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## An Application of Porter's Diamond Model: A case of Pakistani selected industries

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### Keywords:

Competitive Advantage,  
Trade, Porter  
National Diamond Model,  
Pakistan.

### ABSTRACT

*The aim the study was to identify factor contributing in Pakistan's national competitive advantage in trade. The panel data was applied to five Pakistani industries from 2005-15. Fixed effect model was applied to the data. The government policy variable shows significant impact on the competitiveness of selected industries trade. As, International competitiveness is critical for the attraction of investment, tourism and Other services. The current work will analyse variables through which international competitiveness can be attained for Pakistani industries. The future studies can be directed toward other industries, additionally majority of the data was unorganized and undocumented, due to which limited items were included in the development of variables future studies can include more items in the development of variables.*

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## 1. Introduction

Pakistan came into existence on 14 August 1947. The country has very significant development potential. It is located at the crossroads of China, Middle East, and South Asia. It is thus at the fulcrum of a regional market, having large population untapped potential for trade and diverse resources. At the time of independence, Pakistan was an agriculturally based country. In the first five decades, its average economic growth was above the world economy in the same period (Ahid & Wali 2017). Pakistan purchasing power parity (PPP) in 1980 was \$71.81 billion. It grew up to \$793.85 billion in 2013. Pakistan was ranked 42nd in terms of GDP and 24 in terms of PPP. With a population of over 190 million (the world's 6th-largest) with 6% of the total population is below the poverty line, its nominal GDP per capita is \$1,428 in 2016. Pakistan was ranked 25th in 2017. Growth in GDP was 4.5 % in 2015 and 6.7% in 2016 and 5.2% in 2017 with the expectation of 5.5% growth in 2018, with the agriculture sector contributing 25%. services 54 %, and industrial sector 20% in the total GDP (Wikipedia, 2017).

The main issue which is threatening its economic stability and growth is decades of war against terrorism and political instability which had seriously damaged its infrastructure and other managerial issues. Pakistan economy is semi-industrialized, which is growing along the Indus River (Henneberry, 2000). A seminar on Pakistan competitiveness by Zia (2006) suggested a weak Competitive position of

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Pakistani firms with stagnant growth. As compared to newly emerging economies. The exports are mainly composed of low technology products. But, despite weak competitive position the economy is showing signs of recovery, which might be the result of economic reforms, concessional financing, debt restructuring, structural reforms, designing of policies with resulted in increased GDP (Zia, 2006). Currently, the country is in the process of trade liberalization and privatization of many public organizations for the attraction of FDI and also for decreasing the problem of the budget deficit (Pakistan Country Report, 2010).

Primary export commodities include chemicals, leather, textiles, sports goods, medical instruments, and carpets/rugs. (Workman, 2017). Other item exported by Pakistan are Cotton, Cereals, Ores, slag, ash, Salt, Sulphur, stone, cement, Rawhides excluding fur skin, Plastics, Food waste, animal fodder, Copper, Fish, Gums, resins, Other textiles, worn clothing, Knit or crochet, Clothing (not knit or crochet), Leather, animal gut articles, Medical, technical equipment, Textile floor coverings, Furniture, lighting, signs, Plastics, Fruits, nuts, Footwear, Toys, games, Toys, games, Manmade staple fibers, Salt, Sulphur, stone, cement, Vegetables, Alcoholic beverages, Sugar, Base metal tools, cutlery, Coffee, tea and spices, organic and inorganic chemicals and oilseed (Pakistan Defense Forum, 2015).

### **Research Question**

- What are the factors which contribute to the competitive advantage of Pakistan international trade.?

### **Research Objective**

- To identify factors affecting Pakistan National Competitive Advantage in trade with India during post SAFTA period (2005 to 2015).
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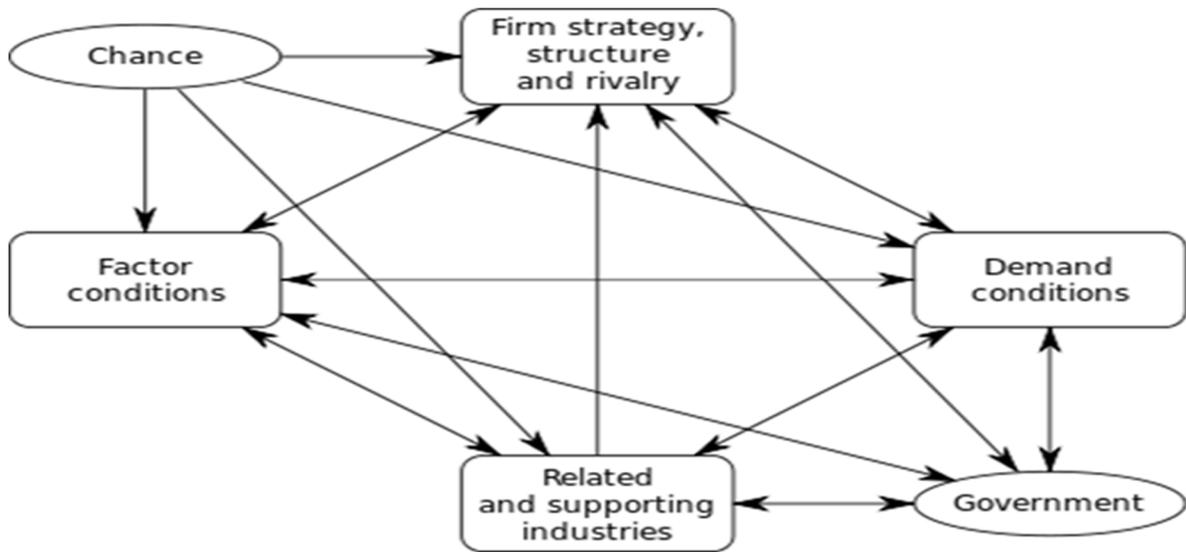
### **Significance Of Research**

The study could provide information on Pakistani industries and sources of their competitive advantage. Countries like companies compete in the international market. At the firm level, the competitiveness can be attained by the combination of strong political and legal system, with stable institutions and social frameworks, this work will identify factors which can play important role in the development of competitive advantage. Additionally, the macro, as well as micro-conditions of the nation, will help to attain and sustain competitiveness in the global market. As, International competitiveness is critical for the attraction of investment, tourism and Other services. The current work will analyze variables through which international competitiveness can be attained for Pakistani industries.

## **LITERATURE REVIEW**

There are certain countries in which companies are consistently engaged in innovation and improvement and able to gain and sustain competitive advantage in different industries. They are also able to overcome barriers to reach different markets. The reason for their success lies in four important attributes of that country. These attributes individually and as a constitute diamond of national competitive advantage. This actually a playing field which is developed by that country for its industries. These attributes are: Factor Conditions include the condition of a factor of production, including human, physical, informational, infrastructure and capital necessary for the competition in a particular industry. Demand

Conditions include the composition of home demand and number and sophisticated customer in the home country. For particular goods and services. Related and Supporting Industries are the existence or absence of supplier’s industries and other internationally competitive supporting and relates industries for a particular product or service. Firm Strategy, Structure, and Rivalry are the business environment of the nation in which companies develop their strategies and also the nature of domestic rivalry in the countries. The role of government the policies and procedures perused by the government to boost the competitiveness of the country. The role of chance is the sudden incidents or events which might have affected the competitiveness of the



**Figure 1 Porter Diamond Model**

Source: Porter (1980)

**Factor Conditions**

Factor conditions are the backbone of any economy. They play a vital role in the development and acceleration in the economic development of any country. These factors are a combination of basic and advanced factors. As Pakistan is a factor driven economy, Therefore, the factor condition plays a very important role in the development of national competitive advantage in Trade. The detailed analysis of different factors of Pakistan is as follows:

***Human Resource***

Human capital and its development play an integral part in the development of competitive advantage. In this regard, professional experts have strategic importance (Debrah and Ofori, 2006). For the development of the knowledge-based economy, it’s very essential to develop human resource of the country which reduces skill mismatch in the labor market and creates a competitive advantage for the

nation by enhancing economic and social development for the improvement of the wellbeing of its citizens (Khan, 2005). The Agriculture sector has employed 43% of the total workforce, whereas, wholesale and retail sector, 9.2 %, manufacturing sector, 13.3 %, and transportation and communication sector contribute 7.3% of the total workforce (Pakistan economic survey 2013). Afridi (2016) suggests a positive relationship between human capital and economic growth using data from 1972 to 2013 from Pakistan they applied ARDL and VECM models. The study suggested that it's very important for Pakistan to invest in education and health sector from its budgets for long-term benefits for the economy. Pakistan has a population of over 220 million. But it is utilizing almost or less than 20% of its workforce on the professional, managerial and technical positions, a Major portion of its workforce is engaged in the industrial and agricultural workforce at the front line (Afza & Nazir, 2007). Pakistan is situated in South East Asia and the majority of this workforce is comprised of the labor force, the majority of countries in this region have a labor-intensive economy. As compared to other economies of South Asia, Pakistan is in a better position, as it is using its workforce at technical, administrative and professional positions. However, improvement is still needed in many areas. The current education system has to be modified and upgraded, the industry and academia should bridge the gap and work together for the development of the required skills and technical expertise needed. New institutes for training and development should be established. Pakistan is in the top ten (9th) labor forces of the countries of the world (Brinkhoff, 2013).

The education sector is dominated by poor infrastructure, ghost teaching staff in many village schools, poor teaching staff and very inadequate learning outcomes (Arshad, 2016). In the health sector, government spending was 1% of GDP in 2013, which makes it the lowest spender in the health sector in the world. The outcomes of the health sector have improved but showed very low improvement in nutritional outcomes. Which is not improved since two decades, and even worsened. According to the survey on National Nutrition, the 44% of child stunting rates remained static since 1965, with 15% acute malnutrition in under 5 years of age. The official statistic suggested reduced poverty rates. Reductions in poverty have been strong in both urban and rural areas, and the fall in rural poverty from 40 to 16 percentage points between 2002 and 2011 is particularly striking. This decline in poverty is confirmed when examining the poverty headcount according to the international poverty line of \$1.25 per capita. According to this metric, poverty in Pakistan declined from 36 % in 2002 to 11 % in 2011. Pakistan now has the second lowest headcount poverty rate in the South Asia region, after Sri Lanka (4 %). A large mass of the population moved from just below to just above the official poverty line, which is why small improvements in households' real consumption. Despite increased growth in many sectors, Pakistan is faced with the problems of very low human development and very low labor force participation and economic growth. It ranked 146 out of total 187 countries in 2014. Which is lower than most of the South Asian countries. Access to education is very low with primary completion very low. Government spending on education is 2.1 % of the total GDP in 2013 (Wikipedia, 2017).

### ***Physical Resources***

The major resource of Pakistan's is its arable land and water. Pakistan has a larger irrigation system with 25% of arable land under cultivation. It irrigates almost three times more acres than, Russia with a favorable climate, agriculture contributes 23 % in the GDP and employs 44% of the total workforce of the country (World Bank, 2008). The country is endowed with a large number of mineral resources and a very promising area for exploration of mineral reserves. The country is gifted with almost 6,00,000

km<sup>2</sup> of the outcrops area demonstrates a geological potential of different varieties metallic and non-metallic mineral reserves (Wikipedia, 2017).

### ***Knowledge Resources***

There is a dire need to increase research and development culture in Pakistan to increase exports (Manan, 2013). There are a large number of research institutions set up at federal and provincial level by the government, but the main problem is inconsistent financial support from the government, lack of linkage between academia and industry and lack of funding for market-based surveys. The science and technology board of management has made significant efforts for the development of national science policy (Butt, 2015).

### ***Capital Resources***

The banking sector of Pakistan remained very strong during the financial crises of 2008-9, attracting a huge amount of FDI (Wikipedia,2017). The consumer financing greatly flourished in the country during the last few years due to the privatization of banks. There is an inadequate finance to many sectors. The FDI is the major external source of finance, which can help modernize the industries and it helps to integrate the economy in world markets. Pakistan had taken reasonable steps to increase the amount of FDI. It is categorized as one of the top ten destinations of Asia (SBP, 2017).

### ***Infrastructure Resources***

The Pakistan telecommunication industry has shown remarkable growth due to regularization measures. In 2008 mobile subscribers reached 140 million in 2014, which was the world's highest mobile tele densities (Wayback machine,2010). There are above 6 million landlines having 100% fiber-optic network. Which provide coverage to the remotest areas of the country (Wikipedia, 2017). There are almost 3.1 million fixed line users, additionally 2.4 million wireless users. The liberalization measures had attracted almost \$90 million FDI During 2007-8 (Wikipedia, 2017). This sector attracted \$1.62 billion FDI which almost 30% of the FDI received by the country. The Current growth of state-of-the-art infrastructures in the telecoms sector is due to the efforts of PTA's vision and implementation of the updated policy. Internet and mobile phones were adopted with laissez-faire policy. There is a rapid increase in internet users with an increased number of people speaking in English; the Pakistani society has shown a remarkable revolution in communication. In terms of growth in broadband internet, Pakistan is ranked 4th in the world (Wikipedia, 2017). In 2009 the country had 20 million internet users with the capability of absorbing 50 million in the next 5 years (Wikipedia, 2017). Every government department has their own website. The used of search engines and messaging devices is accelerating very rapidly. This sector had provided almost 80000 directly and 500000 jobs indirectly (Wikipedia, 2017).

### **Supporting and Related Industries**

An efficient and modernized communication and transportation system is a key for the success of a country. Public and private investment in this sector greatly reduces transportation cost and also generates employment. Pakistan has reasonably developed its transportation infrastructure. The country bears a load of almost 239 billion passenger kilometres domestic transport and 153 billion kilometres

per year. The demand for domestic transportation services, higher than the growth in GDP. The road transport system plays a vital role in the overall transport system. The network of about 3.65% of the total road network in the country. It carries loads of about 80% of the total road traffic. Over the last few decades, the freight and passenger traffic has significantly grown even more than the national economy. But there is negligence in the other modes of transportation; the government is now trying to improve them as well. The port traffic is increasing at the pace of \*8% per annum. There are three major ports efficiently working including Karachi, Port Qasim, and Gwadar port. There are also 14 dry ports working to cater to foreign trade. Pakistan Railways (PR) provides service for inland transportation, which cheaper than land routes. It consists of the main North-South corridor, which connects the Karachi port and the primary production and different population centers within Pakistan. There are 36 operational airports in the country which handle both domestic and international cargo (Pakistan Economic Survey, 2007-8).

### **Firm Strategy and Rivalry**

According to the world bank, Pakistan had made a significant progress in doing business index in medium and small size business. It is included in the top ten improvers of the world. The country has also announced a roadmap for the next three years for further improvement in the global ranking of doing business. The country has also implemented reforms in the last three years for registering property, trading across the border and getting credit (Wikipedia,2017).

The introduction of digitalization process land transferring and other land has improved and became more reliable. Introduction of cross-border electronic custom platforms both in Karachi and Lahore had decreased time for fulfilling border regulation. The government of Pakistan has also improved access to credit information and provided a legal guarantee to borrower right for the inspection of their data. This has also increased the country ranking in getting credit. Despite these efforts, the domestic businessmen still face many problems in different areas including enforcing the contracts and also getting electricity. It also takes almost 3 years to clear a dispute in Pakistan as compared to world average of 637 days. The companies in Karachi and Lahore faces power outages on a daily basis (Pasha & Saleem, 2013).

### **Government Policy**

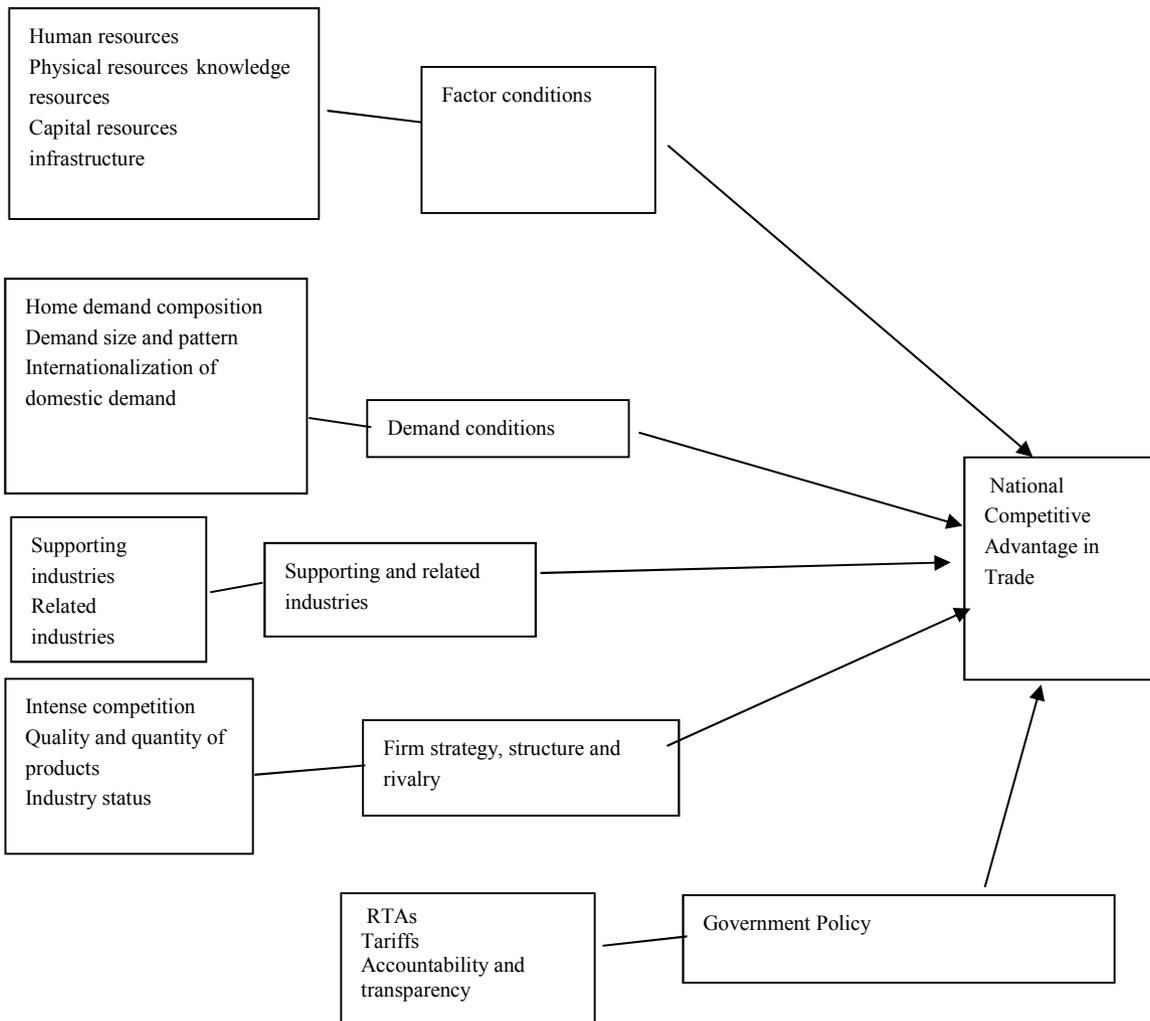
Amjad.et.al (2012) performed a firm-level survey using data from Pakistan and suggested that the key impediment to Pakistan export competitiveness are, skilled labour shortages, energy crises, poor infrastructure, and market imperfection. Which needs a clear and practical government policy to be devised to solve these problems, and help to expand the export market of the country. The growth strategy of Pakistan followed a pattern of sector-picking for the sake of import substitution and later for export promotion. This kind of policy results in negligence of other sectors and distortion of incentives in the public and private sectors. There is an urgent requirement of deregulation of subsidies and tax incentives for true innovation and entrepreneurship (Hussain &Ahmed, 2011).

Hussain (2017) identified that the decline in the international price of oil and gas were not passed to exporters of the country, who are not able to take advantage of cost-saving and innovate new product to be introduced in the market. Exporters are continuously stressed by the government to increase their

exports, but they are continuously faced with the problem to load-shedding. Additionally, their inconsistency and lack of coordination between various government policies. Import tariffs are purely driven by or protection of domestic, import-substituting industries or revenue mobilization. It is not being realized that a restrictive import regime with the tariff, nontariff and regulatory barriers, and customs clearance procedures which are very cumbersome and with autocratic powers enjoyed by low-level customs officials which are amenable to corruption, would restrict entry of Pakistan into the global market. Large-scale manufacturer enjoys higher tax incentives which restrict medium-sized firms to attain economies of scale.

### Conceptual Framework

Based on the above discussion the following conceptual framework was designed



**Figure 2 Conceptual Framework**

## Hypotheses

Based upon the discussion above and the conceptual model following hypotheses was generated

H<sub>1</sub>= Factor endowment has a significant relationship with National competitive advantage in trade.

H<sub>2</sub>= demand conditions have a significant relationship with National competitive advantage in trade.

H<sub>3</sub>= Supporting industry has a significant relationship with National competitive advantage in trade.

H<sub>4</sub>= Firm strategy, structure, and rivalry has a significant relationship with National competitive advantage in trade

H<sub>5</sub>= Government policy has a significant relationship with National competitive advantage

## Methodology

Exports are the important driver of the economy, which helps to boost the level of economic growth, the balance of payment and employment. After independence Pakistan had faced since its independence in 1947. At that time, the economy was based on agriculture. The economy had shown a positive growth since independence and developed as a semi-industrialized country, which was greatly based on agriculture, food products, and textiles. But it is not able to bridge a gap between itself and developed countries. As export is one of the components of aggregate demand, an increase in exports will increase economic growth. The export growth also accelerates service sector and benefit the local economy. There are many factors which will determine the level of exports conducted by the country are its - Competitiveness, value addition of exports, exchange rate, sustained productivity and economic growth. The balance of trade compares the value of a country's export of goods and services against its imports. When the export of the country is greater than its imports the country tends to have a positive or surplus balance of trade. The surplus balance of trade is beneficial for the economy, but unfortunately, Pakistan is facing the deficit balance of trade since very long. A serious effort is required to overcome this situation. In this regard series of steps has taken by the government to liberalized trade

The study had analyzed different industries of Pakistan and India with an intention to identify sources of competitive advantage of Pakistan by applying Porter National diamond model. The ultimate purpose was to ascertain that after so many trade liberalization efforts and implementation of SAFTA there exist trade creation or trade diversion in Pakistan. The current study had used secondary data. The panel data was collected for the period 2005 to 2015. 5 Pakistani industries were selected including textile, Sugar and Sugar Confectionaries, Inorganic Chemicals, edible fruits and nuts, food and agriculture. In assessing the competitiveness of different industries, Revealed Comparative Advantage (RCA) was calculated. Which was also used by Mukhtar and Javed (2009) Rattanavijit, Somboonwiwat and Khompatraporn. (2012).

**Table 1 Variable Proxies Data Source and references**

Variables	Components	Proxies	Sources	References
Factor conditions (FC)	Human Resources (HR)	Labor force	World bank	Wijinads, et.al (2005)
		Participation rate		Tuerck et al. (2007b, 2008)
		Education Index	HDR Report	Wang, Chaing, and Yin (2004)
		GDP Per Capita	World bank	Wijinads, et.al (2005)
	Physical Resources (PH)	Agricultural land	World bank	Wijinads, et.al (2005) Gawad, lkhteeb, Intezar (2014)
	Knowledge Resources (KR)	R&D expenditure (% of GDP)	World Bank	Wijinads, et.al (2005) Balcarova (2013)
	Capital Resources (CR)	Getting credit	World bank	Wijinads, et.al (2005)
		FDI Inflows (billion USD)	World Development Index	Wijinads, et.al (2005)
	Infrastructure (IF)	Internet Users per 1000 individuals	World Development Index	Wijinads, et.al (2005)
	Demand conditions (DC)	Home demand composition (HD)	Total population (million people)	World bank
Demand Size and Pattern (DSP)		GDP (billion USD)	Pakistan Bureau of statistics	Vu and Pham (2016)
Internationalization of Domestic Demand (IDD)		Total export value industry (billion USD)	Pakistan Bureau of statistics	Vu and Pham (2016)
Home Demand Composition (HDC)		GDP per capita (USD)	World bank	Wijinads, et.al (2005) Vu and Pham (2016)

Related and Supporting Industries (RSI)	Domestic Industries (DSH)	Supporting	Mobile subscription	World bank	
	Related industries(RI)		Rail lines (total route-km) and Roads, paved (% of total road)	World bank	Wijinads, et.al (2005) Balcarova (2013)
Firm structure, rivalry, and strategy (FSRS)	Domestic Rivalry (DR)		The intensity of local competition	Prices of products	Wijinads, et.al (2005)
	Business Context (BC)		World bank DTF points	World bank	Vu and Pham (2016)
	International Rivalry (IR)		Market share of the country in the global market	World bank	Vu and Pham (2016)
Government Policy (GP)	Regional Trade Agreement (RTA)		Dummy variable	World bank	Herath, Liang, Yongbing (2014)
	Tariffs (TF)		Average Tariff Rate	World Bank	David (2007).
National Competitive Advantage In Trade (NCA)	Exports		Revealed comparative advantage	Pakistan statistical bureau	Mukhtar. and Javed (2009) Rattनावijit et al (2012)

## Sources of Data

The work was based on secondary data, various data sources were used in the work. The list of data sources is given below:

- World Integrated Trade Statistics (WITS)
- UN COMTRADE.
- Bureau of Statistics Pakistan.
- State Bank of Pakistan.
- Pakistan Economic Survey.
- Trade map

## Data

The population of this work was industries of Pakistan. The work had tried to find the source of competitive advantage in different industries of Pakistan, applying national diamond model presented by Porter (1990). The panel data was used to analyze the export competitiveness of Pakistan. The sample consists of five industries from Pakistan. The industries include Agriculture, textile, Sugar and Sugar confectionaries, Edible fruits and nuts and inorganic chemical industry. The sampling techniques used for the analysis were purposive sampling. In order to analyze industries of Pakistan.

The data were collected from the sources mentioned above. After the collection of the data, the thorough check was done for identifying error entries, outliers etc. The z- values were calculated for standardization. After those descriptive statistics were calculated for checking the normality of the data. The correlation matrix was also calculated between the independent variables for the detection of the multicollinearity problem. In order to select between fixed effect or random effect model, the Hausman test was calculated. In order to check before applying the model data should be tested for Stationary and autocorrelation. For stationary unit root test and for testing of autocorrelation Durban Watson test was used. Individual variables were tested for stationary.

The Multiple Regression Analysis.

This work had used a fixed effect model panel data, Housman's test was applied to select between fixed and random effect model for the analysis and fixed effect model was preferred. For a fixed effect model, the values of Bayesian criterion (SBC) Akaike information criterion (AIC), Schwarz and Hannan-Quinn criterion (HQC) were also lower. By including fixed effect, the average differences across variables were controlled in any observable or unobservable predictors. The Fixed Effect Model greatly reduced the threat of omitted variable bias. This work will use the linear regression model, but

Following model will be used:

$$NCA = \alpha_0 + \alpha_1 (FC) + \alpha_2 (DC) + \alpha_3 (FSRS) + \alpha_4 (RSI) + \alpha_5 (GP) + u$$

Where:

$$FC = HR + PH + KR + CR + IF$$

$$DC = HDC + DSP + IDD + HDC$$

$$RSI = SH + RI$$

$$FSRS = DSI + RI + IR + BC$$

$$GP = RTA + SD + TC$$

## RESULTS

This section will apply the methodology identified in the previous section. The results will be analyzed and discussed thoroughly. The regression analysis is a technique used to identify the variation independent variable caused by individual or more than one independent variables. Before calculating regression, the normality of the data was checked the descriptive statistics for each model was calculated. For checking the problem of multi-collinearity Pearson correlation test was applied. ADF test was applied to check stationarity of each variable.

**Table 2 Summary Statistics**

Variables	Mean	Median	Min	Max	SD	skew	Kurt
FC	6.3e019	-0.026	-0.0784	0.193	0.077	0.270	1.022
DC	7.2e-008	0.0378	-0.0378	0.274	0.183	-0.051	-1.361
SRI	-9.0e-009	0.0090	-0.186	0.106	0.081	-0.903	0.202
FSSR	0.0042	-0.002	-0.396	0.263	0.114	-0.901	2.000
GP	-0.0002	0.0060	-0.104	0.060	0.048	-0.595	-0.433

Table 5.6 shows the summary statistics of Pakistan. In order to check the normality of the data the value of kurtosis was analyzed and suggests that all the variable shows less than 2 value. This suggests that the data is normally distributed.

**Table 3 Correlation Matrix**

	FC	DC	SR	FSSR	GP
FC	1.00	0.65	-0.31	0.14	-0.47
DC		1.00	0.021	0.34	0.19
SR			1.00	0.30	0.51
FSSR				1.00	0.22
GP					1.00

Table 5.7 shows the correlation matrix of explanatory variables of the overall Pakistan model. The result suggests that the problem of multicollinearity is not present in the data.

**Table 4 Regression Results**

VARIABLE	Coefficient	Std. Error	t-ratio	p-value
FC	-0.01	0.074	-0.12	0.89
DC	1.14	2.19	0.51	0.60
SR	0.23	0.83	0.28	0.77
FSSR	-0.64	1.13	-0.57	0.56
GP	2.44	0.74	3.27	0.002
Adjusted R-squared	0.28			

F statistic		5.23
P-value	(F)	0.00
Durbin-Watson		1.79

Table 5.10 presents regression results Pakistan. The adjusted R square was 28.14 %, which suggests that almost 28.14 % changes in the selected data were due to above motioned explanatory variables. The coefficient for factor conditions variable is  $-0.01$  and shows a negative relationship between factor condition and competitive advantage. The coefficient of demand conditions is 1.14 which shows that there is a positive relationship between demand conditions and competitive advantage. The coefficient for supporting and related industries is 0.23 and shows a positive relationship with the competitive advantage of the country. The coefficient for firm strategy and rivalry is  $-0.64$  and shows a negative relationship with the competitive advantage of the country. The coefficient for government policy variable is 2.44 and shows a positive relationship with the advantage of the country. The overall model is statistically significant with F value of 5.23 and P-value 0.00. The T-statistics show that only government policy is statistically significant at 5% significance level. The DW statistics suggest the data is free from Auto Correlation.

### REGRESSION ANALYSIS

The results of the fixed effect model show that overall model is significant, which suggests that, Pakistan's national comparative advantage can be explained by the independent variables tested and identified in the model. This favors the national diamond model presented by Porter (1990). The regression results for Pakistan suggested a significant impact of factor conditions, demand condition, supporting and related industries and government policy on the national competitive advantage. This shows that Pakistani exports are positively affected by the abundant natural resources available in the country which supports the results of Zia (2006) who also suggest that Pakistan is factor driven country and there are signs of growth in the economy. This also supports the results of Raja (2015) that Pakistan is endowed with fertile soil, climate, hardworking human resource working in the areas of information technology, finance and engineering, who is providing a strong base for exports. The variable of factor conditions suggests an insignificant negative relationship with the national competitive advantage of Pakistan. This contradicts the results of Abbas and Waheed (2015), who suggested a positive relationship between the irrigated land area and exchange rate against US dollars with the export competitiveness of Pakistan. It also contradicts the results of Afridi (2016). Who found a positive relationship between different factor conditions, including human capital on the economic growth of Pakistan and suggested an investment in education and health sector to achieve long-term benefits. As the p-value is greater than 0.05 therefore, the hypothesis of a significant relationship between factor conditions and the national competitive advantage is rejected. The reason might be unskilled labor situation with an increase in the flight of both skilled and unskilled human capital to developed countries suggested by (Husain, 2001). As compared to India and China the development of human capital is very weak, with very low productivity. There is also a very slow growth in private investment with poor infrastructure which are major impediments to the growth of the economy (Chaudry, 2007). As suggested by Afza and Nazir (2007) that despite having a large population majority, Pakistan has utilized

only 20% of its population on professional, managerial and technical positions, a Major portion of its workforce is engaged in the industrial and agricultural workforce at the Frontline. Financial resources for the business sector are also rudimentary and very restricted as compared to countries following export growth led policies. FDI can be identified as a potential external source of finance and continuous inflow of its help in value addition of much industry, transfer of technology and improvement of labor skills but Pakistan is also lagging behind to attract the potential amount of FDI. Additionally, Pakistan is not efficiently in research and development as compared to East Asian countries, for the achievement of sustainable growth (Mahmood & Ahmed, 2017).

The results of demand conditions suggest positive and insignificant with national competitive advantage. This suggests that demand conditions are not playing a significant role in the national competitive advantage of Pakistan. This contradicts the results of Abbas and Waheed (2015) suggested who suggested a negative relationship between domestic consumption demand with the export competitiveness. The reason might be the low technology production trap identified by Zia (2013), the preference of buyers to purchase to export items, lack of purchasing power of the majority population due to high poverty levels. Therefore the hypothesis of a significant relationship between demand conditions and the national competitive advantage is rejected

The variable of supporting and related industries suggests a positive but insignificant relationship with national competitive advantage national competitive advantage. The reason might be the critical challenges faced by the transport and logistics sector include non-declaration of transport and logistics as an industry by the government, lack of proper investment in transport infrastructure by the government, no government licensing authority for freight cargo transporters, no official law enacted for transport sector in Pakistan, outdated legal framework for carriage of goods by roads, lack of rail services and logistics to transport containers from ports, damage of roads and other infrastructure due to floods, run down roads and transport network, restrictions on provision of bonded transport, high cost for less than container load, non-operation of Pakistan Railways on commercial basis, lack of road safety devices, resulting in road accidents (Masood ,2011). Therefore, the hypothesis of a significant relationship between related and supporting industries and the national competitive advantage is rejected

Firm strategy and rivalry show a negative and insignificant relationship with the national competitive advantage of Pakistan. Therefore, the hypothesis of a significant relationship between firm strategy and rivalry and the national competitive advantage is rejected. The reason might increase the cost of doing business in Pakistan identified by the Department of International Trade (2015). Mahmood and Ahmed (2017) also identified the increased cost of setting and running a business in Pakistan, which might be the result of high inflation and poor security situations. National Tariff Commission (NTC),(2015) also identified the high cost of doing business and the very unfriendly socioeconomic environment in Pakistan.

The variable of government policy shows a positive and significant relationship with national competitive advantage showing government positive role in increasing the national competitive advantage of the country. The reason might be the liberalization policies introduced in the country. It is also supported by Pakistan country report (2010), which suggest that the country is trying to adopt trade liberalization policies, privatization of many public owned organizations and attracted FDI which might have impacted the positive impact on the national competitive advantage. According to Mahmood & Ahmed (2017), increased tariffs had restricted the imports of certain items which boosted some domestic and increases exports of the country, but in the long run, they will seriously damage the competitive

advantage of the country so applied tariffs should be decreased. Amjad.et. al (2012) performed a firm-level survey using data from Pakistan and suggested that the key impediment to Pakistan export competitiveness are, skilled labor shortages, energy crises, poor infrastructure, and market imperfection. A clear and practical government policy should be devised to solve these problems which help to expand the Pakistan export market. Another issue identified by Husain and Ahmed was sector picking for export promotion which boosts exports of the certain sector but seriously damages others. Therefore, uniform policies should be devised for the balanced growth of the economy. The benefits of decreased Soil prices should be passed to manufacturers for cost saving (Hussain, 2017). Another issue of customs clearance and shipping documentation should also be revised for better performance. Therefore, the hypothesis of a significant relationship between government policy and the national competitive advantage is accepted is rejected.

## **CONCLUSION AND RECOMMENDATION**

The main aim of this work was to identify sources of competitive advantage for Pakistan by applying porter diamond model. Panel data was collected from 5 Pakistani industries. The independent variable was national competitive advantage in trade which was calculated by revealed comparative advantage. The independent variable includes factor conditions, demand conditions, supporting and related industries, firm structure, strategy and rivalry and government policy. In order to develop variables different proxies were identified, and composite variable was developed. Fixed effect model was applied and the results suggests only government policy is playing a significant role in determining nation competitive advantage in trade. Therefore, Pakistan can devise its policy for the improvement of all the other variables for the attainment of sustainable national competitive advantage in trade

Trade integration is very critical for the economy as it will help countries to cooperate and offer more products at reasonable cost and efficiency in the international market. The government of Pakistan is trying to liberalize their trade policy, but still, results are not up to the expectation. Therefore, a serious revision of policies and their implementation is required to achieve the benefits of trade liberalization. In order to improve Factor conditions, both countries should improve the education system and allocate more budget for education and health, increase number of training institutes should be established, for the improvement in human resource skills. Health reforms should be introduced for the improvement of the quality of the labor force. In order to improve per hectare yield of the crops, the farmers should be given easy credit and facilitated with superior quality seeds. The communication gap between research and development and the farmers should be eliminated for better results. Additionally, the feudalism system should be monitored and regulated and farmers should be given lands. Credit availability should be eased for entrepreneurs. For the improvement in demand conditions, population growth should be monitored, the Strict quality standard should be maintained and regularly monitored. For increasing international demand for domestic products. Increase employment opportunities should be created for increasing the purchasing power of the people, Consumer friendly policies should be introduced. Working of consumer courts should be enhanced, for consumer protection. Transportation system should be upgraded. Technological advancement should be incorporated in every field of life for better results. More dams should be constructed, solar power should be used for electricity generation. Other sources of energy like wind, biogas, coal should be used for generation of power for industries. A business-friendly environment should be maintained within the country. More industrial zones should be established, with the facilitation of energy availability and tax benefits. Government procedure should be simplified. The Private sector should be involved and public-private coordination should be

established in different industries. In order to improve government policy, a rigorous policy should be designed for the improvement of infrastructure and business environment of the country. The unnecessary intervention of the government should be restricted. The Prices of sugar or wheat should not be utilized as a political tool, unnecessary tariffs should be abolished against each other. More RTAs should be signed for an increase in regional integration, Unnecessary non-tariff barriers should be abolished, Research grants should be given priorities for increasing the competitiveness of the country, Measures should be taken to decrease corruption, accountability and check and balance should be maintained for government officials, efforts should be made for maintaining normal law and order situation will attract new investment. It will also decrease the brain drain from the country.

### **Direction for Future Research**

Future research should be conducted by applying other models like a double diamond model and nine-factor model for better understanding of the factor affecting competitive advantage in trade for Pakistan. Further research can also be done by adding more items to the development of variables to Potter National Diamond model. More industries can be included for a better understanding of the Pakistani economy.

### **Limitation of the Study**

There are some limitations of this work which cannot be overlooked, the major limitation is that few industries were selected from both countries, although the sample was representative, still, the results cannot be generalized to the whole economy, other industries have their own resource requirements and management practices. The future studies can be directed toward other industries. The second limitation was that the majority of the data was unorganized and undocumented in both countries, due to which limited items were included in the development of variables. The third limitation of the study was ill legal trade patterns between Pakistan and India and was not included. Lastly, another limitation was political tensions between both countries, due to which trade was suspended at different time periods during the study period.

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