Transportation in Kazakhstan and its Economic Implications

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ABSTRACT:

Transport and logistical systems and their management play an important role in the national economy and international trade. Kazakhstan is the largest of the republics in the Central Asia and in the Commonwealth of Independent States (CIS) except the Russian Federation. It is also one of the most sparsely populated countries and has probably the largest reserves of oil, gas, minerals, and natural resources. Companies from Europe, Asia, and Americas started moving to this region and realized the importance of economic development in the Central Asian Republics. This paper describes Kazakhstan's current transportation system, its infrastructure, and various issues in the logistical management system. We suggest how to improve and utilize multimodal transport systems, resources of Kazakhstan, and to utilize governmental policies to generate prosperity and national wealth, to reduce costs of imported items, and to make more efficient and effective transportation systems in Kazakhstan. Transport and logistics companies as well researchers will benefit significantly from this paper.

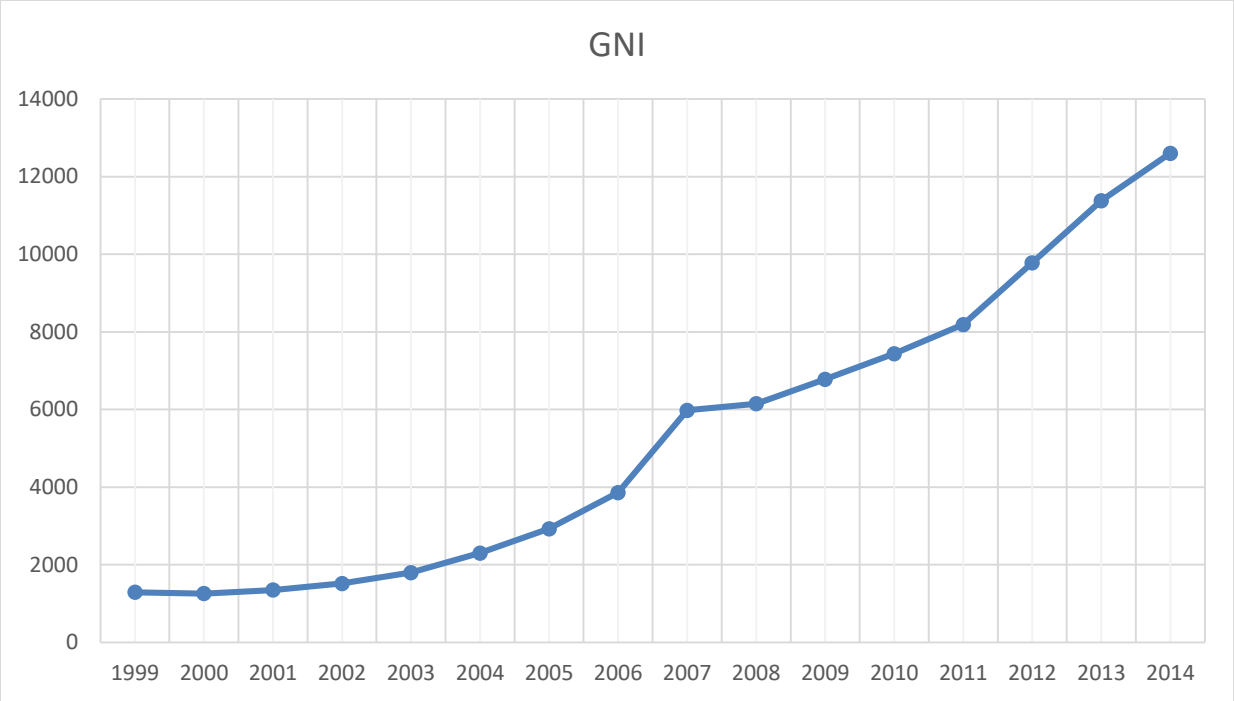
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1. INTRODUCTION:

Logistics is an important and essential link in most value chains and transportation is an integral part of logistics operations. An efficient transportation system plays a significant role to reduce the cost of goods and services to the final consumer. Advancements in information technology have not only brought the world closer, but also made it more convenient to transport goods from one part of the globe to another. International trade has grown at a very fast pace during the last two decades. Before the economic depression hit international business in 2008, goods and services worth around two trillion US dollars crossed international borders every single day. This level of business was possible due to efficient and effective means of logistics operations, especially international transportation systems. Trade and transport are inextricably linked. An international transportation connects various transport links that correspond to a transfer, storage or transport operation in the country of origin, in a transit country or in the country of final destination. A deployment of efficient transport services is a prerequisite to successful international trade.

Kazakhstan is the largest in area not only in the central Asia, but also of the former Soviet republics, excluding Russia, also called the Commonwealth of Independent States (CIA). It has enormous fossil fuel reserves, one of the largest in the world, and has plentiful supplies of minerals and metals, such as uranium, copper, and zinc. Corporations from all over the globe come to Kazakhstan with a primary focus on the extraction and processing of its natural resources. Its oil production is 1.54 million barrels per day and Kazakhstan is ranked sixth in grain production. Its GNI has increased at a much better rate than other nations in the Commonwealth of Independent states. Figure 1 shows a graphical representation of Kazakhstan's growth rate.

Figure 1: Kazakhstan's GNI growth 1999-2014



The current transport system, along with different types is described and various issues and weaknesses are enumerated. We also make various suggestions to improve the efficiency and effectiveness of Kazakhstan's transportation system so that cost of goods and services to the final consumers is reduced. The remaining of the paper is organized into sections. The literature review is described in section 2, and Section 3 lists the current transportation system and its various modes. Section 4 enumerates various factors that contribute to high demand of transportation in this vast country. The next section, Section 5, identifies important issues and weaknesses that need to be addressed. Further, suggestions are made to improve the transportation system and they are included in Section 6. Finally, Section 7 concludes the paper.

2. LITERATURE REVIEW:

During the early half of the twentieth century, many countries, including the former Soviet Union republics, Mongolia, China Moved radically from market economy to state controlled economies. The failure of centralized economies in these countries from 1980s to 1990s moved them back to the market economy and these are termed as transitional economy (World Bank 1996; Jones and Kumssa 2000). The Central Asian transitional economies had a history of logistics and supply chain problems. The studies of logistics issues in these transitional economies are scarce, but they are of great interest to the business world today. Even two decades after the dissolution of the Soviet Union in 1991, many are still relatively new, resource rich, untapped markets. Foreign companies entered Kazakhstan en masse.

The focus of this study is transportation and logistics systems in Kazakhstan. It is important to outline the definition of logistics management used, compared to its broader counterpart with which it is often confused supply chain management. The Council of Supply Chain Management Professionals (CSCMP) defines logistics management as "that part of supply chain management that plans, implements, and controls the efficient, effective forward and reverses flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers' requirements." CSCMP defines supply chain management as encompassing "the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities.... Supply Chain

Management is an integrating function with primary responsibility for linking major business functions and business processes within and across companies into a cohesive and high performing business model" (CSCMP 2005). Because this research focuses on the planning, implementing, and controlling of the movement of goods for individual organizations within a specific context, logistics management, and not its broader counterpart of supply chain management, is studied.

Very little published research is available on logistics management that focuses on Kazakhstan or the Central Asian Republics. One of the important factors that Vanden Bloomen and Petrov (1994) noticed that foreign companies need to maintain their continued market presence in these transitional economies. The second factor related to logistics management is the distribution infrastructure in Kazakhstan. U.S. Commercial Service (2005 and 1997; EIU 2003) regularly documented problems with its transportation infrastructure and adds that Kazakhstan's distances and geography makes the costs of building newer roads and railways or significantly improving them prohibitive and will limit the expansion of international trade for many years. Karaseva(1995)suggests that geography and buying powers influenced logistics management in Russia negatively and the similar factor are also applicable and make logistics management problematic in landlocked Kazakhstan, one of the larger and more sparsely populated countries of the world, with a population density of about 6 persons per square kilometers.

In their study of emerging markets, Arnold and Quelch (1998) state that there is little market data in Kazakhstan and very little is known about customer demand. The fourth logistics management issue in Central Asian Republics is a lack of management education and training. Chikan (1996) found that a lack of supply chain understanding contributed to stockpiling in Hungry. Vanhonacker and Pan (1997) and Razzaque (1997) had the similar findings in China and Bangladesh and they predicted that Kazakhstan may face similar logistics management challenges pose by a lack of local supply chain understanding.

A fifth logistics management issue in transitional economies is corruption and a corresponding lack of legal accountability. Gillespie and McBride (19196) found extensive evading and co-opting legal officials in Poland and China. Reports of corruption, smuggling, and a lack of legal recourse may lead to logistics management difficulties in Kazakhstan.

The world's largest trading relationship is between the USA and Canada. They trade merchandise over USD 400 billion a year. This explosive growth in trade came as a result of Canada-U.S. Free Trade agreement (CUSFTA) and the North American Free Trade Agreement (NAFTA). Taylor et.al (2004) describes border impacts and costs, and suggests possible solutions. Kazakhstan and other CIS countries can learn a great lesson from this alliance and need to follow the U.S-Canada Trade Agreement model. These new republics in CIS, of course, need to revise their policies, tariff, and customs regulations in order to have free flow of transportation and goods and services. Stank and Crum (1997,31) observed that "Border crossings delays in transportation and add uncertainty to transit times as customs clearance, traffic congestion, and other operating procedures and often highly variable with respect to time." They further suggest several measures to reduce the transit times and traffic congestion at international borders.

3. KAZAKHSTAN'S CURRENT TRANSPORTATION SYSTEMS:

The transportation system plays a vital role in the Kazakhstan's economy in view of its vast territory, land locked position, uneven spatial distribution of population clusters and of natural resources. The Transportation component of the economy is one of the largest in the world. Currently the transportation infrastructure does not meet the needs of this vast country. Its climatic extremes put a considerable stress on the transportation structure and make the situation worst. Critical repairs and expansion have been neglected or delayed due to its geographical location between Europe and Asia it has a great transit potential as there exists no alternatives for Asian countries to link to Russia and Europe. Especially, the availability of natural stone reserves and its diverse landscape can help develop railway and automobile routes relatively

unrestrictedly. According to IME, cargo transit between European Union and Asia is worth more than USD 600 billion and Kazakhstan can attract a significant part of it.

Kazakhstan is geographically located to provide a bridge between Europe and Asia, as well South Asia and the Russian Federation. This country has been a part of the **Silk Road** in the past. Railways carry the majority of freight while roads are the dominant mode of transport for passenger traffic within the region. The trade between China and Europe has grown many folds in the last decade. Air transportation plays a prominent role in providing international access and linking major cities to the capitals. Baku in Azerbaijan and Aktau in Kazakhstan are linked by water transportation on the Caspian Sea.

The transportation system has an obsolete infrastructure and technology and its fixed assets are in poor condition. Roads and railways account for a major share of the total transportation infrastructure, about 189 thousand and 18 thousand kilometers, respectively. From density point of view, it is 5.1 kilometers for railways, 32.4 kilometers for roads and 1.5 kilometers for in-land navigable waterways per thousand square kilometers.

3.1 Railway System:

The total length of railways is eighteen thousand kilometers. The famous Trans Asian Railway Main (TARM) passes through Kazakhstan and provides a major network. A total length of 18 thousand kilometers provides 70% of cargo and 50% of passenger turnover in Kazakhstan. Five international corridors cross the territory of Kazakhstan and they are listed below:

Northern Corridor of Trans-Asian Railway Main (TARM): It connects Western Europe with China, Korea, and Japan and passes through the northern part of Kazakhstan and covers the section of Dostyk-Aktogai-Sayak-Mointy-Astana-Petropalovsk.

Southern Corridor of TARM: This corridor connects the South Eastern Europe with China and the South Eastern Asia via Turkey and Iran, and passes through Dostyk-Aktogai-Almaty-Shu-Arys-Saryagash. This passes through Uzbekistan via Shymkent.

Central corridor of TARM: This branch, although, is not one of the transcontinental, but it is of great significance for regional transit. It passes through Saryagash-Arys_Kandagach-Ozinki.

Transport Corridor of Europe–Caucasus–Asia (TRACECA): This railway line connects Eastern Europe to Central Asia via the Black Sea, the Caucasus, and the Caspian Sea, and passes through Dostyk-Almaty-Aktau. TRACECA aims at supporting political and economic development in Black Sea Region, Caucasus and Central Asia by improving the international transport system in the region.

North-South Corridor: This corridor connects the Northern Europe with the Gulf States via Russia and Iran and crosses Kazakhstan by passing through Aktau, Ural and Atyrau, on the east of the Caspian Sea.

The main corridors stated above, significantly decrease distances in the East West connection and cut down cargo delivery time. Besides the main corridors, shorter rail routes are constructed across Kazakhstan to link Western China with Russia, Almaty to Lake Issyk-Kul in Kyrgyzstan, and Druzhba on its eastern border with China via the Alatau-Shankou pass.

3.2 Roads:

The road network consists of around 189 thousand kilometers and has and international significance of linking with the Asian and European motorways. A length of 108 thousand kilometers is paved and graveled

and almost 81 thousand kilometers remains unpaved. Almost two-thirds of the main highways are in poor condition. Having realized the contribution to economic growth the transportation system makes, Kazakhstan has become an active participant in the world integration processes and has paid much attention to developing a good transport infrastructure, with a high level of service. As a result about 15 thousand kilometers of roads length was repaired in the last few years, including 15 highways of a length of 11 thousand kilometers.

3.3 Civil Aviation and airport:

Kazakhstan provides about 55 thousand km of air routes including 50 international routes. Currently 22 major airports and over 50 smaller paved runways provide air services. Nine airports have longer than 3000 meters runways and own a dozen offer international flights. Kazakhstan permits its airspace to 18 countries of Europe, Russia. South East and Central Asia 66 airlines operate in the country including Lufthansa, KLM, British Airways, Turkish Airlines, etc. Kazakhstan is very convenient for international flight connections between West and East. 620 airplanes and 109 helicopters are registered in the state register of civil aircraft of the Republic of Kazakhstan.

The government of Kazakhstan has taken several initiatives to promote transport systems in the region. Almaty International Airport's multimodal freight terminal, the largest in the Central Asia was completed in 2006. It has a hub status to promote main cargo channels in Asia–Europe–Asia direction. It took out International Quality Certificate of ISO9001-2000. Freight service has trained and qualified personnel who can also handle dangerous freight and palletized cargo. It has a space of 28,000 square meters, covered storage facilities for large size freights, and sufficient loading-unloading facilities. It is quite safe for valuable cargo storing, has cold stores with a total volume of 240 cubic meters with a temperature control of 10 degrees to -18 degrees Celsius, and ample parking spaces for heavy haulers. Video surveillance computer systems are fitted all over the freight terminal and check points are secured by the security staff. It also has hidden warning devices and communication facilities to manage emergency and extraordinary events.

3.4 Water transport:

After rails and roads, water transportation is the third most important element in the transportation infrastructure. Water transport is the cheapest and the least pollutant of various kinds of transportations.

Seaports: Aktau, Bautino, Kuryk, Estuarine river port of Atyrau are the main ports of Kazakhstan. The Caspian Sea, although land locked, and the Irtysh river provide the opportunity for water transportation. About a dozen companies carry out traffic through in-land waterways of about 4000 kilometers, mostly in the Irtysh River that has ports of Oskemen, Pavlodar, and Semey, and serve the northeastern industrial sector. The other navigational rivers are Ural and Idly. The Caspian basin with the main ports of Aktau and Atyrau is the main cargo generating state that exports oil, metal, wheat, etc. The Aktau International Sea Commercial port has a capacity of handling 10 million tons of oil shipment, 1.5 million tons of general and bulk cargo, and 24 thousand containers annually. This port is also a strategic junction of TRACECA corridor and also of the North-South corridor that connects the North Europe with the South Asia and India. The Bautino port is located in the Tupkaragan bay of the Caspian Sea. It handles 2.5 million tons of cargo annually and is used as a base to support shore operations. The construction of Shulba Sluice has provided a capacity of 3 million tons of cargo transportation between China, Russia, and Kazakhstan.

3.5 Pipelines:

Pipelines provide the most economical means of transportation for oil and natural gas. Since Kazakhstan is endowed with a very large amount of oil and natural gas deposits, pipelines play a prominent role in the country's economy. Kazakhstan has more than 10 thousand kilometers of each of natural gas and oil

pipelines, 1200 kilometers for refined products and 1500 kilometers for water, a total of 16.3 thousand kilometers. Kazakhstan is linked to the Russian pipeline system by the Atyrau-Samara line and to Russia's Black Sea oil terminal at Novorossiysk by the Caspian Pipeline Consortium line. The central Asia oil pipeline transports oil from Kazakhstan to Pakistan's sea port of Gwadar (on the Persian Gulf) through Turkmenistan and Afghanistan. The Atasu-Alashankou oil pipeline connects eastern Kazakhstan and Xinjiang province of China. This 970-km line has a capacity to transport 20 million tons annually.

4. CONTRIBUTING FACTORS FOR HIGH DEMAND:

Understanding the factors that contribute to high demand of the transportation network is as important as the knowledge of the current system. This section enumerates various factors that contribute to the high demand for transport Networks and they are the following:

- Kazakhstan has a vast territory with a total area of 2,717,300 square kilometers.
- Land-locked Nature-Although Kazakhstan owns a part of the Caspian Sea, it has no access to an open sea.
- Uneven spatial distribution of population clusters-Kazakhstan's population is mostly concentrated in cities.
- Abundance of natural resources - It has large deposits of industrial metals, minerals, oil and gas.
- Its geographic location between Europe and Asia present a transit potential up to USD 600 billion.
- High economic growth rate – Its GN1 has been growing at almost 15% annually as per the World Bank statistics.
- Proximity to Russia, China, and India-present a huge potential for economic cooperation and a huge market for exports. Being in the neighborhood of these countries also provides sources of low cost supplies.
- A better transport infrastructure compared to other countries in the Central Asia.
- Strategically positioned to serve as a link across Europe and Asia.
- Boom in oil and commodities.

Even though the transportation infrastructure is not adequately developed, some of the above factors provide strength to Kazakhstan and motivation to investors in developing transport capacity and capability in the Central Asian region. An efficient transportation system coupled with improved logistics will help boost its export earnings. Export revenues can enable financing the infrastructure development, rolling stock, and the creation of logistic centers at strategic locations.

5. ISSUES AND WEAKNESSES:

The transportation infrastructure is not even close to meet the needs of this vast country. Goods require transportation from their source to the final consumers. Inadequate or inefficient transportation system can add significantly to the final cost of goods. In Kazakhstan, the share of transportation cost to the total cost of goods makes up 8% for in land railways and 11%for automobile traffic, compared to 4 to4.5% in industrialized countries. These figure clearly indicated that transportation costs need to be reduced to almost one half of the current costs and to do this, several measures are needed in terms of investment in infrastructure, government policies, and the way businesses are operated. The Central Asia Regional Economic cooperation (CAREC), a partnership of 10 countries and six multilateral institutions, is quite active to assess the current situation. Kazakhstan is comparatively a new country, a transitional economy,

and it is natural for it to take some time to achieve the level of industrialized nations. It has much strength and many weaknesses as well. The following weaknesses are the major ones:

- The trade and the transport systems are not well connected to major markets.
- Manufacturing industry has relatively low productivity.
- It has an unbalanced economic development. Remote areas with no oil and mineral deposits are poor with no economic activities.
- Large land surface requires more infrastructure investment to increase rail and road density.
- It is land-locked country and has no direct access to sea ports.
- It has a low expertise in containerization and that leads to a limited access to overseas market for export products.
- Customs tariff agreements on basic transport highways are not settled with the neighboring countries.
- Railway rolling stock is not corresponding to international standards.
- The credit crisis, originated from the USA in the past few years, has severely affected its economic growth.

Some of these weaknesses can easily be overcome by devising favorable government policies, making wise investment decisions, including foreign direct investment (FDI), and utilizing oil and gas revenue.

6. SUGGESTIONS FOR IMPROVEMENT:

The current market of logistical services is young and needs considerable improvements. The government of Kazakhstan or investors needs to build six logistical centers in Horgose, Almaty, Taraz, Shymkent, Kyzylorde, and Aktobe. Additionally, more transport logistical centers in Astana, Aktau, Menkente and Uralsk must be built. Warehouse space is definitely insufficient at most places except in the city of Almaty. Building the new logistical centers will not only provide additional space, but also reduce the transportation cost in the long run.

The Central Asia Regional Economic Cooperation (CAREC) plans to develop an integrated and efficient transport system in CAREC countries to promote sustainable economic growth and poverty reduction. Its main objectives are simplification of cross border transport procedures, harmonization of transport regulations to promote efficiency and better services, development and improvement of regional and international transport corridors, restructuring and modernization of railways to provide quality and efficient services, improvement of funding and management, and liberalization of civil aviation.

Roads of Kazakhstan need improvements and a daring expansion. The main problem is their load bearing ability. The most roads were constructed sixty to eighty years ago when the safe load per axle did not exceed six tons. That load limit is now increased to ten tons per axle. The economy's need for the development of international motor transport system dictates the need for both the preservation of the quality of roads and their upgrading to international standards.

Transporting through Kazakhstan reduces the distance to one-half compared to sea-routes and saves one thousand kilometers compared to the transport route through Russia. A flat landscape of Kazakhstan and the

presence of large supplies of a natural stone material is an added advantage for promoting rail-road and motor transportation systems. This characteristic presents an advantage to build railways and roads at a reduced cost in Kazakhstan.

An interstate highway system of the U.S.A is an example for the entire world. President Eigen hover, while he was an army General during the Second World War, realized the importance and vitality of mobilizing armed forces. After he became the American president in 1953, he created the Interstate Highway network that runs north to south all the way from the Canadian border to the Mexican border. The major interstates are numbered from 5 to 95, I5 along the west coast of America (Pacific Ocean), I95 on the east coast (Atlantic Ocean), and others I15 to I75 are in between the two coasts. Similarly, interstates 10 to 90 run across from east coast to the west coast. These are the freeways, each at least a four lane highway, with dividers or medians and limited entries and exits so that military vehicles could move uninterrupted. Although the interstate freeways were created for military purposes, they make an outstanding transportation network for passenger and cargo traffic that can safely move at a speed of 100 to 130 kilometers per hour.

Kazakhstan requires a similar system of freeways with limited entries and exits. However, the creation of a network of freeways needs a substantial investment, which will undoubtedly pay in the long run. It will reduce the travel time as well as the cost of consumer and industrial goods significantly. The benefits will more than compensate the investment.

For reducing the transportation cost of goods, as well as for capturing the transport potential between Europe and Asia, the following measures are considered necessary:

1. Improve the existing railway network by installing the standard gauge railway lines. Europe and China have mostly standard gauge so that the goods and cargo need not be transferred at the border crossings. It will save transit time and cost.

2. Enhance containerization capacity. Historically, containerization improved the performance of modal transfers of general cargo at ports and terminals and resulted in significant cost and time savings. When container movement dominates general cargo transport, the multimodal transport network become more effective and expands. (ECMT, 2001). Containerization or unitization precedes a multimodal transport system with reducing instances of intermediate cargo transfers reflecting increasing degree of multi modalism.

3. Develop limited access highways like the interstate network in the U.S.A. that can be used by the military as well as for the movement of cargo and passengers. An implementation of this will not only boost the national economy but also bring in a significant foreign direct investment.

4. Develop multimodal junctions at strategic locations in Kazakhstan. The junctions or hubs will facilitate easy transfer of cargo from one mode to another.

5. Build logistics centers to enhance the effectiveness of multimodal junctions. The logistics centers provide the needed facilities for transport operators and others.

7. CONCLUSION:

Kazakhstan is a member of the Eurasian Economic Community (EAEC), along with Russia and the Central Asian Republics. The customs union remains under development and aims to bring about coordinated customs procedures and a high degree of uniformity in its members' external tariffs. This agreement will help reduce transit time and promote import and export among the neighboring countries. For effective use of geopolitical potential of the Republic of Kazakhstan, it is necessary to create transport logistic supply

chain that will be able to offer qualitative added value cost service. Kazakhstan must become a part of the world transport communication system and to achieve this goal, a lead development of the whole transport infrastructure is needed. Although this paper is exploratory in nature, it provides an understanding of the current transport and logistical systems in Kazakhstan. A further research is needed in developing modern systems. It further needs to be extended by formulating logistical models of various transportation systems and multimodal systems.

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