ABSTRACT

Agriculture is one of importance sectors in every country. In general, agriculture activities are carried out by small farmers of less than one hectare and they work individually. They rely on middlemen in the agricultural supply chain because it is not worthwhile to market their agricultural products in urban markets. One of the main issue of faced by farmers in the supply chain of the agricultural products is the long marketing chain that involves multiple actors and several intermediaries or known as middlemen. The objective of these middlemen is to maximize their profit by buying the agricultural products at low prices and selling them back at higher prices. While the consumers pay higher price, the farmers received a very low prices, manipulation of price in nature. This paper discusses issues and challenges of the traditional agricultural supply chain and offers an alternative solution through the involvement of cooperative movement.

Keywords: Co-operative movement, marketing, agricultural supply chain, agricultural products.

INTRODUCTION

Agriculture is one of the important sectors in every country. This sector provides food and employment for the population, and generates incomes from export of agricultural products for the nation. The Food and Agriculture organization (FAO) estimated around 500 million family involved in agriculture activities in the world in 2014 (FAO, 2014). In 2013, an estimated one billion people were officially employed in the agriculture sector (IIASTD, 2014). In the same year, more than USD100 billion worth agricultural products were traded in the world.

Agriculture is considered one of the great foreign earners for many countries. In general, agriculture activities are carried out by small farmers. There are more than 570 million farms in the world and more than 90% are run by individuals or family (FAO, 2010). The vast majority of the world's farm are small or very small of less than one hectare; 12% are between one and two hectares and only 1% of all farms are larger than 50 hectares (IIASTD, 2014). Family farms occupy a large share of the world's agricultural land and produce about 80% of the world's food.

Agricultural production is broadly categorized into input supply, production, processing, sales and distribution to consumers, or known as the agricultural supply chain (Parwez, 2014). One of the issues faced by farmers in the supply chain of agricultural products is the long marketing chain involving multiple actors and several intermediaries between the producers or farmers and the final consumers. Many smallholder farmers rely on
intermediaries or known as middlemen in their marketing effort to sell their agricultural products to customers. They rely on collectors as it is not worthwhile to transport and sell their products to the market themselves. The collector will distribute the agricultural products to processors, followed by large and small wholesalers, and then to retailers before it reaches the hands of the final consumers. As many traders are involved, the agricultural supply chain is considered inefficient and a slow process. At the same time, marketing margin occurs each time the agricultural products pass from one intermediary to the others. The more the intermediaries involve in the supply chain, the less the farmers get the profit. While consumers have to pay high prices for the agricultural products, farmers receive a low profit margin, in return.

Considering this issue, there is critical for an efficient supply-chain management for the agricultural products. An alternative pathway for farmers to increase their income is through their involvement in the cooperative movement. Worldwide, cooperatives have demonstrated their contribution to economic growth, food security and community development. Cooperative movement in agriculture has economic and culture benefits for farmers as well as consumers (Dimitri et. al 2011). The sector increases the income of farmers and the consumption of agricultural products by consumers, thus helping to strengthen rural-urban relationships.

This paper discusses issues and challenges of the traditional agricultural supply chain and offers some solutions for marketing agricultural products through cooperative movement. It aims to identify the role of the cooperative movement so as to improve the supply chain of the agricultural products.

**Marketing of agricultural products**

Agricultural marketing is complex activities as it is carried out by farmers individually and involves a large number of intermediaries or known as middlemen. Farmers depend on the collectors, commission agents, wholesalers and retailers to market their products. There is a difference in the price prevailing at different levels of marketing, i.e collectors, commission agents, wholesalers and retailers. The extent of village sales also varies from area to area and commodity to commodity.

Agricultural products are also characterized by its homogeneity, seasonality, bulkiness, perishable and not in standard size. The agricultural products require special supply-chain management that includes post harvest handling, processing, packaging, storage management and logistics and transportation. However, the real challenges faced by the farmers are when they want to dispose the same commodities at the same time. The overly supply of the same commodities at the same time gives the chance to the middlemen to manipulate the price. The middlemen exploit farmers resulting in the low share of supply, and because they work individually. They have no bargaining power in the negotiation with the middlemen, resulting with the lower price of the agricultural products. They have to accept whatever prices determined by the middlemen, lower profits and income in nature.

The objective of these middlemen is to maximize their profit margins by buying the agricultural products at lower prices and sell them back at higher prices. The manipulation of middlemen has influenced the fluctuation of price of the agricultural products, and this situation affects the income of smallholding farmers. Other issues associated with smallholding farmers include knowledge gaps, marketing and market access and financial problem. Knowledge gaps include inadequate price, economy and market information that determines consumers’ need, preferences and information of the agricultural products supplied in the market. Lack of market information leads to fluctuation of agricultural products and unstable prices.
The marketing and market access is associated with the problem in the flow of the agricultural products from farm to reach consumers in domestic or international markets. This include the marketing channels available for farmers to market their agricultural products, government intervention such as price control, trade liberalization that allows the importation of products from overseas and trade protocols imposed by foreign countries.

 Farmers are hard-pressed for money to meet their initial and operational capital for their agriculture venture. Financial problems include credit availability, higher interest rates for landing and in some cases the money-lender requires collateral. Farmers are indebted to village moneylenders, traders and landlords. They are often forced either to enter into advanced sale contracts or sell the produce to them at low price. These issues need special attention by the government to ensure the development of the agricultural sector remains sustainable.

**Concept of supply chain**

In general, supply chain can be defined as a sequence of processes involved in the production and distribution of a commodity. It is a set of organizations directly linked by one or more upstream and downstream flows of products, services, finance, or information from a source to customers (Jacoby and David, 2009). It is a flow of products from suppliers to end users, and linked by a network of organizations such as producers or farmers, collectors, big wholesales, small wholesalers and retailers.

The concept of Supply-Chain Management is based on two core ideas. First, generally every product that reaches an end user represents the cumulative effort of many organizations. These organizations are referred to collectively as the supply chain. The second idea is that most organizations have only paid attention to their activities. As a result, few organizations really understood, much less managed the entire chain of activities that ultimately delivered products to the final customer. The result was disjointed and often ineffective supply chains.

The organizations that make up the supply chain are “linked” together through flows of physical products and information. Physical flows involve the transformation, movement, and storage of goods and materials from producers to end users. They are the most visible piece of the supply chain. In return, financial flows from end users to intermediaries organizations before finally reach the producers. At the same time, information flows allow the various supply chain partners to coordinate their long-term plans, and to control the day-to-day flow of goods and material up and down the supply chain.

**Agricultural supply chain**

An agricultural supply chain encompasses all the input supply, production, post-harvest, storage, processing, marketing and distribution, along the “farm-to-fork” continuum for agricultural products (Rao and Punwar 2004). These functions typically span other supply chains, geographic and political boundaries and often involve a wide range of public and private sector institutions and organizations. The underlying objective of agricultural supply-chain management is to provide the right products (quantity and quality), in the right amounts, to the right place, at the right time, and at a competitive cost. For governments, there may be broader objectives involved, especially where the supply chain is specifically strategic for trade or critical in the domestic food system. These objectives might relate to maintaining low inflation, maintaining social stability, sub regional development and increase the national incomes.
The agricultural supply chains are networks that typically support three major flows (Steven et al. 2008):

- Physical product flows, which are the physical product movements from input suppliers to producers to buyers to final customers;
- Financial flows, which are the credit terms and lending, payment schedules and repayments, savings, and insurance arrangements, and
- Information which coordinate the physical product and financial flows.

The agricultural supply chain can occur in domestic or cross national borders. The domestic agricultural supply chain refers to the flow of agricultural products from producer to end users in domestic markets. While the international agricultural supply chain occurs when the products are exported to overseas markets. Some organizations and service providers are specialized in specific activity, while others are involved in several different supply chains. For example, a big farm produces agricultural products and at the same time provides logistics and transportation services for other farmers. Some retailers, on the other hand, only involved in the selling of agricultural products to customers. The agricultural supply chain normally received support service from both the public and private sectors that includes technical and financial services.

The principle model of agricultural supply chain is presented in Fig. 1.

![Fig. 1. Traditional Agricultural supply chain (adopted from Allen Robert 2004).](image)

According to Banisheree Das et.al (2006), agricultural supply chain is a set of activities from the supply of agricultural input, the production of agricultural products by small and large farmers to consumers. Customer is an integral part of a supply chain. It consists several intermediaries organizations, such as village traders, stockist, processor, wholesaler, retailer, before the agricultural products reach the customers. The organizations in the agricultural supply chain work individually and independently, and the objective is to maximize their profit. The networks between the organization basically determine the supply and demand of the agricultural products. The agricultural supply chain activities include:

- Supply of agricultural inputs such as seed and plant materials, fertilizers and agricultural chemicals by traders in the village or urban. The supply of agricultural input is determined by demand in the industry. Generally, the demand is higher during cultivation and fruiting seasons, while it is stabilized during other seasons. The manufacturers and suppliers are competing to increase their market share at certain areas.
- Production of agricultural products by small and large farmers. The type of agricultural products is usually determined by market trends based on customer demand during certain activities or festivals, such as religious festivals, national celebrations and school holiday.
The transaction of the agricultural products normally occurs at the farm gate when the commission agents or collectors come and buy them from farmers.

- The processing aims to add the value of agricultural products by cleaning, drying, sorting, selecting the good-quality products, packaging and storing them in the right environment before they are purchased by wholesalers.
- The collectors or pre-harvest contractor plays crucial roles in collecting the agricultural products which were cultivated scattered in all over the villages and regions. Generally, farmers waited the collectors or pre-harvest contractor to come to their farm and buy their products at the farm gate. It is not worthwhile for the farmers to bring their produce to the collecting centres because they produce in a small quantity.
- Market the products at domestic or global markets aims to fulfil the requirements by consumers. They are sold through wholesalers, distant retailers and retailers at village and urban areas. The marketing of agricultural products for international markets will involve the exporters and importers from the receiving countries.

**Issues and challenges of traditional supply chain**

The agricultural supply chain is complex activities that involved many participants or organizations. It requires a total system or networks that linked together to create customer satisfaction at the end. In this regards, every organization in the supply chain must be able to manage its cost by reducing the expenses in the whole system. However, some issues and challenges of the traditional agricultural chain are as follows:

- Inefficiency in the whole supply chain coupled with small farm size results in a long chain of intermediaries, multiple handling, loses in quality and increase in the gap between producers and consumer prices. Intermediaries and system inefficiencies consume a disproportionate share of consumer prices. Large number of small farmers and retailers, each handling small quantity, create high overheads is leading to high margins on produce making the consumers pay for the inefficiencies in the marketing chain.
- The agricultural supply chain requires support services such as financial and technical that can assist them entering the local and global markets. The support services for domestic supply chain include fiscal and financial sector policies, pricing and investment incentives and institutions, the regulatory and legal framework. The financial services can come in two perspectives: the banking system that provides loans facilities, and the illegal financial service that provides fast and around the clock financial advance to farmers, without collateral. However, the challenges of providing and lending the rural financial service include interest rate for borrowers and high risks faced by lenders due to uncertainty of agricultural productions. In all cases, lending for agriculture can expose lenders to high levels of liquidity risk and covariant risk (USAID, 2005). Liquidity risk is greater because of the seasonality of crop production, and the likelihood that all farmers in the region will seek a loan or access to their savings at the same time. Lenders also have high exposure to covariant risks such as climatic risk and market (e.g., price) risks that are endemic to agriculture and that affect all farms and firms in a given region who borrow for similar purposes (USAID, 2005b).
- The supply chain involved flow of physical products from producers to customers, and flow of financial and information from customers to producers. Flow of information refers to consumers’ preference toward specific products that include the quantity, quality, time and mode of delivery. However, the factor that has attracted the most attention of policy makers has to do with the lack of appropriate information and dissemination of
knowledge. The traditional models of information dissemination have failed to the growing demand by farmers and business community (Parwez, 2014)

- The agricultural supply chain is lacked of support by logistics and transportation services. Logistics and transportation are most important economic activities among business venture. Logistics play importation roles in determining the agricultural products are produced according to the need by the industry or customers. Whereas, transportation plays the connection role between business activities and determines the agricultural products reach its destinations on time. However, the cost of logistics and transportation is estimated between one-third to two thirds of the total cost of agricultural products. The higher cost of transportation will reduce the farmers' profit margin.

Cooperative Movement

In a very simple term, cooperative can be defined as a group of people work in cooperation for a common objective. In a more precise definition by Merriam dictionary (2014), cooperative is "an association of persons, small producers or consumers, who have come together voluntarily to achieve some common purpose by a reciprocal exchange of services through a collective economic enterprise working at their common risk and resources to which all contributes." The International Cooperative Alliance (ICA) on the other hand, defines a cooperative as "movement that ties together members by their common will to combine together individual forces in one enterprise, to develop sustaining body and to promote the community's economics, social and individual standard." The heart of cooperative movement mainly concentrates on cooperation and shared values (ICA, 2015).

A cooperative is a group of people acting together to meet the common needs and aspirations of its members, sharing ownership and making decisions democratically. Cooperative has three distinct characteristics. It is an organization owned and controlled by members, for the benefits of members. They are not about making big profits for shareholders, but creating value for members. Generally, the function of a member is to provide initial and continue capital, select board of governors that is responsible for the running of the cooperative. The board of directors also makes decisions for the total membership of the cooperative. Members get the benefits from dividend and services, in return.

A cooperative is a member-owned, member-run and member-serving business organization. Its principles are guidelines by which the members put their values into practice as follows (ILO, 2002):

- Cooperatives are voluntary organizations, open to everyone who is agreed with its principles and accept the responsibility as a member.
- Cooperatives are democratic organizations controlled by their members. The members set their policies and make decisions. Every member has equal rights, especially the voting rights during the general assembly.
- Cooperatives obtained initial capital from members who contribute the share equitably and democratically. Every member has equal chance to buy shares, and receives equal equity of the co-operative.
- Cooperatives are autonomous, self-help organizations controlled by their members.
- Cooperatives provide education training and information related to their functions for their members so that they get the benefit from being a member.
- Cooperatives work for the sustainable development of their communities through policies approved by their members.
In 2013, it was estimated more than 700 million people are members of more than 500,000 cooperatives in the world (ILO, 2015). Cooperative movement plays multifunctional roles both in rural and urban areas, such as service providers, run economic activities and generate the dividend for its members, helps for the poor, create conducive environment for the members to participate in business ventures (Banishree Das et. al 2006). Generally, a cooperative is established for special purposes and thus, they are categorized by its function or objective and activities. In general, the co-operative functions and objectives are as presented in Table 1.

Table 1. Function and objectives of co-operative movement

<table>
<thead>
<tr>
<th>Cooperative Functions</th>
<th>Definition</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banking/credit</td>
<td>Another form of banking institution that provide business loans to farmers, and mortgages.</td>
<td>To provide financial services for members</td>
</tr>
<tr>
<td>Industry</td>
<td>Association of workers involved in cottage or village industries.</td>
<td>To undertake collective production, processing &amp; marketing of goods manufactured by the members &amp; provide them with the necessary services &amp; assistance</td>
</tr>
<tr>
<td>Logistics and Transportation</td>
<td>Association of logistics and transport providers</td>
<td>To provide logistics and transportation for individual and business venture</td>
</tr>
<tr>
<td>Agriculture production</td>
<td>A collective efforts by farmers in production and marketing agricultural products</td>
<td>To aggregate purchases, storage and distribution of farm input for producing agricultural products</td>
</tr>
<tr>
<td>Agricultural marketing</td>
<td>Cooperative business owned by farmers, to undertake transformation, packaging, distribution and marketing of agricultural products</td>
<td>To undertake collective marketing activities for members</td>
</tr>
<tr>
<td>Consumer</td>
<td>It is a form of free enterprise that is oriented toward service rather than pecuniary profit. It often takes the form of retail outlets owned and operated by their consumers</td>
<td>Collectively purchase and sell agricultural products to enterprise</td>
</tr>
</tbody>
</table>

The function of a cooperative is determined by the objectives of its establishment and policies set by the members. For example, the credit cooperative provides credit facilities and financial services to its members. The agriculture co-operative or also known as farmers’ coop is where farmers pool their resources in a certain area of activities and work together in
producing and marketing the agricultural products. They purchase and supply their members with inputs for agricultural production, undertake transportation, packaging, distribution and marketing farm products together.

The operation of transportation determines the efficiency of moving products from producer to customers. It involves packaging, moving activities, service quality, delivery speed, cost of operation and the usage of facilities. The logistics and transportation cooperative will determine the customers receive the agricultural products on time, safely, in good quality and at reasonable cost.

Consumer cooperatives are business venture owned, managed and aim at fulfilling the needs and aspirations of their members. They operate within the market system, independently of the state, as a form of mutual aid, oriented toward service rather than financial profit. The customers and consumers of the goods and services provided by consumer cooperatives are often the individuals who have provided the capital required by the cooperative. The purpose of consumer cooperative is to provide quality good products and services at the lowest cost to the consumers, rather than to sell goods and services at the highest price. In general, the prices of the goods and services are at competitive market rates.

The separation of functions is the uniqueness business model of co-operative movement, and it will prevent a co-operative from competing in the same business venture. The separation of function also enable the cooperative focus on the capabilities that it has and the coordination between cooperatives become easier.

Roles of cooperative movement

The existence of cooperative has a big impact in the generality of agricultural development. These include employment creation, market development, enhancement of rural incomes and the improvement of access to social services. It has been evident that agricultural cooperative has been responsible for introducing the exchange economy in rural areas. Cooperative has been responsible for developing modern markets in rural areas, provide ready markets for farmers' crop and at the same time absorb transaction costs (Holloway et al 1999).

There are several benefits for farmers to join cooperative movement, such as obtaining economies of scale, entering new markets, accessing professional services, increases the bargaining power and preserving existing markets. Farmers can obtain economies of scale from joining efforts in the production, logistics and marketing the products. For example, it is cheaper for a group of farmers to buy agricultural inputs such as seeds, fertilizers and pesticide in a bulk, rather than buying individually in a small amount. The economies of scale enables the supplier to deliver the agriculture inputs in bigger amount and reduces the cost per unit.

A cooperative, which is a combination of farmers can form a bargaining power when they want to purchase their agriculture inputs or to get services. They also have a bigger power when dealing with the intermediaries such as collectors, wholesalers and marketing agents. A cooperative that has a bigger amount of agricultural products can bargain a higher price with the wholesalers and retailers because it has the quantity. Even though the agricultural products are gathered from the cooperative members, they are sold from one channel that is the cooperative.

A cooperative is generally served by professionals who have unique academic qualification and experience. These professionals work as manager, supervisor, consultant, marketer and agent. These professionals understand the need by the industry and experiences in dealing with other businesses ventures. They will deal with the sellers and buyers on behalf
of farmers. This situation reduces the burden of farmers and allows them to manage their time more efficiently.

The traditional delivery pattern of freight is fewer trips and more loads. The delivery companies usually maintained their business independently. It means two carriers might serve in the same area. Nowadays, the trends of urban freight transport towards to deliver “Just-in-time” and "door-to-door." The operation of freight transport changes to have more trips but fewer loads in order to increase the efficiency differently. Without improvement, the transport costs will increase hugely to satisfy the current requirements. Cooperative freight systems are the ways which could be expected to solve this problem. Cooperative transportation systems integrate the resources of the cooperating companies to optimise the economic benefits. The main benefits of the techniques are (1) properly increasing delivery trip loads; (2) reducing unnecessary trips, as well as pollution and costs; (3) reducing service area overlaps; (4) increasing service quality and company profits. At the same time, cooperative movement can plan the role of service providers such as in the financial and technical services. The credit cooperative is still the most popular movement in many countries. Credit cooperative generally is very strong, comprises the highest number of membership and is the strongest in terms of asset and capital accumulations.

The consumer co-operative has the objective to provide basic and essential household products at higher quality and at reasonable price to its members. The activities include the running of agricultural markets, fresh and processed stores to members and public at large. From the above discussion, clearly the cooperative movement can be looked as a new marketing channel or intermediaries in the supply chain of agricultural products. Realizing the importance of cooperative movement in the supply chain of agricultural products, the government should play greater roles by providing more initiatives and incentives to the cooperative for them to be involved effectively. At the same time, the national, regional and international cooperative movement can play their roles as the coordinators and monitors in the networks of agriculture movement when the trading is made between the same nation, or between regional and in the global arena.

Way forward

A cooperative is democratically managed enterprise and operated by members. Cooperatives follow a unique business model which can be considered as truly socially responsible, with the core principles are for community and democracy. Democracy is the core value of a cooperative. Hence, the focus of cooperative is cantered on people. The ultimate goal is to meet not only economic, social and cultural needs, but also the aspiration of the members. The cooperatives provide services for their members, and thus the focus is on the benefits, not the real profits.

The cooperatives can specialize on the capabilities, and thus enable them to improve their overall competencies in the same way that the traditional intermediaries organization has done. It also allows them to focus on their core competencies and assemble networks of specific, best partners to contribute to the overall value chain itself, thereby increasing overall performance and efficiencies. The role of cooperative in the agricultural supply chain is presented in Table 2.
Table 2. The role of cooperative movement in agricultural supply chain

<table>
<thead>
<tr>
<th>Intermediaries in Traditional Agricultural Supply Chain</th>
<th>Cooperative functions</th>
<th>Scope of activities</th>
<th>Products/Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money lender</td>
<td>Banking/Credit</td>
<td>• Financial services</td>
<td>• Loan/mortgage</td>
</tr>
<tr>
<td>Industrial / Supplier</td>
<td></td>
<td>• Input supplier</td>
<td>• Fertilizer</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Bio-products</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Seed and plant materials</td>
</tr>
<tr>
<td>Logistics and transportation</td>
<td>Logistics and transportation</td>
<td>• Logistics and transportation of agricultural products</td>
<td>• Storage and transportation services</td>
</tr>
<tr>
<td>Producer</td>
<td>Agriculture production</td>
<td>• Production of agricultural products</td>
<td>• Fresh and processed products</td>
</tr>
<tr>
<td>Collector</td>
<td>Services</td>
<td>• Commission agents</td>
<td>• Collection and distribution of agricultural products</td>
</tr>
<tr>
<td>Processor</td>
<td>Industrial</td>
<td>• Processing of agricultural products</td>
<td>• Producing agricultural products</td>
</tr>
<tr>
<td>Wholesaler</td>
<td>Agricultural marketing</td>
<td>• Marketing of agricultural products</td>
<td>• Agricultural products</td>
</tr>
<tr>
<td>Retailer</td>
<td>Agricultural marketing</td>
<td>• Marketing of agricultural product</td>
<td>• Agricultural products</td>
</tr>
<tr>
<td>Local market</td>
<td>Consumers</td>
<td>• Marketing of agricultural products</td>
<td>• Agricultural products</td>
</tr>
</tbody>
</table>

The aim of the agricultural supply chain is to put forward the efficient and fast delivery of agricultural products from producers to consumers. The transformation of intermediaries to cooperative movement will reduce the intermediaries organizations in the agricultural supply chain, and create a more efficient value chain of agricultural products. Furthermore, the cooperative movement will return the profit of every business venture in the supply chain back to its members.

The value and objectives of agricultural cooperative are solidarity, cooperation among cooperatives, free will, democratic, improving economic and social life, support and development of agricultural incomes. The transformation of the agricultural supply chain through cooperative movement will remedy the problem faced by individual farmers such as introversion of agricultural activities, under funding, petty interest in the business venture and lack of technological infrastructure. This is because every business venture in the agricultural supply chain will be carried out by cooperative and all decisions will be made by cooperative members for their benefits. This effort will benefit all parties, especially smallholder farmers who are the member of a cooperative movement and consumers. The transformation of agriculture cooperative supply chain is presented in Fig. 2.
Fig. 2 indicates the agricultural supply chain that involve the cooperative movement. Every cooperative plays the role of intermediaries in the supply chain and focus on the function that it has capability and competitive advantages in producing the agricultural products or providing services. The involvement of cooperative movement will reduce the intermediaries of the supply chain and thus, efficient and effective flow among various stakeholders of any business activity and strengthening the supply chain.

The producer cooperative will replace the supplier of agricultural inputs and at the same time integrate the production of agricultural products. The integration of business activities among cooperative movement will reduce the cost among intermediaries. The cooperative movement will enable the purchase of agricultural input and the production of agricultural products in economies of scale. This will enable the cooperative to improve the quality and reduce the cost of operation in every intermediaries.

The services cooperatives such as the technological and ICT organization, and Credit cooperatives will provide technical and loan/mortgage services to other cooperatives, create an horizontal integration in nature. Every cooperative contributes in the supply chain management and follow the cooperative principles, which is sharing of profits.

Optimizing the entire supply chain, therefore, requires a level of information sharing, teamwork, cooperation and collaboration among the participating enterprise. Given the scenario of interdependence among cooperatives, rapid interchange of data on products and activities among cooperatives in a supply chain will reduce the transaction costs. Information can be shared and disseminated efficiently and effectively through the promotion of ITC based e-government where all farmers and agricultural business community can assess the information freely, faster and accurately. The information can be accessed from computers or hand phone anywhere in the country or abroad. Parwez (2014) suggests components of the agricultural information systems as follows: (i) development of agricultural informatics and communication, (ii) strengthening of IT apparatus in agriculture and cooperation states, (iii)
Agricultural resource information system, (iv) IT apparatus at department headquarters and its field offices.

Coordination between cooperative movement can be implemented at the national, regional and global under the supervision of the national, regional and international cooperative commissioner or registrar. The coordination will enable a better strategic planning that includes which markets will be supplied for which locations, a planned build-up of inventories, timing and market promotion. A better coordination among these cooperative movements will lead to a better alliance, and collaboration supplies chain, which in turn lead to the efficient products and information flow.

CONCLUSION

This paper discusses broadly the role of cooperative movement in the supply chain of agricultural products through extensive review. Cooperatives are present in many sectors of economy with different functions and objectives. They are run like commercial business ventures and have the capacity to replace the intermediaries or middlemen in the agricultural supply chain. The success of the supply chain is determined by the ability of the organization to deliver agricultural products to consumers at the right time and with cost effective. The sustainability of supply chain collaboration largely depends on how relationships are established and maintained among cooperative movement. Similarly, trusts among cooperative movement, power share and interdependence are other important factors for enhancing relationships in the supply-chain system, and these are lies in the principles of cooperative.

The cooperative movement in the world has improved presently, compared to before the second world war. The cooperatives are managed by professionals, and they run the organizations like commercial business entity. The growth and development of co-operative is closely regulated and control by the government in many countries. In making the cooperative movement an important sector, government must play greater roles and provides more incentives.

Agriculture can realize its full potential by applying the principle of supply-chain management by strengthening the collaboration between various intermediaries or middlemen. The real measure of supply chain success is how well activities coordinate across the supply chain to create value for customers, while increasing the profitability of every link in the supply chain. In other words, supply-chain management is the integrated process of producing value for the end use or ultimate consumers.

A major constraint to cooperative enterprises in many countries is the poor enabling environment, either due to restrictive laws and regulations stemming from the legacy of state control or, in some cases, the complete absence of a cooperative legal framework. The negative impact of the lack of an enabling environment cannot be overemphasized. To function well, such organizations do need a robust enabling environment with solid prudential regulation, protecting democratic member control and ownership, autonomy, as well as voluntary and open membership. Further, such a framework must be simple and transparent concerning its registration, auditing and reporting processes.

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