

A Study on Gwadar Port International Competitiveness using Porter's Diamond Model

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Abstract—Being competitive at the international level requires a certain number of conditions to be fulfilled. Research has identified port costs, port infrastructures, hinterland proximity as factors that can determine the competitiveness of ports, while others have focused on port service quality, inter-port cooperation, supply chain integration. This paper aims to analyze the competitiveness of Pakistan's Gwadar port, it has been taken over by China, at international level based on Diamond Porter's Model. Mains findings reveal that Gwadar has enormous potential to be a competitive port and facilitate trade in China, Pakistan as well as south Asia, central Asia, west Asia, Africa and Europe. However, it is expected to face competition and the risks of growing insecurity in the region. This study also aims to find out the significance of Gwadar Port, provide suggestion to revealed countermeasures.

Index Terms— Diamond Porter's Model, Gwadar Port, international level, significance

I. INTRODUCTION

Ports serve as important transportation hubs that facilitate goods movement to businesses in local communities and worldwide markets^[1]. Ports can connect goods to consumers through highway system, railroads, air transit and domestic marine highways (water transportation routes). These ports include seaports as well as smaller intercoastal and inland ports that facilitate movement of goods between the seaports and local communities. Intermodal transportation refers to movements of cargo between different kinds of transport modes^[2].

The issue of port competitiveness has been an important topic. Port competition is often analyses based on individual characteristics of seaports rather than inter-port connections, confirm the progress of secondary ports over their major competitors, reflecting the importance of local port policies^[3]. Some research on port competitiveness has focuses on strategy for container ports, for survival during the next stage under conditions of harsh competition and a profound understanding and a categorization of main drivers of port competitiveness^[4]. Moreover, relevant authors concentrated on the identification of the drivers of port competitiveness and their measurement using the Porter's Diamond Model^{[5][6]}.

Run Y U and Wen Y selected 16 quantitative indexes on port infrastructure, port operations, port hinterland conditions and port developing potential to establish an evaluation system to measure the international competitiveness of port and apply the method of Dynamic Factors Analysis(DFA) to analyze eight major ports in Asia from 2010 to 2014^[7]. Chernoeff Faces Model^[8] and Fuzzy-ANP method^[9] are also used to build a port competitiveness evaluation model.

Recent researchers have analyzed Pakistan's Gwadar port, it has been taken over by China, as hub port and to focus on the economic potentials of Gwadar port that can enhance the economy of Pakistan^[10], highlights the future scenario of energy transactions for both China and Pakistan^[11], evaluates the prospects of trade, industrial development opportunities and economic benefits through Gwadar port^[12].

This paper aims to analyze Gwadar port competitiveness through Porter's Diamond determinant. Indeed, Gwadar is a small fishing town which with the construction of the corridor port could be one of the rapidly growing city of Pakistan to become an important industrial, trade hub of the country and strategically important port city of the world^[13]^[14]. The city is to become the bridgehead of the China-Pakistan Economic Corridor (CPEC), a \$54 billion multi-faceted project launched in 2013 to connect western China with the Indian Ocean via Pakistan^[15]. The CPEC itself is an axis of China's extensive the Belt and Road Initiative, aimed at developing a land belt and sea route, involving some 65 countries. However, does Gwadar has the finery, the potential to achieve the goals that the investor "China" and Pakistan host country have set themselves?

The remainder of the paper is organized as follows. Section II provides the materials and methods of the study. Section III describes the main finding of analyzing Gwadar port according Porter's Diamond Model. The significance of Gwadar port in section IV shows the importance at the same time for Pakistan, for China and for the countries of Asia. Section V presents some countermeasures and suggestions. The last section VI concludes on implication of the results for Gwadar port development policy.

II. MATERIALS AND METHODS

In his book "Competitive Advantage of Nations", Michael Porter offers the first theory of competitiveness based on the causes of productivity with which companies compete instead of traditional competitive advantage. The model helps to understand the competitive advantage of

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nations or groups process due to certain factors available to them^[16].

Traditionally, economic theory mentions land, location, natural resources (minerals, energy), labor and local population size as factors for comparative advantage for regions or countries.

Because these factor endowments can hardly be influenced, this fits in a rather passive (inherited) view towards national economic opportunity. Porter (1990) introduced four specific factors, which will potentially create competitive advantages on a global scale. Abundance of such factors may actually undermine competitive advantage^[16]. Organizations can use the Porter's Diamond Model to establish how they can translate national advantages into international advantages. The Porter's Diamond Model suggests that the national home base of an organization plays an important role in the creation of advantages on a global scale. This home base provides basic factors that support an organization, including Chance and Government Policy, but they can also hinder it from building advantages in global competition.

Gwadar port was examined according these determinants of Porter's Diamond factors in order to determine the level of influence of these determinants on Gwadar Port competitiveness. The determinants that Michael Porter distinguishes are: Factor Conditions, Demand Conditions, Firm Strategy, Structure, and Rivalry and Related and Supporting Industries.

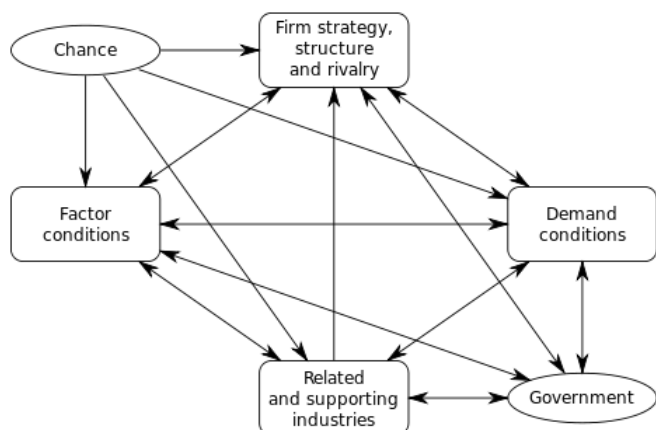


Figure 1 Porter's diamond model (Porter, 1990, p. 76)

III. RESULTS OF RESEARCH

Applying the determinants of the Porter's model the competitiveness of Gwadar port has shown the following results:

A. Factor conditions

The situation in a country regarding production factors, like skilled labor, infrastructure, etc., which are relevant for competition in particular industries.

1) Human resources. Skilled labor is an important basic factor for industry development^[17]. Balochistan and underlines its economic difficulty in terms of the dearth of human resources, physical infrastructure, economic autonomy, productivity among others^[18].

Balochistan is known for its lack of skilled professionals, and Gwadar as a very small town of traditional fisherman. Given the scale of the project, today the population of Gwadar is insufficient to accommodate this project. But this population expect to grow from 100,000 in 2017 to 500,000 in 2020 and even reach the 2,000,000 in the next 20 years.

2) Physical resources refer to natural resources (agricultural land, water resources), climate but also to a nation's location, geographical size and other physical traits. Abundance, quality, accessibility and costs determine a nations advantage^[16]. Gwadar port occupies a great geographical location according to experts, because its proximity to the Arabian Sea gives China and Asian countries access to Persian Gulf and the markets of the Middle East. Pakistan forecast with the master plan to develop 18600 hectares of land for his project including an export processing zone of 74 hectares located on land adjacent to the port in east. For 600 meters of wharf, a maneuvering basin of 450 m in diameter and a depth of 12 to 14 m. Near to the Strait of Hormuz and the Red Sea shipping route through which Sudanese oil passes, the Port of Gwadar is ideally located from the point of view of Chinese interests.

3) Knowledge and education negatively affect the development of Gwadar. The Vision identifies core issues in the education sector in the district that include extremely poor literacy rate, the non-availability of teachers and their low commitment to the profession and their students, and the location of schools in relation to access and transport^[19]. Next to that, there is an inability of the local population to communicate with the 2000 Chinese workers.

4) Capital resources and infrastructure made in Gwadar have been important to make Gwadar Port a corridor. Type, quality and cost of infrastructure affects competitiveness. Infrastructures includes transport systems, communication and mail systems as well cultural institutions that affect quality of life^[16]. Big investments have been made to equip the port and the city of Gwadar with the latest generation infrastructure. China and Pakistan have agreed on a project set estimated at 10 billion of dollars and their construction will be completed before 2030. Transport infrastructure, energy and industrial collaboration being the four key areas. The highway from Kashgar to Gwadar was put into service, with 60 trucks from Kashgar travelling 1,935 miles for 15 days and arriving at Gwadar port. Building of three multipurpose berths and related port infrastructure and port handling equipment, and improvements under CPEC and other ancillary projects.

B. Demand conditions

Describes the state of home demand for products and services produced in a country.

Porter^[16] discussed home demand through three general attributes: the nature of buyer needs, the size and growth rate of home demand, and the transferability of domestic demand into foreign markets.

1) Home demand. In Porter's analytical framework home market demand conditions also play an important role in determining competitive advantage of a nation^[16]. The economic impact of CPEC will be similar to that of the Marshall Plan after the Second World War. Pakistani officials predict that the CPEC will create more than 2.3 million jobs between 2015 and 2030, and add between 2% and 2.5% of the country's annual GDP if all projects were completed. A 2,700-kilometer highway running across the country would be the heart of the economic corridor between Gwadar port and Kashgar in the Xinjiang province of North-West China. This would be complemented by a fiber link, oil and gas pipelines, freight trains, and an optical fiber link. As the Gateway city of the CPEC project, with a \$62 Billion joint investment between China and Pakistan, Gwadar will be the host to one of the most important ports in the world. Strategically located by the Arabian Sea, it will be providing a shorter route for trade, import and exporting; reducing the time, effort and costs required to the tune of about 60 to 70 percent.

2) Internationalization of domestic demand. Gwadar port is very important for the Chinese as it reduces the travel time for their goods and supplies between China and Middle East from 45 days (on traditional South China Sea route) to only 12 days. Gwadar offers tax free investments and trade, thus attracting large number of foreign investment to open new development projects and economic plans. Strategically being close to the Middle East, it is very close to important oil routes, such as the Hormuz Strait, responsible for over 20% of the oil passing in the world. The area surrounding the region holds a proven two-thirds of the oil reserves, making the port ideal for shipping and other imports. This would prove beneficial to both China and Pakistan. China could benefit from a cheaper option to reach out to the world in a much shorter route, while Pakistan can benefit from boosting its own exports.

C. Rivalry and Related and Supporting Industries

The existence or non-existence of internationally competitive supplying industries and supporting industries.

1) Innovation and R&D. This "CPEC" Project will change the international trade. The cost and time for transfer of goods will decrease, which usually takes 50 days to reach Hamburg from Beijing with \$3,000 will arrive in only 15 days saving \$1,800 after the completion of CPEC by 2030 as reported by Punjab Board of Investment and Trade (PBIT). Sartaj Aziz said the Consortium of Business Schools and Pakistan China University Alliance (PCUA) would provide a platform for collaboration and sharing of knowledge between

Pakistani and Chinese academic institutions^[20]. Collaboration in the fields of agriculture, finance, business, maritime sector and tourism needed to be explored in order to develop capacity building into relevant fields pertaining to the China Pakistan Economic Corridor (CPEC). The importance of research and academic work into key areas of CPEC, including transport infrastructure, agriculture, industrial development, and integration of financial markets are big problems that need to be improved.

2) Internationalization. The increasing bilateral trade between Pakistan and China and the volume of investments under the China-Pakistan Economic Corridor (CPEC), which has reached \$57 billion, has opened up possibilities for replacing US dollars with CNY in bilateral trade. Looking at the CPEC, China should not bound it to the bilateral relations, but mull it over with a regional and comprehensive vision^[21]. CPEC is not only a regional affair, but much more international, because it connects China to Asia, Africa and Europe making international trade cheaper through easily accessible land roads.

3) China-Pakistan Cooperation. Chinese cooperation with Pakistan has reached economic high points, with substantial Chinese investment in Pakistan infrastructural expansion including the Pakistan deep-water port at Gwadar. Both countries have an ongoing free trade agreement. Pakistan has served as China's main bridge between Muslim countries. Pakistan also played an important role in bridging the communication gap between China and the West by facilitating the 1972 Nixon visit to China. The relations between Pakistan and China have been described by Pakistan's ambassador to China as higher than the mountains, deeper than the oceans, stronger than steel, dearer than eyesight, sweeter than honey, and so on. According to Stockholm International Peace Research Institute, Pakistan is China's biggest arms buyer, counting for nearly 47% of Chinese arms exports. Referring to a 2014 BBC World Service Poll, 75% of Pakistanis view China's influence positively with only 15% expressing a negative view. In the Asia-Pacific region, Chinese people hold third most positive opinions of Pakistan's influence in the world, behind Indonesia and Pakistan itself.

D. Firm Strategy, Structure, and Rivalry

The conditions in a country that determine how companies are established are organized and are managed, and that determine the characteristics of domestic competition. Vigorous local and global competition not only sharpens advantages at home but pressures domestic firms to sell abroad in order to grow^[17].

1) Establishment of Gwadar port. Several successive phases as well as major projects have allowed the port of Gwadar to see the light of day and to be operational at present.

Phase I (2002–2006)

The first phase of construction at Gwadar Port began in 2002, and was completed in 2006, before inauguration in 2007.

Phase II (ongoing)

The second phase of construction is currently underway as part of planned improvements under CPEC and other ancillary projects. The total project is expected to cost \$1.02 billion.

Table 1: Different phases of Gwadar port

Phase I (2002–2006)	Phase II (ongoing)
<ul style="list-style-type: none"> Berths: 3 Multipurpose Berths (capacity: bulk carriers of 30,000 deadweight tonnage [DWT] and container vessels of 25,000 DWT) Length of Berths: 602 m in total Approach Channel: 4.5 km long dredged to 12.5 m depth Turning basin: 450 m diameter Service Berth: One 100 m Service Berth Related port infrastructure and handling equipment, pilot boats, tugs, survey vessels, etc. Built at a cost of \$248 million. 	<ul style="list-style-type: none"> 4 Container Berths along 3.2 kilometers of shoreline 1 Bulk Cargo Terminal (capacity: 100,000 DWT ships) 1 Grain Terminal 1 Ro-Ro Terminal 2 Oil Terminals (capacity: 200,000 DWT ships each) Approach Channel: To be dredged to 14.5 m depth 4 lane expressways to connect the port to the Makran Coastal Highway New international airport to be built in vicinity of the port Floating liquefied natural gas terminal with capacity of 500 million cubic feet of gas per day 2,292-acre special economic zone to be developed adjacent to port Desalination plant 360-megawatt coal-fired power plant
<p>Longer term plans</p> <ul style="list-style-type: none"> Dredging of approach channel to depth of 20 meters 100 berths to be built by 2045 Capacity to handle 400 million tons of cargo per year 	

Source: Gwadar Port Authority

2) Management of Gwadar Port. (2007-2013) A shortage of resources, the non-fulfilment of concession agreements by the Government of Pakistan and the original concessionaire (the Port of Singapore Authority) and the limited commercial activity in Gwadar city have together retarded the development of the port over last few years^[22]. In 2013 the operations of the port were handed over to China Overseas Port Holding Company (COPHC). COPHC was determined to transform Gwadar into a world class port and is investing around a total sum of \$1.02 billion, for the advancement and expansion of the port. Work on construction of a 10-square kilometer free industrial zone CPEC in Gwadar is underway and the

port city alone will be able to create more capacity of job opportunities in future.

3) Goal of Gwadar port. China-Pakistan wants to make Gwadar port a corridor port, a port through which goods transit between China, Asia, Europe and Africa more quickly and more easily. Gwadar port is a major part of China's Belt and Road Initiative, is also a main feature of the China-Pakistan Economic Corridor. China Overseas Port Holding Company plans to expand Gwadar port, constructing nine, new multipurpose berths along 3.2km of seafront to the east of the existing berths. Gwadar port will provide an alternative shipping route to the Malacca Strait, which is frequently patrolled by the United States. The shipping route from the Middle East to China, via the strait, is about 12,000 km long.

4) Chabahar port Vs. Gwadar Port. Consider as sisters ports because of their geographical location and proximity to each other. These two ports could be rival ports, contrary to the agreements signed between these two countries. As mentioned Iran's Ambassador to Pakistan "Chabahar port will not threat to Gwadar port as the two facilities acts as sister port in the future and great source of regional cooperation, peace and stability"^[23]. Indeed, it will be difficult to achieve and respect these agreements, and because China and India through these ports "Gwadar and Chabahar" covet the same resources. Chabahar in south western Iran is likely to become the strongest competitor of Gwadar to transit trade for Afghanistan, Central Asia and China. Chabahar is considered as the economic gateway to the world due to its location on the Oman Sea shore outside the Strait of Hormuz. It shortens the inland link from the sea to CIS's countries by up to 100Km. Chabahar provides the shortest link across to Central Asia and the Middle East.

E. Government

Government sets up policies, rules, and regulations in industry activities. It is directly responsible for improving the wellbeing of citizens, as well as achieving economic and political stability^[17]. Government can influence all the four general determinants either positively or negatively. Sets up policies, rules, and regulations in industry activities. It is directly responsible for improving the wellbeing of citizens, as well as achieving economic and political stability^[17].

The Pakistani government's contribution to the construction of the port in financial terms is negligible compared to the one of China, but it is distinguished by the quality of the partnership agreements made with China. The Pakistani authorities made the CPEC the largest project at the infrastructure level since its independence in 1947.

Indeed, CPEC does not only concern the port of Gwadar, but it also concerns the whole city of Gwadar. Gwadar port Authority initiated the project of building a modern civic center. The government is planning to set up free trade zone at the Gwadar port of Balochistan^[24]. Gwadar offers a tax-free investments and trade, thus attracting large number of foreign investors to open new development projects and economic plan. Gwadar port will also increase job opportunities for Pakistani people and help in economic

development through transit trade fee and foreign exchange reserves.

F. Chance

Chance refers to external events that may affect or benefit a nation or industry and that are totally outside the control of firms and government.

Porter^[16] proposed that firms promote continuous innovation and improvement, and endeavor to seize opportunity resulting from chance events.

Pakistani and Chinese scholars are establishing collaborative research institutes and exchanging ideas on both sides of the border. This academic approach to the CPEC is paving way for Pakistani students to pursue higher education in Chinese universities, and for Chinese students to do the same in Pakistan. However, Pakistan’s domestic politics is also important to the CPEC’s success. The country’s political system has never been particularly stable. Political power oscillates between military and civilian leaders. The risk of insecurity in the region could hinder the achievement of this project and threaten the competitiveness of the port of Gwadar.

transit trade fee and foreign exchange reserves. Tourism, hotel industry, trade and state income will build up which will reinforce nation’s economy. It will help Pakistan to screen the Sea Lines of Communications starting from the Persian Gulf and the Strait of Hormuz.

A. Importance to China

China has the largest population of around 1.371 billion according to 2015 Census report and to fulfil its energy needs, China imports oil from the middle east. While China has to travel a long distance in order to get that oil, Gwadar on the other hand is surrounded by countries having two third oil reserves. Gwadar can act as shortest trade route to China.

The Chinese industries are also facing trouble competing in the global market due to high transportation cost and delivery time. China is using a longest way due to which gives a competitive edge to competitor’s example Japan and The United States. This new route from Gwadar-Pakistan has solved many problems for China and will save billions of dollars and will reduce time.

Now it will enable China to more safely and reliably import oil. The Government of Pakistan has also provided a naval base to China in Gwadar, and it is stated as an Economic Corridor to China. It will enable China to more safely and reliably import oil. Currently, sixty percent of China’s oil must be transported by ship from the Persian Gulf to the only commercial port in China, (Shanghai) which takes around 2/3 months. Hence time loss and distance will be reduced.

B. Importance to Asian Countries

Gwadar port would connect three regions, i.e. Central Asia, South Asia and Middle East. The Gwadar port is important not only for Pakistan, but China, the Central Asian Republics (CARS) and the entire region. The Corridor will help cut the journey time for Freight between Gwadar port, West China and the Central Asian regions by 60 to 70 percent. Transportation of oil from Persian Gulf to China used to take about 2 to 3 months.

Land locked countries such as Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan since they have no sea-port and Gwadar is shortest way to sea, these countries have shown great interest in Gwadar port and will use Gwadar port for trade purpose.

Figure 2: Gwadar risk measures



Source: The Economist. SCMP Graphic

IV. SIGNIFICANCE OF THE GWADAR PORT

A. Importance to Pakistan

Gwadar is important as a key to economic prosperity, regional connectivity and maritime development for Pakistan. Gwadar can act as an international trade hub for Pakistan. It would open new job opportunities and help in the development of Balochistan. Pakistan would be able to explore minerals, hydrocarbons, oil and gas resources of CARs. The port will attract foreign investment and tourism. It would provide foreign reserves and free trade zones and special economic zones (SEZ) that would help in the economic prosperity of Baluchistan and Pakistan. It would help to increase Pakistan’s trade and commercial activities particularly in Balochistan province, so provincial grievances will be addressed. Gwadar will increase job opportunities for Pakistani people and help in economic development through

V. COUNTERMEASURES AND SUGGESTIONS

Despite bright prospects, the number of employees hired by port remains insufficient, probably because of their lack of experience and knowledge.

It would be necessary for the Pakistani authorities with the help of China to create training and learning units for the local population in order to involve them in the project, as this would aggravate a sense of deprivation that goes back decades.

Contrary to what we have seen, the main objective of the plan lies in the creation of industrial parks, or special economic zones, perfect infrastructure, sufficient energy supply and the capacity of self-service energy.

Long Term Plan for China-Pakistan Economic Corridor (2017-2030) (CPEC-LTP) has planned to put much emphasis on modern agriculture, textiles and clothing, cement and

building materials, fertilizers and agricultural technologies, which until now have been practiced in a traditional way^[25].

The issue of financial resources is always crucial. One of the main risks facing long-term investments in the case of the Pakistani economy is policy and security. Some factors, such as competing parties, religion, tribes, terrorists, and Western intervention affect Pakistani.

Efforts will have to be made by the plan to provide "free and low-interest loans to Pakistan" once the costs of the corridor begin to arrive. Local governments and Pakistani local authorities involved should also assume part of the financing by issuing sovereign guarantee bonds, while protecting and improving the proportion and magnitude of the funds Public investment in the construction of the corridor in the financial budget.

The CPEC should strengthen security in Gwadar and in the region, conduct actions to convince the local population of the well-being of this project.

Joint actions will have to be led by China and Pakistan to bring more strength to the project. China and Pakistan should further strengthen cooperation between local governments, strengthen the communications among non-governmental organizations, develop extensive project cooperation centered on public opinions communication, people-to-people friendship and people's livelihood improvement, and enhance the comprehensive service capability of the cities along the CPEC; strengthen cooperation in trade and industrial areas, expand bilateral economic and trade relations, and enhance the level of bilateral trade liberalization, to strengthen agricultural infrastructure construction within the CPEC.

China has the strength of management the Port well where Singapore failed from 2007 to 2013, China should use the difficulties of this mountainous region to make it an advantage for tourism and development of the region and entire Pakistan.

VI. CONCLUSION

The Gwadar port is probably on the verge of becoming a very competitive port on the international level, both by its geographical position and by the amount of investment put in place for its construction, and also by the interest that China and Pakistan dedicated.

This study aimed to analyze the competitiveness of Gwadar port through the factors of Porter's Diamant model, namely: Factor Conditions, Demand Conditions, Firm Strategy, Structure, and Rivalry and Related and Supporting Industries and with his sub-factors. Starting from Porter's point of view, given that Gwadar is located at a corridor location, i.e. near the Strait of Ormuz and the Red Sea shipping route through which Sudanese oil passes. Considering the amount of investment estimated at 53 billion dollars and infrastructure (road, rail, port equipment etc. ...) to accompany the project. Given the quality of China-Pakistan cooperation and their objectives and the labor force that China has deployed in building and managing this project, Gwadar port has the potential to become a competitive and world-renowned port.

However, the accomplishment of a project cannot be done without the agreement and participation of the local population. Also, terrorist threat, repeated attacks aim to curb and block the realization of this project. Similarly, the rivalry

between these neighbors, the port of Chabahar in general can be an advantage in terms of innovation if the countries in charge of these ports respect the treaties and agreements signed and work mutually in compliance with international standards; and a disadvantage in the measures where they will have to divide market share.

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