

Kazakhstani Agribusiness Supply Chain: Issues and Challenges

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Abstract

Kazakhstan, the largest in the Central Asia with an area of 2,724,900 square kilometers, has the largest oil, gas, and mineral deposits. Its gross national index (GNI) is \$11380 as in 2013, which categorizes it as upper middle economy. Its population of sixteen million is almost one hundred percent literate. The development of its economy and increase in GNI at the rate of almost twenty-five percent per year has enabled a high standard of living, increase in consumer spending, and people's preferences towards high quality processed and packaged food. Agribusiness supply chain plays a prominent role not only in providing quality consumer products at affordable prices, but also significantly contributing to economy. Nevertheless, the current supply chains, not only of agribusiness but also of other products and services, have several issues and challenges. Some of them pertain to policy matters, tariff regulation, and transportation and logistics infrastructure. Although several agencies are working to make their systems efficient and cost effective, there exists a considerable room for improvement. From the point of view of supply chain management, it has come up a long way during the last two decades, mainly due to international, developmental, and private foreign investments. Additionally, encouraging government policies and sustained investments in the agribusiness have enabled the nation to make significant progress. This paper provides an insight of Kazakhstani agribusiness to researchers, businessmen, and investors and what issues and challenges its agribusiness supply chain faces.

Keywords: Agribusiness supply chain, vertical integration, food processing, grocery retailing, Kazakhstan

1. Introduction

Kazakhstan, the largest republic in the Central Asia, has large oil, gas, and mineral deposits that provide it a major source of revenue. During the USSR era, the Central Asian republics were the sources of raw materials to feed the processing plants mostly located in the Russian Federation. The collapse of the Soviet Union disrupted not only agribusiness but most supply chains, especially in the Central Asian republics. The Commonwealth of Independent States (CIS) inherited the old system practices and bureaucracies prevalent in the command or controlled economy. The transition from the old system to market based economy was disruptive and the process contributed to the dysfunction of the food supply chains and consumer goods supply chain in the CIS. In the early years of their independence, the people in the Central Asian republics experienced food and consumer goods shortages.

Financing from various local and international banks, government, and private investors has helped Kazakhstan develop companies that are adding values to supply chains. Due to favorable endowment of natural resources, government policies, and more sophisticated consumer preferences that create demand for branded products, agribusiness supply chain has evolved considerably during the last two decades of independence. By virtue of having received international financing for agribusiness development and a sustained government support, many companies entered into the agribusiness and imported raw material despite home country potential. They initiated vertical integration either by owning farms or by financing farmers for securing constant supply base required for production of finished goods. France invested in the dairy subsector, Russia in the poultry, and the Saudi Arabian capital has been flowing in the edible oil subsector.

Kazakhstan's Gross National Index (GNI) grew from \$6,780 in 2009 to \$ 11,380 in 2013, at an unprecedented rate of 15-20% per year (World Bank 2013). GNI of the five Central Asian republics are listed in Table 1 for a comparison. Corporations from all over the globe have established their business in Kazakhstan and trying to avail of opportunities this transitional economy provides.

Table 1: Gross National Indicator (GNI), Atlas Method in U.S. dollars

Country Name	2009	20010	2011	2012	2013
Kazakhstan	6780	7440	8190	9780	11380
Turkmenistan	3570	4070	4660	5410	6880
Uzbekistan	1130	1300	1510	1700	1900
Kyrgyz Republic	860	850	900	1040	1200
Tajikistan	650	730	780	880	990

Source: World Bank National Accounts Data

Supply Chain Management (SCM) is crucial to the smooth running of a business. To ensure stable and efficient functioning, a company needs to manage all elements of the logistics process (suppliers, products, materials, inventory, warehousing, transportation, markets, and customers) while taking into account the complex relations between them and identifying and using new opportunities for growth (Deloitte 2011).

In this paper, we address the agribusiness supply chain in Kazakhstan, in what state it was at the time of its independence after the collapse of the USSR, and how it evolved during the last two decades. We describe the agribusiness in Kazakhstan and its main components. A brief description of various food supply companies and how they manage their functions is also stated. Further, various issues and challenges that the agribusiness faces in this transitional economy are discussed. Based on the author’s experience in the study and analysis of supply chains in the U.S.A. and Canada, various suggestions are made that can improve the agribusiness supply chain in Kazakhstan.

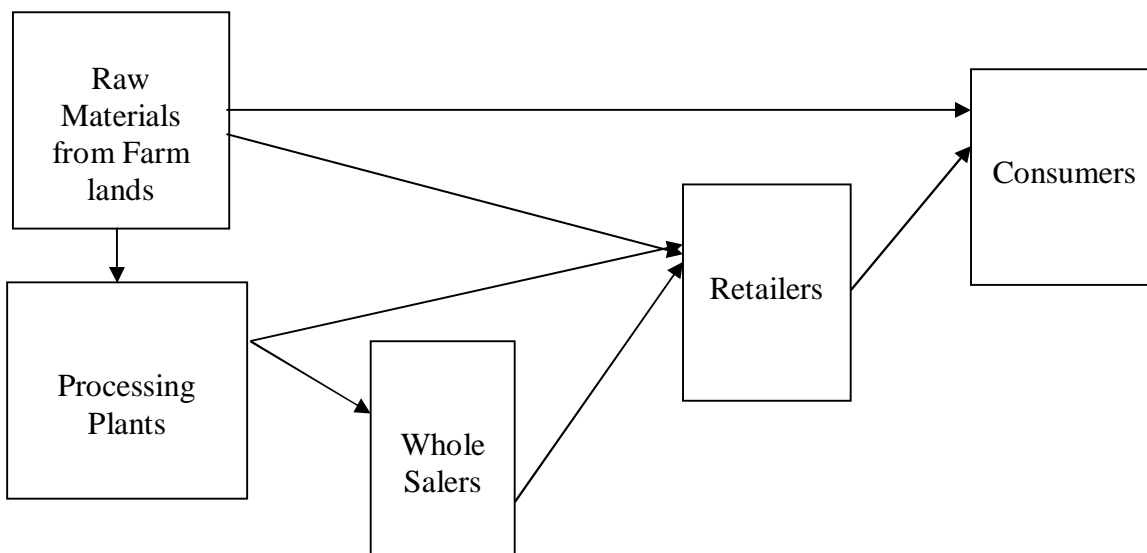
The next section provides an overview of the literature pertaining to the agribusiness. Section 3 describes agriculture and its main products in Kazakhstan. Section 5 lists and discusses issues and challenges and Section 6 suggests various measures necessary for improvement. Section 7 concludes this paper.

2. Current Agribusiness and Literature Survey

2.1 Current Supply Chain

Kazakhstan’s current supply chain is underdeveloped and so are the agriculture and farming. Farmers sometimes directly transport their produce to the open markets (bazaars) where consumers buy them directly from them. In other cases, farmers sell their produce to the retailers. Agriculture farms produce the raw material base. Dairy products, grains, vegetables, fruits, etc. that need further processing are transported to processing plants that make various kinds of finished products from the basic raw materials. Wholesalers or middlemen take care of the logistics operations, like packaging, distribution, transportation, and delivery to retailers and consumers. A diagram of the currently practiced supply chain, showing how final consumers receive their food products, is shown in Figure 1.

Figure 1: A Currently Practiced General Agribusiness Supply Chain



2.2 Literature Survey

Swinnen et.al (2006) conducted a survey of dairy supply chains in Eastern European Countries (EEC or CEE) to determine the effect of transition and globalization. Their findings includes: Foreign Direct Investment (FDI) into processing and retail industry contributed the development of higher quality standards and increased vertical coordination (VC). Swinnen (2005) provides some interesting conclusions on functioning of food supply chains in the CIS. Buyers provide inputs and assistance to farms that include investment assistance, trade credit, bank loan guarantees, and management advisory services.

Gordon and White (2006) describe the relationships developing between farmers and buyers (processors and retailers) in the CEE and CIS markets and observed that FDI has caused food retail chains and internationalization of agribusiness markets. The CIS agribusiness is influenced by three main forces (1) an emergence of vertical integration financed by private sector; (2) a massive extension of state financing loans to agriculture related projects; (3) the emergence of a modern food retail sector in metropolitan areas. These forces will lay the path of agribusiness from most fragmented to modern industrial facilities. This can happen when producers, processors, and retailers develop and implement a system to coordinate the production and the supply of farm products, its processing and distribution with demand signals along the supply chain (PEI 2006).

3. Agribusiness in Kazakhstan

3.1 Agriculture and Products

The Republic of Kazakhstan, the largest country in the Central Asia, is bounded by Russia on the North, by China on the East, by Kyrgyzstan, Uzbekistan, and Turkmenistan on the South, and Caspian Sea and Russia on the West. Its total area is 2,724,900 square kilometers that includes almost two thirds of its deserts and wastelands and the remaining is steppes, hills and mountains in the East and South East.

Kazakhstan's agriculture sector contributes significantly to its economy. It is the 15th largest producer of wheat in the world, growing more than 11 million metric tons annually. Wheat is Kazakhstan's largest export commodity and takes up 55% of total agrifood exports. About 15 % of labor force is employed in the agriculture sector that contributes about 8% to its GDP.

Kazakhstan's agricultural sector comprises grain, vegetables, dairy, poultry, fodder, and livestock. Kazakhstan is the sixth largest grain producer in the world (15.6 million metric tons of grain in 2011), including high quality wheat with rich protein content. Grain and flour are a major source of hard currency from exports. Its five major regions specialize in different agribusiness products. The various areas of Kazakhstan and their specialization are listed in Table 2.

Table 2: Specialization of Agriculture Products

Geographical Area	Agricultural Products
Western	Fishery and animal husbandry
Southern areas	Irrigated agriculture and sheep breeding
East	Food processing
North	Grain, dairy (milk), and meat
Central	Grain, dairy, and meat

The government initiated the restructuring and privatization in 1993 that resulted in 90 % of agriculture under private ownership. It strongly supports agribusiness in order to join WTO and encourages the development of modern technologies and processing of new products, namely bio-ethanol, high octane accelerator, or high quality gluten for the feed industry and enriched yeast for cattle breeding. Almost 50% of the agricultural output pertains to livestock related activities. Traditionally, farmers raise sheep, cattle, and horses. Hogs and camel herding is also developed in some parts.

According to the Republic of Kazakhstan statistics, the number of farms has been growing with each coming year. The total number of farmer households reached 170,000 in 2009, a 9.2 % increase in one year. Farm production was worth KZT 158.5 billion in 2008 out of which crop production at KZT 144.9 billion and livestock at KZT 13.6 billion.

Kazakhstan's food processing industry is not developed and is inadequate to meet the demand for processed food products. Most imported products are processed food and exports are predominantly unprocessed staple commodities. More than one hundred thousand companies work in the agribusiness all over Kazakhstan.

3.1.1 Meat Processing Industry

Animal husbandry is well developed from the Soviet time and occupies the first place in Kazakhstan. It is almost evenly spread in the country and meat provides a staple diet for the people. The meat industry caters nearly 30% of the entire food products in Kazakhstan and meat production ranks third after Russia and Ukraine. The major capacity meat-packing plants are located in Semipalatinsk, Almaty, Uralsk, and Petropavlovsk. Cattle and sheep are driven to these meat packing plants from its vast territory. Nevertheless, Kazakhstan meat consumption is more than its production. For example, production for meat in 20011 was 725,200 tons and the actual consumption was 970,000 tons, which is 234,000 tons in excess of production or 32%. Most preferred is the beef and its amounts to 45%, whereas pork, lamb, and poultry are 24%, 14%, and 8%, respectively. The shortage of meat is met by imports, and 13,300 tons of beef, 2,900 tons of pork, and 152,000 tons of poultry was imported in 20011.

3.1.2 Dairy Production

There is milk shortage in the country. Milk consumption varies greatly by the region. For example, the average per capita consumption of milk in the South Kazakhstan oblast is less than 200 kilograms compared to an average of 260 kilograms. A large proportion of dairy products are imported. Also, the local dairy products are not competitive in price. Consequently, Kazakhstan's market abounds in imported goods, especially food products like cheese and butter.

Under the country's industrialization strategy, Almaty and Kostanai regions are the main hub in the dairy subsector. Domestic market's 50% supply of dried milk come from Kostanai region. The main producers are DEP, Kosmis, and Milch. However, the shortage of indigenous quality raw materials causes problems. For example Food Master, a well-known dairy producer, imports almost one third of its production input from Kyrgyzstan in the winter season. There is a need for significant investment in local dairy farms.

Food Master, with annual sales of 25 million USD, controls the entire supply chain of dairy products from milk to distribution of final products. It has four processing plants at Issyk, Astana, Shimkent and Kurdai and the fifth in Almaty, which processes products including milk, kefir, sour cream, yoghurts, cheeses, and ice-creams (Evp.ru).

3.1.3 Grain and Flour

Kazakhstan ranks sixth in grain production. In 2011, 16.3 million hectares of land was planted with grain, including 13.9 million hectares of wheat. Akmola in the North and Kostanai Oblasts are the main grain producing regions. In 2012, 15.6 million tons of grain was harvested and expected to export more than 25 million tons in year 2015. This country holds the leading place in the world in flour export. The milling industry has made a huge progress and captured most of the regional market in Central Asia and Afghanistan.

3.1.4 Vegetable Market

Kazakhstan is self-sufficient in vegetables in general. The only problem is in rathe-ripes. Insufficient quantity of vegetables are grown in protected grounds, that is, in greenhouses. Therefore, the State now encourages construction of greenhouses. The number of greenhouses in Kazakhstan increased tenfold in the last two years. To achieve the required level of the domestic rathe-ripes market, an additional 80% increase is needed in rathe-ripes production. To achieve that level, there are governmental incentives and primarily subsidies. Currently, a draft law on food security is pending in the Senate, specifying the provision for subsidizing greenhouse vegetables. The provision would be a good stimulus for the development of greenhouse agriculture.

The greenhouse industry of Kazakhstan is only beginning its development and has a vision for the future as the land for such industry development is available in abundance. KazAgro National Managing Holding has launched crediting of mini-greenhouse farms. According to experts of the holding, the implementation of this program will provide the commissioning of up to 10 hectares of greenhouses. The estimated yield per greenhouse is 12 kilograms per square meter. This program implementation will result in the production of 1,000-1,500 tons per year, and create up to 400 additional jobs in the country.

3.1.5 Drip Irrigation

KazAgro National Holding started a project of developing horticultural production with drip irrigation applied in Southern Kazakhstan. In 2012, tomatoes were planted over 141 hectares with drip irrigation and 8,400 tons of tomatoes were produced. The project is subject to land development of Akdala massif in Southern Kazakhstan. By 2015, up to 4,200 hectares land will be planted to master production with application of modern water-saving technology of drip irrigation of tomato, onion, grape, apple, pear, apricot, peach, sweet pepper, and watermelons. In 2011, construction of a tomato-processing plant was planned.

3.1.6 Fodder Production

In Kazakhstan, the total fodder security does not meet the needs of livestock breeding. Scarce is succulent forage production, the availability of which is 31% of the demand; such valuable types of forage as haylage, mono-fodder (grain-haylage), and mangold (fodder beet) are virtually not produced at all. This requires a greater area of irrigated pastures for complete grazing fodder availability for the existing livestock. Fodder fund should be also established in sufficient scopes to meet the industrial poultry farming requirements

At the same time, the Ministry of Agriculture announced in 2011 its willingness to increase subsidizing to reduce the cost of fodder in beef, pork, and poultry production by KZT 1 billion. For this purpose, KZT 2.5 billion were allocated this year; the program proved its effectiveness and will continue to be implemented. The total amount, approved by the Ministry of Economy within this sub-program for 2014 amounted to KZT 3.5 billion.

3.2 Food Processing

Favorable developments in the Kazakhstan economy have enabled an increase in consumer spending and their preferences towards high quality processed and packaged foods. The food processing industry is among the leading and most rapidly developing economic sectors. Processed food consumption is rising, on an average, by 20% annually. The food processing industry includes more than 5,000 plants and 80% of them are small and medium size enterprises (SME), employing about 10% of the total Kazakhstan employees.

The food processing industry has special support from government and international financing organizations. The major segments of food processing industry includes: soft drinks, flour and cereals, plant and animal oil production, meat processing, dairy, fruit and vegetable processing. The volume of food processing industry is estimated to be about 3 billion USD.

The Ust-Kamenogorsk Poultry Factory (UKPF), located in the North East Kazakhstan, is a vertical integrated broiler factory that markets and distributes frozen and cooled chicken, chicken sausages, and smoked chicken. It accounts for almost 50% of chicken produced in Kazakhstan.

Juice production is the most dynamically developing segment of the agribusiness. Large domestic and foreign producers market under various brand names: Juice, Piko, Da-Da and Gracio, Moya Semya, J7 and 100% gold. JSC RG is the leading beverage producer and consumer goods distributor. It has four production companies for juices, soft drinks, tea packaging, and milk and two distribution companies in Kazakhstan and Kyrgyzstan (EBRD; RGbrands.KZ)

3.4 Grocery Retailing

Kazakhstan's retail trade increased manifold during the last decade and reached over 12 billion USD, of which 35% is in food sales and the remaining 65% in non-food sectors. The city of Almaty, with a population of 1.5 million, contributes to 41% of the retail trade. Retailers are classified as:

- Trading companies: These are retail chains and share the lowest, almost 21 percent of the retail business.
- Independent Organizations: these include stores owned privately by families and small businesses, and are not affiliated with retail chains. Their share of retail business is 40 percent.
- Outdoor markets and bazaars: Individuals have established their small stores and stalls mostly outdoor or in temporary structures to protect themselves from heat or cold. These retailers capture almost 35 percent of the retail business.

Compared to American or European retailing, the market is underdeveloped. For example, Almaty, the largest city with a population of 1.5 million, has only 60 square meters of retail space per thousand people, compared to 200 and 350 square meters in Prague and Warsaw, respectively. Local food and consumer goods chains include Dartarkhan, CityCenter, Silkway city, and Ramstore.

Ramstore is a major investment by a foreign grocery retailer and makes available high quality foods and other consumer goods at low costs. It sources about 85 percent of its products from local suppliers, and works closely with them to secure a consistent and continuous supply of high quality produce. Ramstore owns several supermarkets, hypermarket/mini-malls, shopping centers, warehouse facilities, and corporate offices in Kazakhstan. It is further expanding its operations with the help of IFC financing in order build its retail stores in all big cities and to capture a larger share of the retail business. Ramstore can be compared to some medium size retail stores in the U.S.A, like Safeway in California or Food Lion in Virginia and Carolinas.

4. Issues and Challenges

The following are the main problems face by this industry:

- Shortage of trained human recourses for R&D management, and marketing activities.
- Obsolete equipment and machinery required for processing of finished products. Almost 85% of the machinery is at least 20 years old and urgently need replacement – an investment worth about five hundred million USD.
- Existence of only a few seed growing companies poses a serious constraint for agriculture sector growth.

Most educated people of Kazakhstan like to live in cities, like India or other developing countries. The government supports the agribusiness sector by freeing the sector from taxes and subsidizing development oriented investment by 40%. The President, Mr. Nursultan Nazarbayev, created a state owned company, KazAgro and assigned it the task to raise the governance of state owned agribusiness corporations to international level.

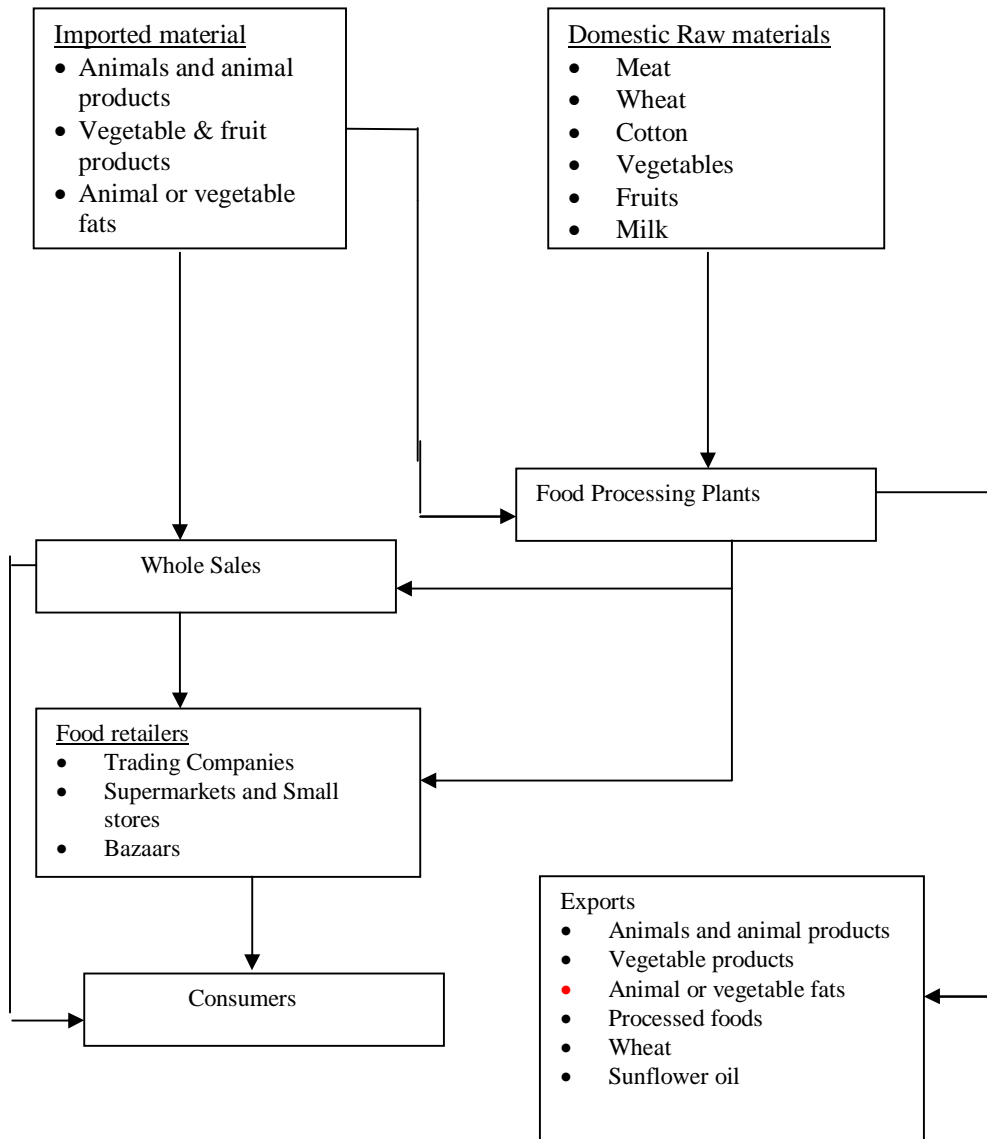
Some international financial institutions, such as World Bank and European Bank for Reconstruction and Development (EBRD) support agribusiness development in Kazakhstan. EBRD signed more than 5 billion EURO loans in agribusiness. The Turkuaz Edible oil industry installed a new sunflower oil plant with a capacity of 200 tons/day that increased its market share from less than 3 to more than 5 percent in Kazakhstan. EBRD is also providing assistance to train farmers and others in packaging, marketing, labeling and product development. Oilseed crops cover over 600,000 hectares, of which 418,000 hectares are sunflowers. Oilseed production is expected to grow more than a half million metric tons per year.

5. A New Supply Chain Model and Suggestions

Kazakhstan's rural area is sparsely populated, with a density population of less than two persons per square kilometer, compared to the entire country's population density of less than six persons. There is a tremendous scope for developing agriculture and animal husbandry. Logistics operations play a significant role to make supply chain run smoothly and efficiently. Investment is needed to develop road-networks and transportation facilities. There exists a huge potential to grow most raw material for good production within the country. Nevertheless, the neighboring Central Asian countries, located south of Kazakhstan, have milder climate. Fruits, vegetables, and other products that do not grow in Kazakhstan due to climatic conditions, can be imported from Kyrgyzstan, Turkmenistan, Uzbekistan, or Tajikistan. These countries need to sign a trade agreement between them, like North American Free Trade Agreement (NAFTA) between the U.S.A., Canada, and Mexico.

The main source of raw material is the farm land and the countryside: Farm products include vegetables, fruits, poultry, meat, grain, dairy products, etc. They are grown either within Kazakhstan or come (imported) from the neighboring CIS region. Most farm products need processing and are required to be transported to processing plants whose locations play a significant role in supply chain management. Some of the finished products from the processing plants are bought directly by retailers, some by wholesalers, logistics companies, or exporters. Certain seasonal food items need to be stored in refrigerated storage or warehouses. The operations described here are depicted in a flow diagram, Figure 2, that suggests an improved agribusiness supply chain for Kazakhstan.

Figure 2: An Improved Agribusiness Supply Chain



6. Conclusion

The collapse of Soviet Union disrupted not only the agribusiness but also many supply chains, especially in the Central Asian republics as they were mainly the sources of raw material supply to processing plants in Russia. Availability of finances from various development banks, private investors, and also from government helped Kazakhstan develop many supply chains, including the agribusiness. Due to favorable endowments of natural resources and conditions, and more sophisticated consumer preferences that create demand for branded products, agribusiness supply chain has evolved considerably in the last two decades of independence. By virtue of international financing for agribusiness development and a sustained government support, many foreign and local companies have entered into the agribusiness. Some of them imported raw material despite home country potential and also initiated vertical integration either by owning farms or financing and partnering with farmers by securing a constant supply base for the production of finished goods. France has invested heavily in the dairy subsector, Russia in poultry, and the Saudi-Arabian capital has been flowing in the edible oil subsector. The most dynamic business is juice processing and grain production is one of the pillars of the Kazakhstan food cluster.

With time Kazakhstan will have trained personnel in R & D, management, and other areas as the government policies are quite favorable and conducive for investors and business people. Efforts are underway to build infrastructure for multimodal transport systems and logistic systems that will help improve various supply chains. This will provide this nation a share in the global markets not only of agribusiness but many other commodities.

A future research includes the relationships and dynamics between supply chain partners and how they can collaborate and coordinate to make the agribusiness supply chain more efficient in order to provide food items to its consumers at an affordable and reduced cost. Additionally, applying American and European technology and management techniques to the Central Asian supply chains may further make them more consistent and function smoothly.

Although the agribusiness supply chain is still underdeveloped from the point of view of supply chain management, it has come up a long way during the last decade, mainly due to international, developmental, and private foreign investments. Additionally, encouraging government policies and sustained investments in the agribusiness have enabled to make significant progress. Furthermore, the author suggests an improved supply chain model for the agribusiness in Kazakhstan in order to have smooth and efficient functioning. The suggested model is based on the author's experience in American supply chain management. In my future research, I will like to study relationships between supply chain partners. This paper provides an insight of Kazakhstan agribusiness to researchers, businessmen, and investors.

References

- BMI, Business Monitor International, www.businessmonitor.com
CEE – foodindustry, www.cee-foodindustry.com
Cluster.kz, Kazakhstan Cluster Initiative, www.cluster.kz
EBRD, European Bank for Reconstruction and Development, www.ebrd.com
EBRD (2006), Transition Report Update, www.ebrd.com
IFC, International Finance Corporation, www.ifc.org
Kazakhstan Agency of Statistics, www.stat.kz
Kearney T.A (2006), Emerging Market Priorities for Global Retailers – The 2006 Global Retail Development Index, www.atkearney.com
Lorenz, Harri (2006), Food Supply Chains in Ukraine and Kazakhstan, Electronic Publication of Pa-European Institute, www.tse.fi/pei/pub.
PEI (2006), “Food Industry Value Chains in Leningrad Oblast and Krasnodar Krai”, Electronic Publications of the Pan-European Institute, No 7, www.tse.fi/pei/pub.
Product.ru, www.product.ru
Rana, Krishan (2011), Agribusiness Supply Chain in Kazakhstan.
RG Brands, www.rgbrands.kz
Swinnen J, (2006) When the market comes to you or not. The dynamics of vertical coordination in agro-food chains in Europe and Central Asia, (World Bank Publications).
Swinnen J, (2005) “The dynamics of vertical coordination in the Central and Eastern European agri-food sectors”, Economics of Agriculture, Vol.4, No 2, pp.7-20
USDA, United States Department of Agriculture, www.usda.gov.
USDC, United States Department of Commerce, www.bisnis.doc.gov.
World Bank (2002), Transition-The First Ten Years: Analysis and Lessons for Eastern Europe and Soviet Union, www.worldbank.org/.