the basis of ground realities in the agricultural sector of Bangladesh. While doing so Government should develop and apply a manageable scheme.

Keywords: Agriculture, Food security, Packaging and Marketing.

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I. Introduction

Agriculture in the modern age is redesigning itself as a new global business reshaped by globalization, standardization, high-value production, noteworthy growth in demand (both for the food and the bio-fuel industries), retail and packaging innovations, and a ramp up in efficiency. The “new agriculture” needs new tools to enhance its competitiveness and innovation capacity to cope up with the constant productivity and market pressure. One of these tools is the promotion of technology-based processing and marketing. An agro-based industry is basically a focused production, processing and advertising.

Though the productivity has improved in agricultural sector but due to poor management and processing in post-harvest have hindered in self-sufficiency in food. It has been found that 30% of the horticulture product spoiled or damaged due to poor post-harvest management and processing which ultimately put negative impact the agro-based industry. If the modern technologies and concepts are adopted in post-harvest management and handling which will help and encourage both farmers and agro businessmen in agro-industry, then the problem can be solved. These eventually will have positive impact on our national economy. At present Bangladesh is earning huge foreign currency by exporting Ready Made Garments (RMG). Only depending on RMG sustaining in the present competitive market will be very difficult. In order to increase her competitiveness in worldwide market Bangladesh needs to find new items of exports. Agro-based industries' goods have great prospect of exporting. Improved technology can make our agro-based industry a profitable and export oriented. The present research examines some innovative strategies and guidelines that the country can develop and implement on the basis of ground realities in the agricultural sector of Bangladesh.

II. Research Methodology

The research is based on both secondary and primary sources. The secondary sources which were studied are: books, journals, reports, and data from various official and unofficial sources. For primary sources, information and statistics from official and unofficial sources are collected; interviews have been conducted with various shareholders including farmers. Both formal and informal interview methods have been adopted to collect qualitative information concerning various aspects of agricultural relation in Bangladesh. I have interacted with small-scale farmers of different villages and accumulate information on post-harvest

management, agro processing and marketing. Besides I have performed field survey on few agro processing and marketing companies i.e. Pran Group, Fleming Agro-Technology Limited. Both qualitative and quantitative approaches have been adopted as a methodology.

III. Agricultural Product Marketing in Bangladesh

Agricultural Product Marketing Management Scenario:

The nature of the Agriculture Marketing System in Bangladesh is complex. There are innumerable small farmers spread all over the country. The marketable surplus or marketed quantity of the crops they grow is very small. The cost of collection of these widely dispensed and small-marketed quantities is very high and insufficient. There are almost 13098 (DAM Study 2000) small, medium and big sized markets in the country. In Bangladesh except the activities performed in connection with Public Food Distribution System (PFDS) and agriculture price and marketing policy decision of the Govt. the trade in all agricultural products is largely handed by the private sector. The general agricultural marketing policy of the Government is to allow free play of the market forces in determining the price and support larger participation of the private sector [1].

Agricultural Marketing Information System:

One of the reasons for the low price received by growers, particularly small farmers, is lack of market information. As a result, wide inter-market price variation is created. Common sources of farmer market information are personal visit to market, other farmers, traders, contractor, extension workers, market information services and local offices of Director General of Food. Limitations of getting information through personal visits include (i) time consuming and costly unless going to market to sell product; (ii) have a short-term perspective; (iii) have information only about crops they produce and markets they sell to and (iv) reluctance to provide information. The traders do not see in their interest to provide accurate information or data to farmers. They only know about the crops and markets with which they deal. Extension workers are rarely trained to aid farmers in marketing. As such they are unable to help farmers with long-term production planning and, anyway, receive no advice on this.

Market Size:

The size and growth of the market for agribusiness products may be roughly estimated from available data on exports, imports, and GDP. Retail and export value of all agricultural goods may be estimated at roughly 50 percent of GDP (see Table 1). Setting aside home consumption of agricultural goods (estimated at less than half of agricultural value added), agribusiness sales (the value of marketed agricultural products at retail and export level) are unevenly 40 percent of GDP. From these calculations, exports account for roughly 5 percent of agribusiness sales. Hence, most agribusiness sales are to domestic markets, including a range from less administered products for local markets to more highly administered products for city and national markets. Agricultural imports – demonstrating the potential for import substitution – are equivalent to almost 8 percent of agribusiness sales. Domestic demand is increasing at a higher rate, based on overall economic growth (Bangladesh’s annual economic growth in constant prices averaged 5.3 percent during 1996/7-2002/3), urban growth, and changes in tastes and agricultural technology. Recent expansion of the poultry industry, with output increasing 10-15 percent a year indicates what is occurring and what is possible for a wide range of agribusiness products for domestic markets, including fresh fruits and vegetables, fish, and processed products. With backward linkages, rapid increases in demand for poultry and fish cascade into increased demand for maize and soybeans for poultry and fish feed and, high gluten flour for baked goods, etc. On the other hand, growth of demand for rice and other traditional staples are more closely tied to population growth at about two percent a year.

Table 1: Contribution of Agriculture in the Economy

Item	Year(s)	% of GDP
Exports	2000/1-2002/3	13.3-15.4
Imports	2000/1-2002/3	18.8-21.5
Agricultural exports	2000/1	~2% 1
Agricultural imports	2000/1	~3% 2
Value added in agriculture	2000/1-2002/3	23.5-25
Retail and export value of agricultural goods	Current	~50%

Source: Self compiled in the light of Statistical Pocketbook 2004, p 203, 286

Types of Market:

There are formal and informal sector presents in Bangladesh Agro-Based Industries. The informal sectors mainly supplying to the restricted local market, in the formal sector the processing of fruits and vegetables is a major industry. It has wide backward and forward linkage and great export possibilities. Such

fruit and vegetable processing industries produce, as stated earlier, fruit juice, squash, sauce, ketchup, jam, jelly, marmalade and similar other products on a small scale. The packaging materials they use are mostly glass/plastic containers and flexible packs which are produced locally. At present 62 agro-processors have been registered with the Bangladesh Agro-Processors Association (BAPA). At annex A and B, Case Study 1 and 2 on PRAN Agro, Dairy and Food Limited and Flamingo Agro-Tech Ltd respectively are given where we can see how these farms could improve and acquired market implementing the technology.

Spectrum of Agro Product Marketing:

Market research and the development of an effective marketing strategy are essential components of establishing and running a small food processing plant. There are always a number of different markets where processed food products, particularly fruits and vegetable, and livestock and fisheries products can be sold. Within the broad spectrum of the market there are a number of sections that may have different needs for particular types of products. When a particular segment is identified by the producer, this is known as a 'market niche' and a product that is sold for a single market segment is known as a 'niche product'. The importance of identifying the different segments is three-fold:

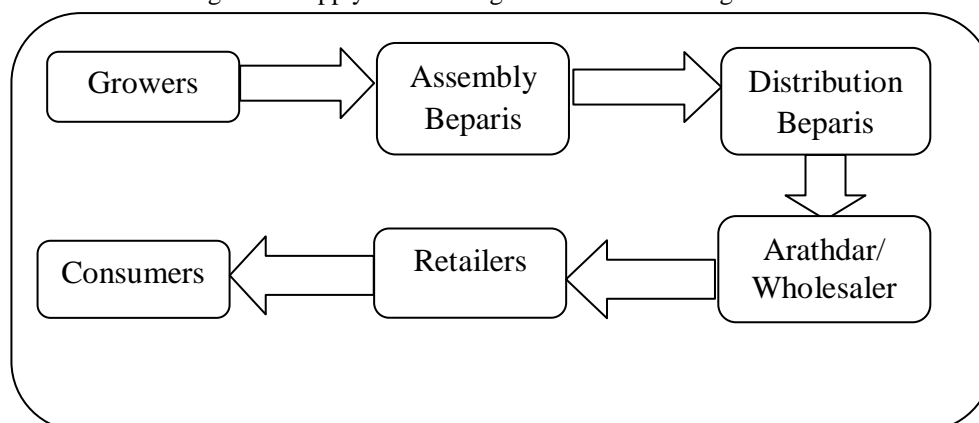
- ✓ It is possible to tailor the product quality for a particular group of customers.
- ✓ The promotional strategy of a product can be designed for a particular segment.
- ✓ The distribution and sales outlets can be located where people in a particular segment usually buy their food.

Because of the small size of the farms and still smaller marketed quantity, the agricultural marketing system of Bangladesh is atomistic, fragmented and widely dispersed all over the country to serve over 10 million farm households. The farmers normally sell their products from their houses or in the nearest rural primary/assembly markets.

Supply Chain of Agro Product Marketing :

Marketing of the agricultural products in Bangladesh typically passes through six stages: growers, assembly beparis (traders), distributing beparis, aratdars (commission agents)/cum wholesalers-retailers-consumers. The stages are not all distinctive and an agent in one stage can interact with several agents operating at different stages of marketing. This feature of rice marketing indicates the absence of complete specialization of function by market functionaries but it widens the choice of one agent in terms of selling his goods to someone, giving him the highest return, and this increases the competitive power of the market.

Figure 1: Supply Chain of Agro Product Marketing.



Source: Farooqee 1998 [2].

Constrains of Agro Marketing:

There are around 7,500 rural primary/assembly markets in the country, most of which have deficiency adequate space, basic facilities and amenities and satisfactory transportation facilities. The absence of space creates problem of access to the markets by the farmers. Again, a lack of transport facilities results in higher transportation cost and reduces competition in the markets by limiting the numbers of traders. Absence of basic facilities like covered sheds results in deterioration of the quality of the product due to exposure to the sun, rain and dust. Realization of excess market toll and charges, deductions and malpractices by traders due to absence of any government agency to ensure proper management of the markets, reduce the farmer - level price and oblige the farmers to sell their crops from their homes at a much lower price. However, the farmers' main

problem has been identified as the low price of the crops in the post-harvest period. That time the small farmers sell most of their crops.

Factors Causing Fluctuations in Agro-Food Market:

Price fluctuation is a multifaceted problem attributed to various factors which, when combined, culminate in dangerous consequences for the most vulnerable. Although high prices can technically be good news for farmers, price fluctuation is extremely dangerous, as farmers and other agents in the food chain risk losing their investments if prices fall. One frequently cited reason for increased prices is 'market fundamentals'. Demand is thought to be outstripping supply and thus leading to increased prices. Climate change, depleted soils and aquifers and the loss of biodiversity are often noted as contributing factors. Yet food production has never been as high as it is today and commodities markets are becoming increasingly interesting for financial speculators.

Price fluctuation is not only harmful to consumers but also affects producers. Generally, poor farmers do not have enough investment capital to sustain such unpredictability. This can result in suboptimal investment decisions and compromise production in the long term. Higher food prices have not necessarily translated into better prices for farmers in developing countries because non-food Essentials such as cooking fuel, transport, rent, fertilizers, kerosene and agricultural inputs have also become more expensive. Also, intermediaries are facing higher transportation costs which they are in turn passing on to farmers [3]. A study by Oxfam and IDS13 suggests that farmers in developing countries are producing fewer surpluses because of increased input prices. 'High input costs have squeezed people's purchasing power, which means that profits from growing and selling food remain low for those with least scope to diversify and spread risk'.

Due to the observed effect of price fluctuation and its impact to small scale farmer's development, this brings the need to focus on how farmers can improve their agricultural investment in order to sustain farmer's development by use storage facilities like silos and this can be done during lowest price for produce during harvest. Therefore, holding off the sale from harvest to a more opportune time will more than pay for the storage.

Price Fluctuation Concept:

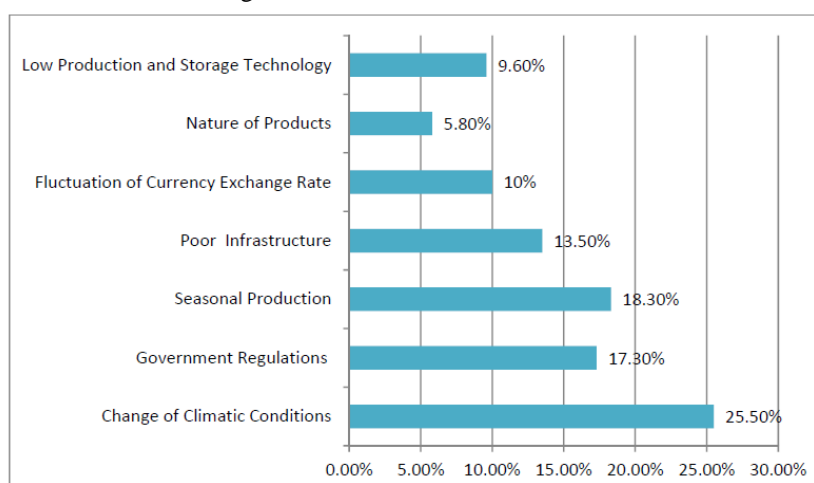
Price fluctuation is a frequent rise and fall of commodity prices in the market as a result of changes in the market situations, price fluctuation can be seasonal whereby prices of commodities changes during certain season of the year due to the increase in supply and demand. Price fluctuation in the market can take a short term due to a slight change in demand or supply of commodities in the market. But it can also last long due to the increased inflation rate which highly affects the prices of commodities in the market and its effect last long and limit the ability of customers to purchase commodities in the market [4].

Causes of Price Fluctuation of Agricultural Product:

Agricultural product prices have been fluctuating widely over the last few years, hurting both consumers and producers. United Nation Food and Agriculture Organization (FAO) show the price index of food have fluctuate widely over four years. The index show that price rose from 122 in 2006 to 214 in June 2008 [5]. This was caused by the following factors changing petroleum prices which result to high translation of food price like transportation cost, crop yield, food stock levels as stock fall price rise, change exchange rate especially of major exporting countries, trade policies, drought, low technology, demand of food is in elastic as small changes in supply can cause big change in prices, the role of speculation purpose and seasonal production Also according to Global Market Report (2007) the agricultural commodity markets have experienced extreme price fluctuation more and more frequently, the main reason for this changes are supply and demand factors this include population growth, weather condition this affect the output related to price [6].

Since 2007, the agricultural commodity markets have experienced extreme price fluctuations more and more frequently this often causes severe supply problems, especially in the least developed countries. Based on that, the study wanted to determine the various causes of price fluctuation of agricultural products. The results are shown in Figure 6 below.

Figure 2: Causes of Price Fluctuation



Source: Huka, Ruoja and Mchopa 2014

The reason of change of climatic condition was mentioned by (25.5%) respondents where it was pointed that change in climatic condition contribute much on determining the level of harvest to farmers this is because agricultural supply is mostly based on rain and highly dependent on the weather, therefore for the farmers the annual weather differences is more important than eventual climate change. Also, it was established by (17.3%) that Government regulation and policies does not provide a conducive environment to farmers, this is because when government provides subsidies to farmers it also allows importation and exportation of product, import tax on the product affect the price charges from the agricultural products to be low or high. This revealed that the importation and exportation of agricultural product also it affect the price sustainability of domestic price of agricultural product.

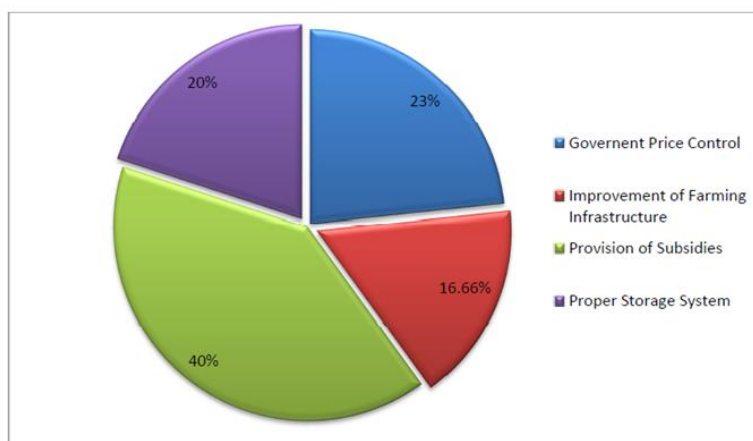
Some respondents (18.3%) pointed out that Seasonal productions is also another causative factor, most agricultural products are seasonally produced which cause un equal balance of the availability of it and for this reason price tend to be low during bumper time and to be high during scarcity time hence to make rise and fall of price in different periods. Furthermore, (13.5%) commented that poor infrastructures is one among the causes of price fluctuations, there is high difference in level of appropriateness of roads in this country which make the ever changing of prices for agricultural products from time to time around the year especially during the rain seasonal most supply areas are not reached easily which causes price to raise.

Fluctuation of currency exchange rates took (10%), rise and fall of the currency causes the price of agricultural products to fluctuate, it was argued that the unstable fuel prices cause everything else including farm products to fluctuate more often due to high cost of transporting the farm product from the farm area to the markets. Nature of products was also pointed out by (5.8%) as another cause of price fluctuations, it was established that most agricultural products tend to be perishable in nature as to why it influences the rise and fall of price over time, the perishability nature of some agricultural product makes it difficult to store during plenty time hence farmers have to sell them even when the price is still low. Low production and storage technology took (9.6%) it was argued that, technological development among small scale farmers is still poor and this affect production of agricultural products in terms of high cost of production and long incubation period, when poor technology is used in production, price tend to raise compare to high technologies which reduce total cost of production.

Measures to Prevent Price Fluctuation of Agricultural Products:

Ghanamen, (2011) suggest various methods which can be adopted by the government and other stake holders in order to reduce price fluctuation of agricultural product, effective of market management and control for example by maintain buffer stocks, high investment in agriculture sectors particularly in research development and infrastructure that promote irrigation, improvement of trade policies particularly agricultural subsidies, improving market transparency the FAO should intensify its information gathering and disseminating information, Financing instrument where by existing financial instruments such as the IMF must made more flexible and usefully for developing countries during crises, commodity exchanges the regulatory frame works governing must also be reviewed to reduce speculative behavior and thus limit volatility. There are various measures implemented to control price fluctuations in order to support the domestic price of farm products as shown in figure 3 below:

Figure 3: Measures to Prevent Price Fluctuation



Source: Sarwar and Leishman 2013

It was revealed by (23%) that, the government is the major solution to resolving the problem of price fluctuations of agricultural products through Pre-established import price below which imports cannot take place. by setting a minimum price to imports will discourage imports as a results domestic product will fetch better prices. It was further argued that, when the government restricts selling of agricultural products outside, Tanzania has resulted into larger accumulation of stocks while demand is low, this situation makes the price to go down. Improvement of farming infrastructures was identified by (16.66) respondents, small scale farmers use poor farming tools which requires more labor force as a results of high production costs(40%) commented that, provision of subsidies is very important in stabilizing prices and gaining control over the market and the economy of the country at larger. Lastly proper storage system was mentioned by (20%), having proper storage system farmers will be able to preserve their surplus and hence balance price throughout the season.

Agro-based Industries: Regulatory Impediment and Government Role:

Bangladesh is a thickly populated agro based country gifted with favorable conditions yet. Hard working people combined with modern knowledge have contributed admirably to make it solvent in our staple food. Necessity is the mother of invention. The agro processing sector in Bangladesh currently stands at USD 2.2 billion and grew on average 7.7% per annum approximately. The beverage industry more than doubled during the same period to US \$29 million, showing an average growth rate exceeding 8 % per annum. According to Bangladesh Agro Processor's Association (BAPA), export of agro processed products from Bangladesh increased from USD 60 million in 2010 - 2011 to USD 224 million in 2014-2015. Despite, the positive growth trends, the contribution of the food manufacturing or food processing industry in Bangladesh has remained mostly static at around 2% of the GDP. This indicates that the growth achieved in agro-food processing is not at par with the economic growth of Bangladesh and the sector is currently under-performing. The steady progression of exports in this sector is encouraging but a great deal more can be achieved both in areas of increasing export volumes and earnings. For this to happen, all stakeholders need to be convinced of the potentials of the sector and adopt and apply policies with a vision.

Analysis of the overall value chain of agro processing and the shortlisted crops utilized in processing revealed a number of findings. Firstly a lot of progress has been made on increasing the production of the selected crops. Almost all of the crops show increasing annual growth trend of around 5-10% with Maize achieving the highest at around 37% during 2013-14. The introduction of high yielding varieties and improvement in cultivation process facilitated the increased production however the productivity is yet to reach the highest potential. Secondly the utilization of crops in agro processing is still very low compared to total production. For majority of the crops except Maize, Mustard and turmeric, only 2-5% of the total production is utilized in processing and the rest is consumed fresh. Thus there is good scope to improve the utilization of existing production in agro processing.

There are several agro processors such as Pran, Akij, Square, Ahmed, ACI, BD Foods and Bombay Sweets in Bangladesh with Pran being the largest. According to Bangladesh Agro Processors Association (BAPA), there are around 250 processors however the list is not exhaustive as there are other processors who are not members of the association. These processors produce a range of items and sell their products both nationally and internationally. Export destinations are primarily countries with large Bengali diaspora; penetration in new markets has been low. The processors are mostly engaged in processing of food products for

which there is a proven market; import trends and the significance of the local informal processing are used as indicators to test the market potential.

We can reap tremendous economic benefits by processing some farm products. We have to work out strategies for setting up the agro-processing industry based on regional competitiveness. The soil and environment of entire North West region is highly favourable for producing various kinds of vegetables like potato, tomato, cabbage, cauliflower, brinjal, carrot etc. So, pragmatic steps need to be taken to increase area-based production of agro-based products. The following are the major challenges in agro business which if addressed properly can make a booming effect in this sector:

✓ **Financial Hurdles:** Though there has been a significant development of agro-business but the output could have been more significant than the present result. Developing countries mostly uses outdated and worn-out tools and bring out inferior quality products. There is shortage of proven entrepreneurs as well. Besides, lack of improved material and technology, absence of long-term national plan, absence of viable marketing or processing structure also creating financial difficulties for this sector. Presently, banks and other financial institutions are also not having the long term plan to patronize this area for development.

✓ **Technological Challenges:** Quality control is one of the most important parts of this sector. To ensure the standard specifications and maintain the proper hygiene aspects, modern equipments need to be incorporated in the production line. Government also needs to enforce the rules and regulations to ensure the compliance issues and the standard of the product as far as the quality control is concerned. These will also help the country to establish fame and creating a reliable market in the world trade market.

✓ **Infrastructural Crisis:** Inadequate Gas supply and restrictions on commercial gas lines is creating hurdles for new investment. Wastage during transportation and increase in price of raw material as there are several factors involved in the supply chain. High market demand for the table crop insisting our farmers to use pesticides and fertilizers to make a race with the time is deteriorating the overall quality management process. Inappropriate packaging and lack of cold storage facilities result in high post-harvest losses. Food safety in Bangladesh is a multi-sectoral responsibility however the administrative enforcement mechanism of Bangladesh is not at par.

Food Processing Industries in Bangladesh:

Bangladesh has a rapidly growing consumer market in the world food market. Due to a large population base, the demand for food products is always on the rise in the country also. Explorations of market and variety of products have evolved significantly over the last decade and many companies have entered the food business which was otherwise not into this level of diversification in the past. Golden Harvest has lot of potential in the growth of the food market. The rational consumer is inclined toward having a good product at the right price. As the price is determined by the market, the right approach is to have a good product for the consumers to take the right decision. If we focus on the core elements of product marketing, the focus should first be on the quality of the product which can drive the business at all times. Packaging plays a vital factor as that has to attract the consumer at the shelf shouting “Buy Me” and not the other brands. If the product is coming from a reputed and trusted manufacturer, it is expected that the average consumer would be eager to buy that brand more than the other available brands.

Putting all the chips together, Golden Harvest has given the best efforts to launch a range of products in the Food market to get a sizable share of the pie. The DITF 2014 gives them the right launch pad to showcase their products and create awareness for the consumers. Initially, there would be two product categories with 9 product variants which will be extended to 10 product categories encompassing more than 60 product variants and about a 100 different pack sizes. Based on the leadership position in the Frozen Food market, the company feels confident that the new product range would make the same impact in the market. The company has always strived to offer the best of products under the banner of “Golden Harvest” so that the brand gets established for the “Good Quality” product trust and confidence among the consumers. (The daily Star, 13/01/14)

The Current Structure of the Food Processing Industry in Bangladesh: The current structure of the food processing industries of Bangladesh can be categorized as follows:

Table 2: Bangladesh: Major Food Processing Subsectors

Subsector	Components
Dairy Processing	Dairy-based confections; ghee/paneer/curd processing
Edible Oil	Oilseed crushing: mustard, rapeseed and soybean; refining of crude edible oils including soybean and palm
Sugar	Crushing of sugarcane: sugar, molasses; refining of mostly imported raw sugar;sugar-based processed food items, e.g., chocolates and confections
Rice	Flakes, puffed rice, snacks, breads
Wheat	Bread and cookies; noodles/pasta and vermicelli; chapatti/luchi/somocha

Fruit and Vegetable	Fruit juices, fruit-based soft drinks: sauces and ketchup; pickles; potato chips
Tea	
Poultry/Beef	Dressed poultry and beef; processed sausages, nuggets, etc.
Pulses and Spices	

Source: Sarwar and Leishman 2013 [7].

Challenges in the Bangladesh Food Processing Industry:

Capacity utilization, technological obsolescence, and marketing shortfalls are the major challenges in the food processing industry in Bangladesh. High fluctuations in raw material quality and lack of efficient technologies and trained manpower also tremendously affect the quality of finished products. Besides high cost and insufficiency of energy and power supply creates uncertainty for producing the required quantity in time to meet the market trend. There is no organized and systematic effort from the industry itself, to maintain food safety standards and hygiene throughout the entire process, from bringing the raw commodity to the facility to marketing the finished product. The industry is also seriously deprived of research and development (R&D) supports to overcome technical difficulties and develop more efficient processes and new products. Increased R&D could help the industry become more economically sustainable in the domestic market and more competitive in the international market.

Issues Related to Post –Harvest Loss of Agricultural Product:

Scenario of Post-harvest Losses: The post-harvest loss is one of the major problems faced by agro-based industries. The amount of post-harvest losses of fruits and vegetables has been reported to be between 5-25 per cent in developed countries and 20-50 per cent in developing countries. Post-harvest loss has been reported to be 40-43 per cent for perishable commodities. This is a clear indication that developing countries are yet to evolve appropriate technologies to reduce post-harvest loss. Bangladesh is not an exception. Post-harvest losses in Bangladesh can be generally ascribed to:

- Inherent perishability of fruits.
- Harvesting before maturity in the case of mangoes, bananas, pineapples, etc.
- Traditional methods of harvesting employed and rough handling and indiscriminate selection of fruits from heaps at various sites.
- Substandard ways of packing.
- Unfavorable post-harvest conditions and abnormal weather conditions at the time of maturity and harvest of fruits.
- Lack of proper technology for processing, storing and processing.

The development of appropriate technology for reducing post-harvest losses can be highly cost-effective and can have an immediate impact on total production. Further appropriate post-harvest technology should be developed, particularly for export markets, to maintain competitiveness.

Improving Post-Harvest Handling:

Fruit harvesting, handling, grading, packaging, storing, and transportation practices followed by the growers and traders are all developed locally and these techniques do not meet the standard requirement. Fruits are either manually harvested or handpicked which results the high damage to harvested fruits. Packaging and storage of fruits are often done in an improvised manner. Only highly perishable items are packed, mostly in bamboo crates. No refrigerated transport is used. Hardly any post-harvest treatment is resorted to except in the case of bananas and mangoes, where some artificial ripening is done. Following Steps may be taken:

✓ **Combined Scientific Efforts:** Measures to improve post-harvest handling should be taken in scientific methods by the private sector. For this the help from the Ministry of Agriculture can be taken.

✓ **Improving Transportation Facilities:** Transportation of fruits from production point to the market place suffers from a number of constraints, mainly the lack of an sufficient number of medium-size trucks, poor road network including unsafe bridges, inadequate ferry capacity, and also the declining river transport capacity due to deteriorating landing facilities and the silting up of rivers. The railway plays a insignificant role in transport of fruits.

✓ **Improving Marketing Facilities** Fruit marketing is done almost entirely by the private sector. Numerous traders buy the product either at the farm gate or at primary or secondary markets on behalf of the wholesale commission agents, who operate in the major consumption areas. There are about 10,000 rural markets where marketing of agricultural products takes place. The physical facilities of these markets are poor, to say the least. The unhygienic conditions of these markets contribute much to the rapid deterioration of the produce.

Upgrading Traditional Technology for Food Conservation:

Food processing technology has not developed in the correct manner. Whatever technologies are available are home-based or of the cottage industry type. There is also lacking of necessary infrastructure. The food processing technologies in the country at present are limited. They are upto to the preparation of traditional products, e.g. pickles, mango leather, salad and brined products, jam, jelly, etc. In order to upgrade traditional technology the following steps are necessary:

- ✓ To create awareness of the importance of agro-processing at all levels.
- ✓ To develop the required trained manpower.
- ✓ To develop appropriate technology.
- ✓ To prevent food losses by:
 - Improving the farm- and village-level storage structure.
 - Improving rodent control.
 - Creating facilities for handling and processing fresh produce.

Agricultural Marketing System in Bangladesh:

Marketing Management is the planning and application of programs designed to construct, build, and maintain sales of a product. This is achieved by the marketing mix items. Agricultural Marketing Management may perform for all business activities that involved in the flow of food products and services from the point of initial agricultural production to reach in the hands of consumers. Marketing management represents an integration of several different activities. For example, selling, advertising, marketing research, new product development, customer service, physical distribution, pricing—all focused on customer needs, wants, and ultimately the search for customer satisfaction. Agricultural marketing management can create value by encouraging competing firms to improve their prices, services, products, and values for consumers. This can be assist in the efficient allocation of resources in the food industry, which in turn may improve the living standards of a society. Modern marketing system has several functions. It's important function is to move the desired varieties of farm products to consumers in the desired forms and settings at the lowest possible cost. There are three major marketing functions such as-(1) Assembling (Procurement, concentration), (2) processing (preparation for consumption), (3) Dispersion (Distribution). There are other secondary services such as grading, packing, transporting, storing, financing, assuming risk and selling.

Bangladeshi Farmers often consider marketing as being their major problem. However, while they are able to identify such problems as poor prices, lack of transport and high post-harvest losses, they are often poorly equipped to identify dormant solutions. Successful marketing requires learning new skills, new techniques and new ways of obtaining information. Agricultural marketing needs to be conducted within a supportive policy, legal, institutional, macro-economic, infrastructural and bureaucratic environment. In Bangladesh, Extension officers working with ministries of agriculture or NGOs are often well-trained in horticultural production techniques but usually lack knowledge of marketing or post-harvest handling. Unfriendly investment climate for traders and others exists due to arbitrary government policy, such as those that restrict imports and exports or internal produce movement. Poor roads increase the expenditure of doing business, reduce payments to farmers and increase prices to consumers. After all, the ever-present problem of corruption can put a serious impact on agricultural marketing effectiveness.

Agricultural Marketing Information System:

Need for bridging Information Gaps for Farmers:

An information service, which collects and disseminates on a regular basis information on prices and supply conditions of produce supply to a range of markets, analyses that information to provide farmers with advice on seasonal trends and identifies products that are in demand on domestic and overseas markets is need of the time. Current service capability of Market Information System is very poor due to following limitations:

- ✓ Although a large number of information is collected, only a few reaches farmers.
- ✓ Information that does reach farmers is often out of date and not something they are able to use in a meaningful way.
- ✓ Even if dependable & up-to-date information provided farmers have no way of knowing how to make use of it.

Possible Areas of Exploration:

Bangladesh needs an Agricultural Marketing Information System to help the farmers as well as traders to accesses to agricultural related information. Following system may be explored for this purpose:

- ✓ Internet Based Market Information: Internet provides a completely new feature to information utilization. Free electronic text, images, software, and many other forms of data are increasing the number, volume, diversity, as well as the number of server/ hosts.
- ✓ Mobile Based Market Information: The vast mobile networks which are easily affordable and inexpensive can make a big change in the agricultural MIS.
- ✓ Electronic Media Electronic media i.e. satellite TV networks can serve the purpose by arranging various agricultural events. Already some of the TV channel started the programme which helping the farmers to a great extent, Shaiek Siraz of Channel I has made his “Hridoe Mati O Manush” is very popular to the farmers.

Agricultural Cluster: Enhancing Competitiveness and Innovation of Agro Industry:

A simple definition of a cluster is “the geographical concentration of industries which gain advantages through co-location” [8]. A wider definition is the “geographic concentrations of inter-connected companies and institutions in a particular field” [9]. Clusters can be a set of linked industries and other entities significant to competition. Although there is a wealth of research and initiatives relating to clusters in general, surprisingly little attention has been paid to clusters in the agricultural sector. Agriculture in the twenty-first century is reinventing itself as a new global business redesigned by globalization, standardization, high-value production, massive growth in demand (both for the food and the biofuel industries), retail and packaging innovations, and a ramp up in efficiency. Faced with constant productivity and market pressures, the “new agriculture” needs new tools to improve its competitiveness and innovation capacity. The promotion of clusters is one of these tools. An agro-based cluster (AC) is basically a concentration of producers, agribusinesses and institutions that are engaged in the same agricultural or agro-industrial subsector, and interconnect and build value networks when addressing common challenges and chasing common opportunities.

AC initiatives are starting to be seen as a crucial approach to help advance the agricultural sector of many countries. The promotion or incentive of such clusters has various advantages relative to other approaches. In particular, cluster approaches recognize that all the actors in the agricultural value chain are often more innovative and successful when they interact with supporting institutions and other actors in the supply chain. By promoting vertical and horizontal links between local agricultural enterprises, as well as supporting relationships between them and assisting organizations (e.g. local governments, research institutes and universities), cluster policies promote the diffusion of innovation, as well as the use and generation of important local externalities. ACs can also develop access to markets and information. Cluster policies are claimed to be crucial for small-scale farmers and agribusiness, as they enable them to engage in higher productivity, and more market oriented and higher value-added production. As a result, central and local governments have discovered that cluster promotion is a valuable tool to support agricultural enterprises in their territory and help them link to global agricultural value chains in a more proficient and sustainable manner.

An AC could be considered the “ideal” value network, as it encompasses vertical, horizontal and support linkages. However, other forms of value network can come out in the agricultural sector. These are briefly considered below.

Agribusiness Complexes:

In many ways the idea of an AC builds on the earlier idea of agribusiness complexes. The term “complex” refers to all the interrelated activities necessary to produce and market a particular agricultural product, and it also highlights how companies within these complexes are often reliant upon one another [10]. However, the term “agribusiness complex” differs from that of ACs in that clusters have a more explicit geographical feature. The term cluster is also a broader term, including actors, such as universities and research institutes, which are not directly concerned in the production of a particular product.

Agro-industrial Parks:

Also called agro production or (agri) food parks, are shared facilities and services (e.g. transport, storage and packaging) built clearly for the processing of agricultural products. The idea behind such initiatives, common in India, is that it is often not easy for small- and medium-sized enterprises (SMEs) to invest in capital-intensive activities. Therefore the building of food parks allows the provision of common infrastructure facilities to be economically assisted, while also helping the enterprises there to gain from other benefits of clustering [11].

Agri-export Zones:

Represent one initiative to clearly use the idea of a cluster in the hope that this will increase the export of agricultural products. Such initiatives were introduced to India in 2001, and the country delivers a good example of what these zones require. State governments recognize a specific agricultural product whose export

is to be promoted. The production of this product or set of related goods would have to be based in a particular area (ranging in size from a single block to a group of districts) that would become the Agro-Export Zone. The export of the product would then be promoted in a complete fashion by looking at and assisting all the various processes within the value chain, as well as the links between them. Assistance to different elements of the cluster can include fiscal incentives as well as financial assistance for activities such as training, research and improvement (R&D) and infrastructure development.

One-village-one-product:

The one-village-one-product campaign is an initiative that initiated in Japan for promoting regional progress. Villages or local areas are encouraged to ponder on one value-added and local product, with product development and marketing support being provided. The products are then sold nationally and internationally. Initially the campaign was internal to Japan, but it is now part of Japan's foreign assistance programme. Other countries are also using it. Thailand, for example, now has a "One-Tumbon-One-Product" scheme [5]. Spice export villages in Sri Lanka are another example of agglomeration and facilities provision in specific locations. In 2006, Department Women Affairs of Ministry of Women and Children Affairs launched a pilot project in twelve districts named as 'One District One Product' which was successful.

Analysis of Existing Agro Policies:

Presently there are as many as 18 policy documents and 5 other occasional reports/papers are available relating to agriculture and agricultural development of Bangladesh which can be broadly categorized under three categories- crops, non-crops and crosscutting policies. Besides total nine ministries i.e. Ministry of Agriculture, Ministry of Jute, Ministry of Fisheries and Livestock, Ministry of Environment and Forest, Ministry of Land, Ministry of water Resources, Ministry of Food, Ministry of Rural Development and Cooperatives, Ministry of Planning are involved in policy formulation and implementation individually. The myriad of policies are generally harmonious in terms of their avowed goals of rapid poverty diminution through increasing productivity and profitability of crops, livestock and fishery, creating income and employment opportunities, spreading work opportunities for rural women and prosperous competitiveness of farmers. All of these policies underscore useful use of land, labour, water and other natural resources and environmental safety. The other common concerns of all these policies are the expressed need for firming research- extension linkage and synchronization amongst the ministries and agencies in the design, approval and implementation of plans and projects. Before we proceed to underline the policy option for Bangladesh it seems suitable to give some reflections on the underlying process and problems of formulation and implementation of these policies.

- ✓ The first issue is at the theoretical level of policy formulation. The mind set for policy preparation is generically guided towards agriculture productivity only and not to the rural economy as a whole. This unifocal perception misses understanding of farm vis-a vis non-farm components of the rural economy in a rational fashion.
- ✓ The second issue is related to demarcation of ministerial domain of administration. Most of the problems in policy formulation and implementation arise, because the domains of the ministries are not clearly defined and demarcated and, in some cases, the defined limits of ministry's domain are knowingly or unknowingly ignored.
- ✓ Thirdly, all critical planning, policymaking and decision-making functions and authorities are located in the apex level offices. Lower-level offices are basically responsible for implementing the plans and policies made at the top-level. Thus, decentralization of public administration is another area, which needs immediate attention.
- ✓ Fourthly, the policy documents are generally lacking of any serious policy analyses, notwithstanding lack of reliable data. These are not discussed or debated at any length at the ministerial level nor in public so that feedback from various stakeholders is missed.
- ✓ Fifthly, data deficiencies are chronic and policies are framed on fragile database. The ministries hardly use their own database collected through their policy & planning units and they hardly explore the potential of upgrading their capacity in data handling and analysis and prepare policy commentary based on hard facts cross-checked with other sources of data.

Cooperative Marketing Strategy for Agricultural Products in Bangladesh:

A cooperative is a user- owned and user-controlled business that distributes benefits on the basis of use” [12]. A cooperative marketing society is an association of cultivators formed primarily for the purpose of helping the members to market their products more profitably than possible through the private trade. The aim of a cooperative is not to convey capital gains to any owners; it is to create benefits to a group of members. And the cooperative is normally established to adjust a malfunctioning market mechanism, which is to say that the members through their cooperative can reduce the risk taking in their farm enterprises. Cooperative marketing or cooperative in agricultural business helps the farmers to take different risks associated with the production and distribution of crops. Cooperatives are strongest in the food processing industry [13]. The government should take different effective initiatives to strengthen the cooperative marketing in agriculture sector. Proper management of cooperative marketing can remove the interruption of intermediaries from market of agricultural product.

Market Orientation and Market Innovations:

Marketing orientation leads to create a customer and it is the customer who determines what the business is. Because it is its purpose to create a customer any business enterprise has two and only these two basic functions: marketing and innovation [14]. It develops a positive relationship between successful market intelligence system and successful market growth [15]. It increases the overall firm problem-solving ability, defensiveness, pro- activeness, futurity and overall strategy execution [16]. Being market intelligence as the vital content of marketing orientation it requires the run-time usage to the wide market needs of the firm where firms fail to understand the conversion process and rather prefers to keep the storage of information for building a rightful strategic marketing planning for the time to come. Thus, firms need to develop a marketing model that may connect the market orientation process with the expected change or innovations in the marketing of the firm. Firms while generating innovations in their existing marketing set up normally get too ambitious to get a fast lucrative profit figures and tend to burden the target enforcements on the existing sales force and intermediaries that results in slowing down the growth figures and turnover of traditional market base. Thus, companies need to inculcate an apprentice approach to innovations with the existing marketing structure that initially may slow down the growth figures. But gradually it proves a consistent growth result and easy market development.

Branding as a Strategy for Marketing Agriculture and Agro-Based Industry Products:

Brand is one of the important elements in marketing a product. Nevertheless, branding of an agriculture product is relatively new and still in an infant stage. It is also very challenging for a firm to brand its agricultural products. To brand their products the entrepreneurs should have clear perception towards agricultural brand, such as the criteria in branding their products, to identify relationships between brand indication and marketing strategy, and to understand the value of the agricultural brand. Brand increases its product competitive advantage and opens the doors of hypermarkets and supermarkets across the country and enables the products to be exported globally. Firms employ a different strategy when branding their products, such as using different brands for different markets or one brand for all markets. Brand helps entrepreneurs to expand their products in the domestic and global markets. As such Government and private sector encourage entrepreneurs of agro market sector to take initiatives to make branding as strategy.

IV. Conclusion

Bangladesh agriculture has over the last forty years been basically rice-dominated crop agriculture. The output growth has been very substantial and mainly focused on productivity only. The post-harvest management and marketing aspects were ignored or neglected. The government and international organizations have focused agro-based industry to ensure food security, help in poverty reduction, stabilize the incomes of the farmers, and satisfy consumer preferences and also to contribute to overall growth of the economy. Though there are lots of opportunities in agricultural industry but agricultural industry is facing huge and multifarious challenges. These challenges need to be overcome by concerted efforts of Government, private entrepreneur, NGOs and international related organization. Government may formulate agro industrial policy conducive to small –scale farmer as well as all stakeholders of agricultural-based industry. Cooperative Marketing Strategy, market orientation and market innovations in Agricultural Products in Bangladesh can contribute positively to improve the agricultural market environment. Branding though new in agricultural sector but it has different dimensions which look after the interest of consumer vis-à-vis profitable for entrepreneurs. Government and public sector both should focus on cooperative marketing, market orientation and innovations to improve the agro marketing of Bangladesh. Private entrepreneurs and financial institutes should come forward to explore the huge potentials of country’s agricultural sector.

Agricultural trade has been an important contributor to improved food security and price stability in Bangladesh. As the global price crisis has shown, however, the positive contribution of private trade might not completely eradicate the role of public food stocks. Even so, there are important opportunities to expand the scope of international trade in agricultural products. Bangladesh has been successful in exporting cereals and high-value products such as shrimp and fish. With well-targeted policy reforms and investments, Bangladesh has the potentiality to increase exports in these areas while meeting relevant quality and safety standards.

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CASE STUDY 1: TAKING BANGLADESH AROUND THE GLOBE

(PRAN Agro, Dairy and Food Limited)

PRAN RFL Group started their Agro business in 1991 by cultivating Papaya and pineapple in the district of Narsingdi in a area of 8 acre land. But it did not turn up as it failed to add value. Then the chairman Major General Amzad Hossain visited number of countries to get the idea. Afterward, he bought idea of Thailand Model of "King Center" (One Stop service) and focused on processed food. He started his business with pineapple canning but due to lack of technical knowhow and non availability of bank loan things delayed.

In the year of 1995-96, evaluating the market demand of Pakistani Shezan mango juice and our mango production, he planned to produce mango juice with the technological assistance of Shezan. They initially started supplying in local market. With the growing demand of local market they started diversifying their product to pickles, jam, jelly etc. Further to explore the international market and improve their product they established Research and Development section. They imported the technology, equipments and raw materials (pharmaceuticals ingredients and vitamins) from BASF and ROCH of Germany, tetra pack from Sweden, chips technology from USA. They mainly focused to train their technicians and engineers from those countries.

At present their engineers and technicians are experts and gain experience. They presently, produce food product from nut, tomato, mango, chili, turmeric, aromatic rice and milk. They directly buy product from farmers in contract farming system. In that they give training to farmers regarding better harvesting and post harvest management, provide good quality seeds and ensure buy back guarantee. As a result, they presently export their product to 83 countries of the world and have distribution center to all most all the Upazillas of the country. At the same time, since 2004, they are receiving Gold Medal from Bangladesh government for exporting highest amount.

CASE STUDY 2: A BIG BOOST TO AGRO-BASED INDUSTRY

(Flamingo Agro-Tech Ltd)

Flamingo Agro-Tech Ltd. (FATL) of Joypurhat started its journey in Bangladesh in 2001, in response to the increasing global demand for high quality "Potato Starch" products. The company has installed its plant by a Swiss company—Hovex on turnkey basis. The plant, set up at a cost Tk 45 crore, which was designed to use potato as the sole raw material. Initially the plant run 24 hours a day during potato harvesting season and produce 48 tons of starch from 220 tons of potato daily. The production rate could be maintained throughout the year if raw material supply can be ensured. A Swiss company-- AVBS—purchased all the products for initial five years. The initial export rate was 600 to 700 US dollars per ton. The price was re-ixed occasionally according to international market price, which hovers above 6000 dollars. Initially, it has utilised 60,000 tones of potato annually. The company also established cold storage to stock the potato during harvesting season, so that no season it can produce starch.

Potato starch is used to impart "functional" properties to process foods such as thickening, binding, filling and taste and as a stabilizer in Noodles, Dairy products, Confectionary, Meat industry, Syrup production, Bakery, Sauces, Pudding, Mayonnaise, Jam, Canned foods, Instant foods, desserts, Ice cream, Soft & alcoholic Drinks, Animal & pets feeds. Potato Starch is also used in the manufacture of pharmaceuticals, Paper Industry, Textile industry, Plywood industry, Adhesive industry, Construction material industry, Petro-chemical sectors.

After successful completion of initial 5 years the company increased her capacity and now exporting to various countries of the world and annual turnover is USD 1 Million.

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