Macrothink Institute™

International Journal of Regional Development
ISSN 2373-9851
2022, Vol. 9, No. 1

Transportation Costs and Time Impact of the China-Pakistan Economic Corridor

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Received: November 12, 2021 Accepted: January 12, 2022 Published: January 29, 2022

doi:10.5296/ijrd.v9i1.19519 URL: http://dx.doi.org/10.5296/ijrd.v9i1.19519

Abstract

The China-Pakistan Economic Corridor (CPEC), which is part of China's Belt and Road plan, is a network of infrastructure, commerce, and investment projects, as well as energy and technology projects, now under construction in Pakistan and China's Western Xinjiang province. The China-Pakistan Economic Corridor (CPEC), which Pakistani officials have labelled as a "game changer," is the most recent manifestation of the two countries' increasing ties. Because they help to reduce freight prices and transit times, transportation and infrastructure are referred to as major trade levers. This research is primarily concerned with the concept of logistics shipping prices and travel times. China supplies Europe and the Middle East with a reliable, low-cost supply line. The study analyses data in a qualitative and descriptive manner. The study investigates how the CPEC will impact trade in terms of shipping costs and trip time. Transportation and infrastructure are considered critical trade issues since they help to reduce shipping costs and transit times. In order to generate revenues and assure timely product delivery, modern organizations strive to reduce shipping costs and transit times. The goal of this research is to examine the CPEC's significance and its impact on import and export costs as well as transit durations. This study also compares the current path to the suggested itinerary. The study takes a qualitative and descriptive approach to its investigation. The study's starting point was the dry port of Kashgar in western China, with three ports in each European and Middle Eastern countries serving as destinations. The three

European ports of Hamburg, Le Havre, and Rotterdam, like the selected Middle Eastern ports of Jeddah, Kuwait, and Oman, which meet China's energy demands, share a considerable trading volume with China. When a 40-foot container is delivered using the current route, the variables time of travel and shipping cost are estimated in the first phase. In the third step, both current and potential CPEC routes are analysed. Because predicting the exact future road transportation cost of CPEC is difficult, the average value of current road transportation costs is used in this analysis. The findings show that shipping costs will be greatly lowered if the proposed CPEC route is implemented. Shipping costs between Kashgar and destination ports can be reduced by 36% for European ports, 50% for Jeddah and Kuwait, and 68 percent for Oman. Furthermore, the transit time from European ports to Jeddah will be reduced by 10-11 days, 15-18 days for Kuwait, and 10 days for Oman.

Keywords: CPEC, One Belt One Road, transit time

1. Introduction

1.1 Objectives

The People's Republic of China is the world's second-largest economy, with about 40% of its trade passing via the South China Sea in 2017. The China-Pakistan Economic Corridor (CPEC) is a possible solution to China's goal for a quick, secure, and low-cost trade route to Europe and the Middle East. This study looks at the impact of CPEC on trade in terms of transportation costs and trip time. The purpose of this article is to comprehend the influence of the China-Pakistan Economic Corridor on transportation costs and time in general. While addressing the numerous research issues, this paper also aims to give an empirical assessment of Transportation cost and time.

1.2 Research concerns

The study's research questions are as follows:

Is there a positive or negative influence on shipping prices and transit time for imports and exports?

Which route is the most cost-effective in terms of shipping and transit time?

Cost and Time analysis of 40ft container by the existing route.

Cost and Time analysis of 40ft container by CPEC route.

1.3 Significance

The China-Pakistan Economic Corridor (CPEC) is a new type of Sino-Pakistan collaboration that has the potential to improve their political and economic ties through commerce and growth. The project is strategic and economic for both China and Pakistan, and it has the potential to help South Asia to achieve regional stability.

2. Economic Corridor between China and Pakistan

During his visit to Pakistan in May 2013, Premier Li Keqiang suggested the China-Pakistan

Economic Corridor for the first time. The planning proposal for a link between Kashgar in western China and Gwadar Port on the Arabian Sea coast in Baluchistan was approved on July 5, 2013, during the Pakistani Prime Minister's visit to Beijing. In 2015, the Chinese President paid a visit to Pakistan and signed a final deal for the $46 billion China-Pakistan Economic Corridor. In terms of physical infrastructure, CPEC consists of a network of trains, motorways, and pipelines. The Pakistani government has planned three complementing road routes: one through Baluchistan and Khyber Pakhtunkhwa, another through Punjab and Sindh, and a third spanning the entire country. The China-Pakistan Economic Corridor is a long-term strategy that will be implemented between 2014 and 2030.

2.1 The Following are the Five Main Components

1. Gwadar is number one (including the social and economic development of the port city and the Gwadar region)

2. Vitality (coal, hydropower, wind, solar, LNG, power transmission)

3. Infrastructure for transportation (roads, railways, and aircraft)

4. Industrial collaboration and investment (Gwadar Free Trade Zone and other industrial parks to be determined)

5. Any other areas of mutual interest that both parties agree on.

The China-Pakistan Economic Corridor is more than just a network of roads and railroads; it's also a collection of projects that have addressed Pakistan's energy and other needs. The overall investment in China is estimated to be around 46 billion dollars.

2.2 Description of the CPEC Route

The China-Pakistan Economic Corridor is part of the Silk Road Economic Belt, which Chinese President Xi Jinping proposed in 2013 to revitalise Asia's, Africa's, and Europe's ancient trading routes. It is a game changer in Asia, including many infrastructure projects, namely,

about 3,000 kilometers of road, railway and pipeline network connecting Kashgar in Xinjiang Northwest of China and Gawader Port in Pakistan, Providing access to the Indian and Arabian oceans. This is the shortest path. The distance between the ports of Kashgar (China) and Shanghai (China) is roughly 5,150 kilometres when comparing China's present trade routes with the onshore component of the China-Pakistan Economic Corridor. The distance between Kashgar Port in China and Gwadar Port in Pakistan is approximately 2,800 kilometres, or nearly half the present route. Other countries will gain from the project, in addition to Pakistan and China. For decades, Pakistan has had inadequate management, administration, and a lagging socioeconomic infrastructure, but the country does have a strategic location. Pakistan's Central Asian gateway offers a 2,600-kilometer short-circuit route to neighbouring Central Asian countries (Afghanistan, Kyrgyzstan, Kazakhstan, Tajikistan, Turkmenistan, and Uzbekistan), whereas Iran is 4500 kilometres away and Turkey is 5000 kilometres away. The China-Pakistan Economic Corridor is a road and rail network that connects the Chinese ports of Kashgar and Gwadar with the Pakistani port of Gwadar. The distance between Gwadar and Kunjrab is 2688 kilometres, including the mountain passes. The China-Pakistan Economic Corridor will have 2 to 6 lanes, each measuring 3.65 metres in width. Its design speed ranges from 70 to 120 kilometres per hour.

2.3 There Are Three Main Roads that Make Up This Corridor

1. Starting in Gwadar, the western route will pass via many cities in Baluchistan, including Turbat, Panjgur, Nag, Basima, Sorab, Qalat, Quetta, and Qilla. Saifullah Arrive in Dera Ismail Khan with Zhob, then in Islamabad. Several portions of road between Gwadar and Quetta are now under construction;

2. The central line, which runs from Gwadar to Dera Ismail Khan, passing through various cities in Baluchistan, Sindh, and Punjab. Basima, Khuzdar, Sukkur, Rajanpur, Layyah, Muzaffargarh, and Bhakkar are among the cities.

3. Gwadar, Basima, Khuzdar, and Sukkur are on the eastern route, as are Rahim yar Khan, Bahawalpur, Multan, and Lahore/Faisalabad, before arriving in Islamabad.

2.3 Review of the Literature

The logistics and supply chain network are key to this project. Its main goal is to see how the CPEC would affect China's import and export supply chains in terms of shipping costs and transit times. The theoretical framework that establishes the significance of shipping costs and transit times in supply chain management.

3. Research Methodologies

The key focus and attributes in this study are the shipping cost and transit time. The China-Pakistan Economic Corridor (CPEC) is a project that will have a significant impact on shipping costs and trade transit times. This research aims to determine how the transit time and shipping cost of a 40-foot container for imports and exports from the Middle East and Europe to Kashgar have changed (western China). The methodology is divided into three sections. The first section deals with calculating current transit times and shipping prices, or how long and

how much it should take for a 40-foot container to arrive at its destination ports. The second section is concerned with calculating the new proposed route's travel time and shipping costs. The final section compares the shipping prices and transit times for both routes. The study's third section allows it to analyse the cost of shipping and transit time for a 40-foot container and offer a recommendation on which route is the most cost-effective.

3.1 The First Section

In the first phase, choose the three European ports with the most imports and exports to China, as well as the three Middle Eastern ports on which China relies to meet its energy needs. This study evaluates the current transit time and shipping cost of one 40-foot container from these selected ports to Kashgar, Western China, after selecting the ports. The trip from the chosen ports to Kashgar (western China) involves a combination of sea and land. The distance between Kashgar (western China) and Shanghai seaport is designated as CR (China road), and the sea distance from Shanghai to destination ports is designated as CS (China sea distance) (China Sea). The map below depicts the present route that China uses for imports and exports.

Figure 2. Current route

3.2 Second Section

The study's second section assesses the proposed CPEC route's transit time and shipping costs. This route is based on both seaways and highways. The PR (Pakistan road) distance between Kashgar and Gwadar is displayed on the map below. The distance between Gwadar and PS, the destination port, is approximately 450 nautical miles (Pakistan Sea). The CPEC path is seen on the map below.

Figure 3. Tthe CPEC path

3.3 Third Section

The final section of this thesis contrasted the current route's shipping costs and transit time to the proposed CPEC route. For comparison, the data from the first and second parts are used.

3.3.1 Volume of Transactions with Specific Destination Nations

Understanding China's exports and imports to these countries is critical before determining the transportation time and cost. This study calculates and analyses the transportation costs and timeframes for both the existing and new CPEC routes. These routes are all backed by roads and waterways. This study chooses three nations from Europe and the Middle East based on their greatest imports and exports from China. Each country's port is picked based on the number of berths available (Figure 4). TABLE 4 shows the various ports in Europe, the Middle East, China, and the Islamic Republic of Pakistan. The red symbol represents the European ports of Hamburg, Rotterdam, and Le Havre; the black mark represents the Middle Eastern ports of Shuwaikh, Jeddah harbour, and Salah port; the blue mark represents the Pakistani port of Gwadar; and the green mark represents the Chinese port of Shanghai.

The ports of Europe, the Middle East, China, and Pakistan are depicted in Figure 4.

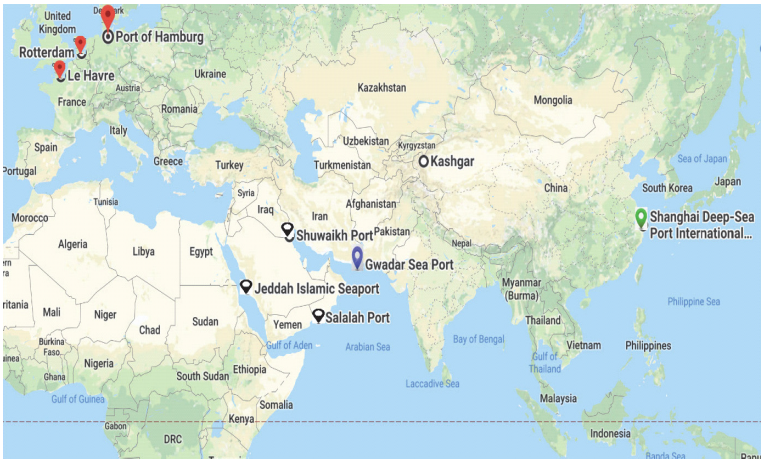

Table 4. Selected ports from Europe and the Middle East (see Figure 4)

Port	Country	Region
Jeddah	Saudi Arabia	Middle East
Shuwaikh Port	Kuwait	Middle East
Port of Salah	Oman	Middle East
Hamburg	Germany	Europe
Le Havre	France	Europe
Rotterdam	Netherlands	Europe

3.3.2 Volume of Imports from Specific Destination Regions (Atlas Media OEC, 2019)

Imports from destination countries to China, In terms of imports, China is ranked second. China's total imports were $1.58 trillion in 2019. The volume of imports from the selected destination country is shown in the table below. China's main import partners are Germany and Saudi Arabia. China imports much of its machinery and other goods from Germany, as well as fuel from Saudi Arabia.

Tables 5. Imports from target countries are included

Countries	Imports in Billion	Imports represent for % of total imports in China.
Saudi Arabia	45.8	2.91%
Kuwait	12.1	0.77%
Oman	17.3	1.1%
Germany	107	6.82%
France	23	1.5%
Netherlands	13.9	0.88%
Total	**219.1**	**14.97%**

3.3.3 Volume of exports from chosen destination countries (Atlas media OEC, 2019)

China's exports to destination countries

China ranks toped in the world in terms of exports. According to data from Atlas media OEC, in 2019, the total volume of China Export is US$ 2.57 trillion. The export volume to chosen destination countries is shown in the table below.

Table 6. Target regions for export

Destination Countries	Exports in Billion	% of China total Export
Saudi Arabia	26.5	1.38%
Kuwait	4.76	0.18%
Oman	3.02	0.25%
Germany	96.9	3.77%
France	45.2	1.75%
Netherlands	65	2.52%
Total	**241.38**	**9.85%**

4. Calculation of the Transportation Cost and Transportation Time of the Current Transportation Route

The current transportation path from Kashgar Dry Port (Western China) to the selected destination port is calculated in this section. Cost and delivery time The present route is based on land and marine routes, respectively known as CR and CS. Initially, the cargo was transported by CR from Kashgar (Western China) to Shanghai Port (Eastern China) (China Highway). In the second phase, take the CS (China Sea Road) from Shanghai Port to the designated destination port; this research only needs to add CR and CS to compute the current path from the departure port to the destination port. Line up the cost of shipping and the expected delivery date. The cost and time of shipping can be obtained from various shipping providers, but the cost and duration of road transportation must be estimated.

4.1 China Land (CR) Transportation Costs

When calculating inland transportation costs, the portion of China's land transportation cost is multiplied by the number of kilometres driven by a truck. Alternatively, the railway's average fare. According to Google Maps, the total distance of the CR part of China is about 5150 kilometer. The average cost retrieved from AW logistics is $0.50 per kilometer (AW logistics 2021).The inland transportation costs of transportation companies in different places are different, so the average transportation cost is utilize to fulfill the requirement.

Table 7. CR (China Road) inland transportation costs

CR (China Road) inland transportation costs				
CR (China Road) inland transportation costs	CR (China Road) distance (km)	*	Cost per kilometer	
CR (China Road) inland transportation costs	5150	*	0.50	
CR (China Road) inland transportation costs		$2575		

The calculation result shows that the inland transportation cost (road transportation cost) of

China's land transportation (CR) part is about US$$2575. This means the freight price of a 40-foot container from Kashgar Port to Shanghai Port Is$2575.

4.2 China Road (CR) Transit Time

The transit time for China Road Transportation (CR) is computed by multiplying the entire distance travelled by the average truck or train speed in the area. The average speed of trucks or railways is taken from local transportation businesses such as AW Logistics, while the distance of China Land Transport (CR) is obtained from Google Maps. Trucks can attain speeds of up to 80 km/h in some locations, but in mountainous parts, the speed drops to 30 km/h or less. As a result, we decided a 40 km/h average speed to meet the requirements.

Table 8. The transit time for the CR section (China Road)

Transit time on the CR (China Road).			
CR (China Road) transit time	CR (China Road) distance (km)	/	Average speed of truck or train
CR (China Road) transit time	5150	/	40
CR (China Road) transit time	129 hours or 5.33 days		

The China Land Transport (CR) portion of the journey takes roughly 129 hours, which equates to a 40-foot container. The container takes 129 hours to go from Kashgar to Shanghai. Other considerations, however, should be taken into account. Other considerations, however, should be taken into account. Other things that may lengthen the time spent on the route include:

- Climate conditions
- Backlogs of traffic
- Rest period for drivers after long-distance driving

08 Daily travel time delays of several hours are added to each voyage in order to obtain correct results. Factor indicates that a 40-foot container will take around 43 hours or 1.7 days to arrive owing to various factors.

Table 9. Travel time delay

Delay in travel time	Number of days	*	08 hours delay per day
Delay in travel time	5.33	*	08 42.6 hours or 1.7 days

The total amount of time spent travelling by road. By adding journey time and travel time delay,

the total trip time of road transportation may be calculated. Travel time + delay equals total travel time.

Table 10. The total transit time for China Road Transportation (CR)

CR (China Road) transit time			
CR (China Road) transit time	Current land transportation time	+	Delays in travel
CR (China Road) transit time	129	+	42.6 hours or 1.7 days
CR (China Road) transit time	171.6 hours or 7.1 days		

A 40-foot container travelling from Kashgar to Shanghai takes 171.1 hours, or 7.1 days, according to the findings. Add the China Land Transport (CR) part's transportation cost and time to the China Shipping (CS) part, which was collected directly from the freight forwarder and shipping business.

4.3 Shipping Costs (from Shanghai to the Port of Destination)

Kashgar is the point of departure in all cases (Western China). China Land Transport (CR) transports the commodities to Shanghai Port, and then China Shipping (CS) transports them to the final destination port. This study must add the transportation costs of the China Land Transport (CR) and China Shipping (CS) parts in order to compute the current transportation cost. For the calculation of China Land Transport (CR) transportation costs, see Table 11. CMA and MSC provide ocean freight in Europe, whereas CMA, MSC, China Shipping, and Hapag Lloyd provide ocean freight in the Middle East. These costs are based on the cost of shipping in August. Under normal circumstances, the tax rate will rise or fall every month, so the validity period is only for one month.

Table 11. Current route freight = CR Road cost + CS ocean freight

Origin Port	Destination port	CR (Road freight) (Kashgar-Shanghai)	CS (ocean Freight) (Shanghai to destination ports)	Total freight
Kashgar China	Saudi Arabia	2575	1600	4175
	Kuwait	2575	1600	4175
	Oman	2575	1400	3975
	Germany	2575	2100	4675
	France	2575	2100	4675
	Netherland	2575	2100	4675

4.3 Current Route Transit Time

China Land Transport (CR) road transportation time is calculated according to Table 10, and China Shipping (CS) sea transportation time is calculated according to CMA's online timetable. This article calculates the total transportation time through a comprehensive calculation of land and sea transportation time.

The transportation time of the current route = China land transportation (CR) transportation time + China shipping (CS) transportation time

Table 12. The current transit time for each route

Port of Origin	Port of Destination	CR (transit time) (Kashgar – Shanghai)	CS (transit time) (Shanghai to destination ports)	Total transit time
Kashgar China	Saudi Arabia	7	27	34
	Kuwait	7	24	31
	Oman	7	22	29
	Germany	7	44	51
	France	7	41	48
	Netherland	7	43	50

Calculation of the China-Pakistan Economic Corridor's transportation costs and travel time The cost and time of transporting 40-foot containers in the China-Pakistan Economic Corridor are calculated in this section. The China-Pakistan Economic Corridor routes, which are labelled PR and PS in Figure 3, are also based on highways and oceans. The China-Pakistan Economic Corridor begins with a PR (Pakistan Highway) link from Kashgar (Western China) to Gwadar (Pakistan) port, and continues with a PS link from Gwadar Port to additional destination ports (Pakistan Sea Road). PS: (Pakistan Sea Route) The shipping company might provide you with a portion of the freight and transit time. The port of Gwadar has not yet been fully utilised, and no rate has been established. As a result, the port of Karachi, which is adjacent to Gwadar, is picked as an option. The distance between Karachi Port and all destination ports is nearly the same as the distance between Gwadar Port and all destination ports. On the basis of the collected data, transportation costs and transit times for PR (Pakistan Highway) are estimated.

4.3.1 Pakistan Land Transportation (PR) Transportation Cost

When calculating the transportation cost (transportation cost) of Pakistan land transportation (PR) part, it is obtained by multiplying the distance of Pakistan land transportation (PR) part by the average value of truck or railway cost per kilometer. According to Google Maps, the total distance of the Pakistan Land Transport (PR) part is approximately 2,800 kilometers. The average cost per kilometer is 0.50 US dollars per kilometer, and the data is retrieved from the

International Joint Freight. The inland transportation costs of transportation companies in different places are different, so the average transportation cost is utilize to fulfill the requirement.

Table 13. Pakistan land transportation (PR) transportation cost

Pakistan land transportation (PR) transportation cost			
(PR) inland Transportation costs	**Distance (Km)**	*	Cost per kilometer
(PR) inland Transportation costs	2800	*	0.40
(PR) inland Transportation costs	$1120		

The results showed that a 40-foot container arrived Gwadar from Kashgar at a price of $$1120. This means that a 40-foot container of PR (Pakistan Land) inland transportation costs US$$1120.

4.4 Pakistan Land Transport (PR) Transit Time

By dividing the total distance of the Pakistan Land Transport (PR) section by the typical truck or train speed in the area, the transportation time of the Pakistan Land Transport (PR) component can be estimated. The average speed of trucks or railways is taken from local transporters such as Combined Freight International, while the distance of Pakistan's land transport (PR) component is obtained from Google Maps (2021). In some places, trucks can reach speeds of up to 80 km/h, but in mountainous areas, the speed will drop to 30 km/h or less. Therefore, we choose an average of 40 the speed of kilometers per hour meets the requirements.

Table 14. Pakistan land transport (PR) transit time

Transit time for Pakistani land transport (PR)			
Transit time in PR	Distance (Km)	/	Average truck or rail speed
Transit time in PR	2800	/	40
Transit time in PR	70 hours or 2.91 days		

Table 15. Travel time delays

Travel time delays			
Travel time delays	Number of days	*	10 hours delay per day
Travel time delays	2.91	*	10
Transit time in PR	29.1 hours or 1.21 days		

The route from Kashgar (Western China) to Gwadar (Pakistan) takes about 70 hours. Meanwhile also Consider the following other factors:

i. Weather conditions

ii. Traffic jam

iii. Driver's rest time after long-distance driving

iv. Public security situation

Because Pakistan's law and order are not as perfect as China's, special consideration should be given to the security status of this route. Therefore, based on the above factors, the assumed average delay time for each journey is 29.1 hours.

Table 16. Transit time for Pakistani land transport (PR)

Transit time in PR			
Transit time in PR	Current travel time on the road	+	Delays on average
Transit time in PR	70 hours or 2.91 days	+	29.1 hours or 1.21 days
Transit time in PR	99.1 hours or 4.12 days		

According to the findings, a 40-foot container travelling from Kashgar, China, to Gwadar, Pakistan, takes 99.1 hours or 4.12 days.

4.5 Costs of Shipping through the China-Pakistan Economic Corridor

The Economic Corridor between China and Pakistan route also includes land and sea transportation, called PR part first arrives at the port of Gwadar (Pakistan), and then arrives at other destination ports via PS. Refer to Table 17 for the calculation of Pakistan land transportation (PR) transportation cost. CMA and MSC provide part of Pakistan Shipping's (PS) European sea freight, while CMA, MSC, China Shipping, and Hapag Lloyd provide sea freight to Middle Eastern countries. These costs are based on the cost of shipping in March. The tax rate will raise or reduce every month in normal conditions (CMA, MSC, Hapag Lloyd, and China Shipping, 2021), hence the data is only valid for one month. PR and PS are seen in Figure 3. Kashgar is the point of departure in all cases (Western China).

The China-Pakistan Economic Corridor route transportation cost = Pakistan land transportation (PR) transportation cost + Pakistan sea transportation (PS) transportation cost

Table 17.

Origin Port	**Destination port**	**PR (Road freight) (Kashgar-Gwadar)**	**PS (Sea Freight) (Gwadar to destination port)**	Total freight
Kashgar China	Jeddah	$1120	1100	2220
	Kuwait	$1120	1100	2220
	Oman	$1120	500	1620
	Hamburg	$1120	2000	3120
	Le Havre	$1120	2000	3120
	Rotterdam	$1120	2000	3120

4.6 Transportation Time for the China-Pakistan Economic Corridor

The Transportation Time for the China-Pakistan Economic Corridor is calculated by summing the part of the transportation time of Pakistan land transportation (PR) and the part of Pakistan shipping (PS) transportation time. The transportation time of Pakistan land transportation (PR) is calculated according to Table 17, and part of the transportation time of Pakistan sea transportation (PS) is calculated according to the CMA online timetable.

Table 18. Transportation time of China-Pakistan Economic Corridor route

Origin Port	Destination port	PR (transit time) (Kashgar-Gwadar)	PS (transit time) (Gwadar to destination port)	Transit time in total
Kashgar China	Jeddah	4	9	13
	Kuwait	4	6	10
	Oman	4	4	8
	Hamburg	4	27	31
	Le Havre	4	24	28
	Rotterdam	4	25	29

Shipping time by sea is taken from CMA's online timetable. The transportation time shall be calculated from the starting point of the ship until the ship reaches the destination, and should not include the time spent in other different ports during the journey.

5. Outcome

This chapter briefly describes the calculation results of the previous chapters. The first section expounds the impact on import and export trade from two aspects of transportation cost and transportation time. That is to say, the first section answers the first research question of this article. In the second section, according to the transportation charge and transportation time, the current route and the China-Pakistan Economic Corridor route are compared, and suggestions for route selection are given. In the third section of this chapter, the distance between the existing line and the newly-built Economic Corridor between China and Pakistan line is compared.

5.1 The Effect on Trade

The initial purpose of this study is to determine how the China-Pakistan Economic Corridor will affect China's import and export supply chains. The China-Pakistan Economic Corridor will have an influence on both the cost and the duration of transportation. China's overall exports to particular destinations are estimated to be at 241.38 billion dollars. Total imports from selected target nations, on the other hand, are estimated to be around US$219.1 billion. According to the findings of this study, the freight for each 40-foot container imported or exported from Europe will be reduced by $1,400. The time it takes to get from Europe to the United States will be decreased by 10 to 11 days. Freight will be cut by $1700 to $2200 for Middle Eastern countries, and the transit time for each 40-foot container will be shortened by 11 to 18 days, resulting in lower transportation costs and faster delivery. The cost of imported raw materials has decreased as a result of lower shipping costs and faster delivery. Transport expenses to Europe have decreased by 36%, Saudi Arabia and Kuwait have decreased by 50%, and Oman has decreased by 68 percent. Regardless of this ratio, this analysis estimates that if the supply chain saves 10% of the total trade cost between China and the destination country, the results are the following:

Table 19. The overall impact of the China-Pakistan Economic Corridor

Origin Port	Destination port	(Excerpted from Table 11) Cost of shipping for the current route	(Excerpted from Table 17) Cost of shipping along the CPEC route	Difference
Kashgar China				
	Jeddah	4175	2220	1955
	Kuwait	4175	2220	1955
	Oman	3975	1620	2355
	Hamburg	4675	3120	1555
	Le Havre	4675	3120	1555
	Rotterdam	4675	3120	1555

The table shows that all exports and imports from selected.

Destinations can save approximately US$41 billion. The China-Pakistan Economic Corridor will not only reduce transportation expenses, but it will also reduce trade transit time by around 10,000 kilometres to 11,000 kilometres due to the opening of the new China-Pakistan Economic Corridor. The products can be transported more rapidly using a shorter route. Every producer's goal is to ensure that the finished product is delivered on time to the consumer. According to the calculations in this article, the supply chain can save US$41 billion in transportation costs. Although this calculation only considers three ports in Europe and three ports in the Middle East, China can use the China-Pakistan Economic Corridor to transport all of its European and Middle Eastern trade. The China-Pakistan Economic Corridor can save billions of euros in the supply chain by dealing with countries in Europe and the Middle East. Because of faster delivery, China has acquired a significant competitive advantage and immeasurable benefits.

5.2 *Transportation Costs and Times for the Current Route Compared to the China-Pakistan Economic Corridor*

The second purpose of this essay is to compare the existing route's transportation costs and times to the China-Pakistan Economic Corridor route's transportation costs and times.

5.3 Transportation Cost Comparison

The table below compares the existing transportation route cost to the China-Pakistan Economic Corridor transportation cost between the departure port and the 6 destination ports, and estimates the cost difference between the two routes

Origin Port	Destination port	(Current Route Transit Time (taken from Table 12)	CPEC route Transit time (taken from Table 18)	Difference
Kashgar China	Jeddah	34Days	13Days	21 Days
	Kuwait	31 Days	10Days	21 Days
	Oman	29Days	8Days	21 Days
	Hamburg	51Days	31 Days	20 Days
	La Havre	48Days	28 Days	20 Days
	Rotterdam	50 Days	29 Days	21 Days

As can be seen from the above table, for every 40-foot container imported from or exported to Europe, China can save approximately US$1,400. The transportation cost of the new route is about 36% lower than that of the current route. The results also show that the cost of ports in the Middle East has been reduced even more, and the cost of transportation to Oman is about 68% lower than the current cost of transportation.

5.3 Transport Time Comparison

The transit time between Kashgar (China) and the six destination ports is shown in the table below under current route conditions and the China-Pakistan Economic Corridor route. Compare the old and new routes and record the findings in the table's last column.

Origin Port	Destination port	CR part Distance (Kashgar to Shanghai)	CS part distance	Total current route distance in KM
Kashgar China	Jeddah	5,150	6,558 nm x 1.852 = 12,145km	17,295
	Kuwait	5,150	6,060nm x 1.852 = 11,227km	16,377
	Oman	5,150	5,383nm x 1.852 = 9,980km	15,130
	Hamburg	5,150	10,778nm x 1.852 = 19,961km	25,111
	La Havre	5,150	10,320nm x 1.852 = 19,113km	24,263
	Rotterdam	5,150	10,525nm x 1.852 =19,492km	24,642

On the China-Pakistan Economic Corridor, the distance between China and Pakistan is

The Pakistan Land Transport Section (PR) and the Pakistan Shipping Section (PS) of the new China-Pakistan Economic Corridor, as depicted in Figure 3, also contain road and ocean parts. The distance of the new route from the port of departure to the port of destination can be calculated by adding the Pakistan land segment (PR) and the Pakistan sea section (PS). Because Gwadar Port is still under construction, the distance between it and the destination port is calculated using the distance between Karachi Port and the destination port.

Origin Port	Destination port	PR part Distance (Kashgar to Gwadar)	PS part distance	Total CPEC route distance in KM
Kashgar China	Jeddah	2,800	2,166nm x 1.852 =4,011km	6811
	Kuwait	2,800	1,085nm x 1.852 =2,009km	4809
	Oman	2,800	471nm x 1.852 = 872km	3672
	Hamburg	2,800	6,386nm x 1.852 = 11,826km	14626
	La Havre	2,800	5,928nm x 1.852 = 10,978km	13778
	Rotterdam	2,800	6,133nm x 1.852 = 11,358km	14150

5.4 Comparison of Distance

By comparing the distance between the existing route and the China-Pakistan Economic Corridor route, it can be inferred that the transportation distance can be decreased by 10,000 to 11,000 kilometres if the new China-Pakistan Economic Corridor route is adopted. This has a significant positive impact on import and export trade, since it can assist reduce not only transportation time but also transportation costs. After the new route is completed, it may be shipped faster than before, and the transportation cost will be reduced.

Origin Port	Destination port	Distance on the current route	Distance along the CPEC route	The KM difference
Kashgar China	Jeddah	17,295	6,811	10484
	Kuwait	16,377	4,809	11568
	Oman	15,130	3,672	11458
	Jeddah Hamburg	25,111	14,626	10485
	Le Havre	24,263	13,778	10415
	Rotterdam	24,642	14,150	10492

6. Recommendations and Conclusions

6.1 Suggest

Based on the findings of the calculations, it is easy to conclude that businesses should choose the new China-Pakistan Economic Corridor route because it is more cost-effective in terms of transportation and time. Manufacturers want to get raw materials on schedule and have finished products delivered to clients as quickly as possible, both of which are dependent on a rapid and dependable supply chain network. In the supply chain network, transportation serves a dual purpose. The transportation of raw materials for manufacture is the first stage, and the transportation of finished products for consumption is the second. Good transportation benefits in the timely delivery of raw materials and the timely delivery of completed goods to clients. Therefore, choosing a good transportation infrastructure can make transportation faster, timelier, and cheaper.

6.2 *Limitations of the Study*

It is difficult to collect accurate data on the cost and time involved with road traffic because the China-Pakistan Economic Corridor project has not yet been fully implemented. The shipping company's 40-foot container shipping fee is usually good for one month. Costs may fluctuate as a result of changes in several factors such as oil prices, demand, and supply. Both the proposed and existing China-Pakistan Economic Corridor routes are made up of highways and marine links. The calculation of sea transportation cost and transportation time is relatively easy, but due to the different charging levels of local transportation companies, land transportation is somewhat challenging. For the price of land transportation, obtaining data is a challenge. Due to the different road charges in different places, the road transportation fee will be different. To meet the research standards, this study takes into account the average cost of road transportation. At the same time, since Gwadar Port has not yet been opened, the nearby Karachi Port was used for research. The locations of these two ports are similar, so maritime transportation costs and transportation times are similar.

6.3 Summarize

The major goal of this research is to look at the impact of transportation costs and time on trade when the China-Pakistan Economic Corridor is implemented. Transportation is crucial in the movement of manufacturing resources and consumer goods. Faster, safer, and lower-cost products transfer is facilitated by good transportation infrastructure, which has a favourable impact on trade. The transportation business plays a critical role in the development of global trade, accounting for around 90% of all global trade. Large-scale import and export of goods is impossible without transportation. China is currently the greatest exporter and importer of products and services in the world. According to Atlas media reports, OEC's overall export volume is currently US$2.57 trillion, making it the world's largest. China ranked second in the world in terms of imports, at $1.58 trillion. Furthermore, to meet its energy needs, China imports a huge amount of oil from Middle Eastern countries. As a result, China requires a rapid, secure, and dependable alternate channel. The study's initial purpose is to determine how the China-Pakistan Economic Corridor affects imports. Each container's transportation cost will be

cut by US$1,400 to US$2,200, lowering the cost of goods. This will be represented in two ways. To begin with, transportation costs have decreased, lowering the cost of China's raw material imports from various countries. Production will be able to use lower-cost raw materials. Second, the cost of energy or fuel will decrease in comparison. As a result, China's export trade transportation costs have decreased, resulting in lower product sales prices. We can also see that the China-Pakistan Economic Corridor's completion has resulted in a win-win situation for all stakeholders. Any trade is either bi-directional or multi-directional. While the new route is convenient for China, it also benefits European, Middle Eastern, and Central Asian countries. He had a large favorable impact on the economic development of Asia and even Europe, in addition to promoting China's economic development.

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