Influence of Porter's Diamond Cluster on Pakistan Automotive Industry's Performance

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Abstract
The purpose of this study was to conduct a theory based contextualization of Porter's diamond related and supporting industries determinant and investigate the influence of clusters, fostering knowledge and innovation, on the performance of automotive firms in Pakistan. In this empirical study the research methodology entails applying axiology of positivism philosophy, self-administered structured questionnaire after pilot study. The research design was cross-sectional, probability technique was constructed in data collection; data analysis was performed by descriptive and inferential statistics. Hypothesis was tested through regression model. Size of sample was 194. The study findings noted absence of empirical research on Porter's diamond in Pakistan in the automotive industry. Related and supporting industries of Porter's diamond attribute have theoretical and conceptual perspective to provide impetus for firms in automotive industry to realize competitive advantage (CA). The study findings conclusively confirmed the determining force of clusters of related and supporting industries and its significant impact on the performance of the auto sector in Pakistan. The study investigated the automotive industry across multinational corporations (MNCs), private companies and joint ventures (JV). Practical implications are significant for constituencies like practicing managers, academia, and government policy makers. The research study is important owing to its conceptual and practical perspective for industry players and policy makers to help this key large scale manufacturing industry to realize CA by internalizing the related and supporting industries determinant of Porter's diamond.
Keywords: automotive industry, clusters, competitive advantage, national competitive advantage, related and supporting industries.
DOI: 10.7176/EJBM/11-19-05
Publication date:July 31st 2019

1. Introduction
1.1Background
In 1990, Porter published his seminal text which was the beginning of deliberation on competitive advantage in global context that has stood the test of time (Wilson & Graff, 2014). Porter's book titled Competitive Advantage of Nations (CAN) represented a six-year long effort involving a large group of researchers who undertook work in ten different States of the world and this massive activity generated prodigious primary data; results were based on analysis of the data (Stonehouse & Snowdon, 2007). A number of studies have focused on the four key attributes of Porter's diamond framework, including the theoretical aspect, practical managerial implications as well as the relevance of Porter's diamond model for policy making institutions.

Porter's diamond model presents a framework to carry out industry specific analysis to determine its performance and competitiveness while operating in the country (Jin & Moon, 2006). This model may be applied both in market based and transition economies (Chobanyan& Leigh, 2006). According to Porter (1990) various dimensions of a country's environment impact the national competitive advantage of a country and four key factors of diamond (i.e. factor conditions, demand conditions, Related and Supporting Industries, and firm strategy, structure & rivalry) influence the firms' competitiveness and performance. Grant (1991) observed that the linkage and interaction of these determinants with each other constitute the country's diamond, and determine the national competitiveness. The researcher rigorously did the analysis of past studies and reviewed empirical literature using the funnel approach.

Reviewing the theoretical context of Porter's diamond and related studies' findings and conclusions it is appropriate to deduce that results are similar in the developed countries. Nonetheless in developing economies the findings of Porter diamond framework inclusive of related and supporting industries attribute presents mixed results. This made the researcher investigate whether in the context of Pakistan Porter's diamond model related and supporting industries determinant has relevance to resolve the problems currently faced by the automotive

sector of Pakistan, improve the firm's performance and guiding the industry to the path of achieving NCA. The (Japan International Cooperation Agency [JICA], 2011) conducted a comprehensive study which sheds light on the underperformance of the automotive industry of Pakistan in comparison to China and India. In Pakistan, automotive sector makes a sizeable contribution to the economy in terms of investment, value added, employment and revenues. The (State Bank of Pakistan [SBP], 2015) expressed that Pakistan's automotive firms constitute the key manufacturing sector which registered 23.5 percent cumulative growth making 33 percentage point contribution to the growth in large scale manufacturing sector. The   industry has a critical role to play in the economic growth of the country due to its sizeable output in terms of revenues as well as employment generation.

Brosnan, Doyle, and Connor (2016) aptly argued that Porter diamond model especially its 'cluster' determinant has positive and significant effect on firm's performance as cluster served as process linked with spatial geographical organizational form. These studies were mostly carried out and conducted in the advanced economies. Therefore it remained to be investigated whether similar studies with significant and conclusive results could be replicated in the context of Pakistan which is an important developing economy in Asia.

1.2 Hypothesis
Research carried out in Pakistan was guided by the specific research objective to evaluate the effect of related and supporting industries as a determinant of firm's performance to test the null hypothesis, $H0_1$: Porter's diamond related and supporting industries determinant does not affect firm's performance in the automotive industry of Pakistan.

2. Literature Review
2.1 Theoretical perspective
Related and supporting industries represent a cluster of firms having operation in geographical proximity providing inputs having content of specialization which in turn motivates the organizations to compete among themselves effectively on the basis of innovation. Formidable supporting industries influence innovation and serve as motivating force for firms to bring about modernization in processes and upgradation in terms of inputs and components (Porter, 1990).

Theoretical framework is defined as selection of theory that provides guidance to researcher for undertaking research. Imenda (2014) defined theoretical framework as practicing the theory, or drawing on a set of ideas reflecting the same theory, to elaborate the research agenda and results. This study is guided by Porter's (1990) diamond theory determinants to derive the conceptual framework variables. Porter based his argument on the premise that in the contemporary world economy, national growth and prosperity is created, not inherited and that growth and prosperity is choice of the state (Porter, 1998). Consequently, it is made explicit that while competing internationally the state strives to create enabling environment that favors business and creates bottom-line impact on the productivity in the industrial sectors. The existence of advanced clusters provides impetus to companies to switchover to innovative and emerging technologies so as to remain world class or to become world class. Furman, Porter, and Stern (2002) expressed that in order to establish positive oriented externalities in the fields of transactional efficacy, knowledge dissemination, and cluster-stage scale economies it is imperative to have clusters of world-class companies in the value chain system. Phene and Tallman (2014) were of the view that development of contemporary and advanced industry clusters lead to creation of economy-enriching technologies which gives a boost to productivity of industry.

2.2 Empirical Review
Studies on influence of Porter (1990) diamond model including its cluster determinant on the performance of the automotive industry in Pakistan are virtually non-existent. The studies by researchers and academia indicate that major research on Porter diamond received emphasis in other countries.

In International Management University of Erlangen-Nuremberg, Germany the authors Dögl, Holtbrügge, and Schuster (2012) conducted a study with the aim to determine the CA of German firms particularly in renewable energy sector in comparison to China and India. Research design had basic competitiveness model of Porter's diamond. In Germany, value of related and supporting industries is substantially greater as against China or India as noted by Dögl et al. (2012) in their study.

In Norway, BI Norwegian Business School, Sasson and Reve (2015) undertook a study titled 'Theoretical and methodological advances in cluster research' to investigate various facets of the theory related to cluster, namely, infrastructure investment, including its value creation potential and related effect on new investments in the infrastructure related development. Focusing on Norway, the study placed emphasis on knowledge sharing via clusters which is the concept of Porter (1990) presented in the CAN context. In the research methodology, the authors made use of simulation and dataset which was unique, plus cluster mapping. The paper was built on the three sub-national studies shedding light on the distinct path adopted in all three and determined their impact in terms of public policy formulation. The conclusions drawn by the authors reflected that cluster based research in

Norway was the key element driving the policy makers to craft cluster-based industrial policy coupled with the government's focus on undertaking similar and related research studies and projects that supported developing theoretical models and methodologies.

In Ireland, Brosnan, Doyle, and Connor (2016) study aimed at exploring and providing clarity on the focal concept of 'cluster' introduced in Porter's (1990) book Competitive Advantage of Nations. The cluster theme introduced by Porter (1990) is related with two of its antecedents (the industrial district and industrial complex). The research design included detailed review of literature, development and evolution of theories of agglomeration and location and Porter's cluster concept and its elaboration in terms of concept development on the basis of which comparatives analysis was performed. Approaching the cluster from the historical context is what differentiates Porter's perspective on national competitive advantage as an approach for analysis from other perspectives of geography-based notions of economic development. Added value of the cluster theme derived from economic determinants has been examined in the paper. The study performed the comparative analysis on location, agglomeration theories and clustering to determine the similarities and differences across the concepts and diagnose the relationship with other approaches with added value of the cluster concept. The study infers that clustering serves as process linked with spatial geographical organizational form offering benefits in terms of efficiency, effectiveness and flexibility. One critical characteristic of Porter diamond is that the framework has self-reinforcing arrangement which may reinforce economic activity within agglomerations and permit increasing returns.

In the US, Delgado, Ketels, Porter and Stern (2010) investigated regional clusters' role to boost entrepreneurship in the region. The authors examined start-up organizations in the context of a specific region-industry, the explicit and unique effects of agglomeration converging on growth in the industry plus employment generation. The research methodology included using dataset from cluster mapping (Porter, 2003) and Census Bureau of U.S. longitudinal database related to Business. The study made some important analysis, namely; (1) diminishing returns and reversion of entrepreneurship of regional industry resulting into convergence effect, (2) existence of complementary economic activities which may lead to externalities that incentivize new entrepreneurs and help remove trade barriers, (3) clusters carry key importance as they lead to creating location-oriented reciprocity. The statistical analysis inferred that clusters bring about positive impact on entrepreneurship and existence of strong clusters and strong presence of other industries result into high growth in start-up employment and new business formation. New businesses get attracted by established clusters; hence clusters influence the multi-establishment companies' location decision. Lastly, solid clusters provide impetus to start-up firms as their survival hinges upon clusters' contribution.

3. Research Methodology

The authors Blaxter, Hughes, and Tight (2006) advocated that research philosophy is a conviction about the approach through which data regarding a phenomenon should be gathered, analyzed and used. Saunders, Lewis, and Thornhill (2016) argued that in management and business world there are five broad-based research philosophies, namely, positivism, pragmatism, interpretivism, postmodernism and critical realism. The researcher applied epistemology for positivism philosophy in this research study as positivism presents as deterministic doctrine in which logical causes administer the effects or results. Further, for positivism, researchers normally focus on facts, scientific methods to measure facts, casual relationship and prediction in the study (Saunders et al., 2016). The survey research design is a widely used type of non-experimental research; authors Christensen, Johnson and Turner (2014) stated that survey research is non-experimental research.

In this study survey research design constituted the integral part of the research methodology. CEOs, senior managers, and functional heads of the firms were the target population. 15 active automotive industry was studied which includes cars, trucks/buses, two/three wheelers and tractors. Automotive industry is concentrated in and around the major cities of Pakistan (Karachi, and Lahore) which is within the defined geographical area of study. Probability technique was applied and simple random sampling was used reason being that each element of population has a well-known chance of being chosen. Christensen et al. (2014) expressed that it is the uniqueness of equal probability that causes simple random sampling to generate representative samples from which explicit generalization is possible from sample to the population. 194 was the sample size. The authors, Zikmund, Babin, Carr and Griffine (2010) noted that data collection phase of the research study is critical due the fact that research studies are not superior to data collected from the field. The data was collected though self-administered structured questionnaire finalized after performing the reliability and validity of the instrument through pilot test study.

3.1 Cronbach's Alpha for related and supporting industries

Tavakol and Dennick (2011) expressed that alpha (>0.90) higher value may be due to instrument's few redundant items, in contrast, lower alpha (<0.5) may represent attributes of result, that is, interrelatedness being poor among items, alternatively questions being low in numbers. To gauge the consistency between variables determining one construct/concept reliability coefficient Cronbach alpha was used. Table 1 provides the results of Cronbach's alpha

for Related and Supporting Industries.

Table 1.Cronbach's alpha for Related and Supporting Industries

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.805	.815	15

3.2 Data Analysis Methods
Data analysis entails using logical techniques and applying statistical methods to illustrate, define, precise, recapitulate, and gauge the data following a systematic process. Data collected through the survey received treatment through data analysis and in the analytical process descriptive and inferential statistics were used consistent with the research hypothesis and specific objective of the study.

3.3 Correlation Analysis Model
Cooper and Schhindler (2014) explained that correlation analysis entails applying the statistics to measure the linear relationship strength between two or more variables; organized changes in a variable bring about changes in the other. Correlation coefficient plus 1 indicates positive association between the two variables. If one variable increases, that results into increase in other variable. In addition, correlation coefficient near to -1 denotes two variables having negative association. Hence increase in one variable leads to decrease in the other variable. In this study Pearson correction coefficient is used to measure the strength of linear relationship between Porter's diamond related and supporting industries determinant and firm's performance in the automotive industry of Pakistan.

3.4 Chi-Square Test
Chi-square is a non-parametric test of significance exemplify as χ2. Sekaran and Bougie (2016) narrated that Chi-square is considered as statistical test applied on sets of data to ascertain whether two variables are labeled as independent or observed agreements are by way of chance. Stigler (1999) stated that Pearson extended the chi-square to test for independence between columns and rows in contingency tables. Since fairly long time the most commonly used agreed statistical analyses technique in social sciences research and assessment is chi-square technique. In this study chi-square test was performed to help determine whether firm's performance was related to Porter's diamond related and supporting industries determinant in the automotive sector of Pakistan.

3.5 Regression Model
Regression analysis model is being used adequately to examine the relationship between a single, two or more continuous outcome variable and predicting variables Thompson (2006). The theoretical perspective of multiple linear regression and correlation is encompassed in linear statistical models theory widely used in texts Graybill (1961). Bluman (2017) stated that multiple regressions have considerable independent variables and dependent variable is one. Regression model normally has assumptions namely; (1) normality (2) linearity (3) homoscedasticity, and (4) multicollinearity has been tested through diagnostic test.

3.6 Ethical codes and norms
Research ethics according to Christensen et al. (2014) refers to doctrines designed to support the association of researchers in arriving at decision in undertaking the research in ethical manner. Diener and Crandall (1978) aptly categorize the ethical concerns having three components: (1) association among science and society, (2) matters concerning professionals, and (3) research respondents treatment. In the study all three concerns pertaining to ethical consideration were internalized by the researcher at virtually every step and level of research study.

4. Results and Findings
4.1 Response Rate (RR)
From 166 out of the 194 filled out structured questionnaires received, data was analyzed to generate the results. The response rate was 85.6%. The recommended threshold is 70% Mugenda and Mugenda (2003).It is safe to conclude that for this study the RR 85.6% was reasonable. Bagire and Namada (2013) documented 66% RR in East Africa in strategic management study.

4.2 Mean and Standard Deviation for Related and Supporting Industries
Based on the responses received in the research study in the automotive industry of Pakistan it is evident that majority of respondents advocated that presence of related and supporting industry suppliers (e.g. vendor industry) accelerates the process of innovation in the industry as it is supported with high score of mean value 4.27. The mean score of 4.14 was recorded on the statement that existence of supporting industries leads to identification of new opportunities in the industry indicating that the viewpoint was supported by respondents. Participants of study

maintained that presence of 'advanced clusters' helps organizations move to emerging technologies in the industry as shown by mean score of 4.08.

   Similarly on the statement that supporting industry suppliers upgrade the business of the industry cluster (group of similar/related firms) the majority of participants were in agreement as it is supported by mean score value of 4.07. The mean value of 3.99 scored on the statement that presence of related industries gives a better chance to the firms located in the cluster to share information in the industry indicates that mostly the participants concurred. On the two questions related to transactional efficiencies being the result of having clusters of world-class organizations across value chains and transactional efficiencies across value chain leading to national competitive advantage, the lowest mean score of 3.84 was recorded. Table 2 presents the outcomes of mean and standard deviation for related and supporting industries.

Table 2. Mean and Standard Deviation for Related and Supporting Industries

	Related and Supporting Industries		
	N	Mean	SD
Presence of related and supporting industry suppliers (e.g. vendor industry) accelerates the process of innovation.	166	4.27	.634
Supporting industry suppliers upgrade the business of the industry cluster(i.e. group of similar/related firms).	166	4.07	.643
Presence of related industries gives a better chance to the firms located in the cluster to share information.	166	3.99	.747
Existence of supporting industries leads to identification of new opportunities.	166	4.14	.654
When the nation possesses clusters of sophisticated suppliers, it results in national competitive advantage.	166	4.03	.782
Having clusters of sophisticated suppliers positively impacts the performance of the firm.	166	4.07	.772
Presence of 'advanced clusters' helps organizations move to emerging technologies in the industry.	166	4.08	.717
Existence of 'advanced clusters' supports the firms to remain competitive in the world.	166	3.95	.818
'Advanced clusters' presence helps the organisations move to gain national competitive advantage.	166	4.00	.747
Presence of 'advanced clusters' is the determinant key factor in achieving of high performance by the firms.	166	3.87	.783
Clusters of world-class organizations across value chains generate positive knowledge.	166	3.99	.747
Transactional efficiencies are the result of having clusters of world-class organizations across value chains.	166	3.84	.713
Clusters of world-class organizations across value chains results in national competitive advantage.	166	3.86	.833
Transactional efficiencies across value chain leads to national competitive advantage.	166	3.84	.705
Positive knowledge generated through clusters of world-class organizations across value chain impacts firm's performance positively.	166	4.08	.722
Transactional efficiencies created through clusters of world-class organizations across value chain impact firm's performance positively.	166	4.07	.743

SD (Standard Deviation)

4.3 Correlation between Related and Supporting Industries and Firm's Performance
In the study Pearson's coefficient was used on normal variables (related and supporting industries as determinant of Porter diamond being independent variable and firm's performance operating in automotive sector of Pakistan being dependent variable) and linear relation was determined. Test results found out that related and supporting industries clusters being independent determinant do influence firm's performance in the automotive industry of Pakistan and are positively and linearly correlated, $r = 0.283$, $p < .01$. Two asterisks provide the identification. Table 3 indicates the results on correlation between related and supporting industries index and firm's performance.

Table 3. Correlation between Related and Supporting Industries Index and Firm's Performance

		Firm's Performance
Related and supporting Industries	Pearson Correlation	0.283**
	Sig. (2-tailed)	.000
	N	166

**. Correlation is significant at the 0.01 level (2-tailed)

4.4 Chi-Square Test

Chi-square test examined cross-classified category data used with Karl Pearson's family of chi-square tests representing statistical analyses for answering questions about the association or difference between categorical variables in the study conducted on automotive industry of Pakistan. Chi-square test is nonparametric test of significance used in the study to compare observed results with expected results and to assess how well a sample fits the distribution of a known population (goodness-of-fit). Chi-square test statistics results concluded that there is association between related and supporting industries Porter's diamond attribute and firm's performance x^2 (25.898, df=6,N=166, p =.000).Table 4 provides the results of chi-square test on related and supporting industries.

Table 4. Chi-Square Test on Related and Supporting Industries

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.898[a]	6	.000
Likelihood Ratio	21.930	6	.001
Linear-by-Linear Association	11.471	1	.001
N of Valid Cases	166		

a.   5 cells (41.7%) have expected count less than 5. The minimum expected count is .15.

4.5 Regression Model

In the research study conducted in the automotive industry of Pakistan regression analysis model is used. According to Thompson (2006) regression analysis model could be used effectively to help investigate the relationship between a single, continuous outcome variable and two or more continuous, predictor variables. Further, linear regression model examined the linear relationship strength between independent variables (set of it) and dependent variable (single) used. With a view to test the null hypothesis that Porter's diamond related and supporting industries determinant does not affect firm's performance regression analysis was conducted in the study. Sixteen items constituting the related and supporting industries as independent variable were tested to measure the strength of linear relationship and direction of independent variable on dependent variable. The forthcoming section provides the discussion and outputs of the regression analysis test results.

4.5.1 Model Summary

The model summary interprets how the related and supporting industries determinant affects and predicts firm's performance in the automotive industry of Pakistan by using the regression analysis outputs. The predictor variable, related and supporting industries is (independent variable) and firm's performance is (dependent variable). R represents the relationship between the observed values and predicted values of the dependent variable, firm's performance. The value of R maintains – 1 to 1 range. In the model summary r =.276 indicated the strength of related and supporting industries as a determinant of firm's performance and the relationship which is positive. The coefficient of determination R square is .076; it means that 7.6% of variation in performance of Pakistan automobile firms is caused by related and supporting industries. The remaining 92.4% is caused by other factors not considered in the study together with the error term. Table 5 presents the results.

Table 5. Model Summary Related and Supporting Industries and Firm's Performance

Model		R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	1	.276[a]	.076	.071	1.66965706215	1.344

a. Predictors: (Constant), Related and Supporting Industries
b. Dependent Variable: Firm's Performance

4.5.2 Analysis of Variance (ANOVA)

Analysis of variance (ANOVA) was used to determine how regression model fits the data reasonably. In case significance value of F statistics is lower than 0.05; it implies that the independent variable performed adequate job in expressing the variation in dependent variable. From the model findings p-value=.000, describing that regression model is statistically significant, F=13.562, df =1, p<.05, in predicting the relationship between Porter's diamond related and supporting industries and firm's performance. Table 6 provides the outcomes on ANOVA of related and supporting industries effect on firm's performance.

Table 6. ANOVA of Related and Supporting Industries Effect on Firm's Performance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	37.808	1	37.808	13.562	.000[a]
	Residual	457.192	164	2.788		
	Total	495.000	165			

a. Predictors: (Constant), Related and Supporting Industries

b. Dependent Variable: Firm's Performance

4.5.3 Coefficients of Related and Supporting Industries

It was inferred from the study results that Porter's diamond determinant related and supporting industries significantly predicted the firm's performance, $\beta_0 = -3.961$, $\beta_1 = .988$, $p = .000$ (less than<.05) p value was less than<.05 set by the study. The model signifies that for every unit increase in Porter's diamond determinant related and supporting industries, firm's performance increases by .998 units in the automotive industry of Pakistan. The study revealed that related and supporting industries significantly predicted firm's performance hence rejected the null hypothesis, $H0_1$: Porter's diamond related and supporting industries determinant does not affect firm's performance. Table 7 presents the statistical results on coefficients of related and supporting industries' influence on firm's performance.

Table 7. Coefficients of Related and Supporting Industries Effect on Firm's Performance

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	-3.961	1.083		-3.656	.000
	Related and Supporting Industries	.988	.268	.276	3.683	.000

a. Predictors: (Constant), Related and Supporting Industries

b. Dependent Variable: Firm's Performance

5. Discussion of Results

The study was seeking to determine the influence of supporting and related industries attribute (specific research question) on the performance of the automotive industry in Pakistan. The drawn result on correlation analysis between related and supporting industries attribute and firm's performance documented that related and supporting industries do influence the firm's performance in the automotive industry of Pakistan as they are linearly related $r = 0.283$, $p <.01$. These results are in agreement with Porter (1990) context that related and supporting industries, maintaining operation in geographical proximity and rendering concrete impetus coupled with content of specialization influence the firms to compete among themselves effectively on the basis of innovation. Further, the fierce force of supporting industries brings about impact on firms pushing them to infuse innovation and modernization in processes leading to upgradation in terms of inputs and components. The study results revealed that presence of related and supporting industry suppliers (vendor industry) accelerates the process of innovation, supporting industry suppliers upgrade the business of the industry cluster (group of similar/related firms), and that clusters of sophisticated suppliers result in national competitive advantage across progressive manufacturers and assemblers of automotives.

These findings corroborate with Dögl, Holtbrügge, and Schuster (2012) study conducted with the aim to determine the CA of German firms particularly in renewable energy sector in comparison to China and India. The study found out that in Germany, value of related and supporting industries is substantially greater as against China or India, and that the CA may be derived from German companies' favorable position. The results were significant and showed correlation of related and supporting industries with CA. Similarly, another study in the US by Delgado, Ketels, Porter and Stern (2010) investigated regional clusters' role to boost entrepreneurship in the region. The statistical analysis inferred that clusters bring about positive impact on entrepreneurship and that existence of established clusters and strong presence of related industries result into high growth in start-up employment and new business formation. New businesses get attracted by established clusters; hence clusters influence the multi-establishment companies' location decision. Lastly, solid clusters provide impetus to start-up firms as their survival depends upon clusters contribution. This study results are in agreement with the research findings of the study on automotive industry of Pakistan.

The research findings are also in agreement with the study by Brosnan, Doyle, and Connor (2016) in Ireland where the author performed comparative analysis on theories related to location, agglomeration and clustering to determine the added value of the cluster concept and concluded that clustering serves as process linked with spatial geographical organizational form offering benefits in terms of efficiency, effectiveness and flexibility. These results are in agreement with the findings of the research study on auto sector in Pakistan where the study results affirm the effect of related and supporting industries on firm's performance.

The results of the study by Sasson and Reve (2015) in Norway titled 'Theoretical and methodological advances in cluster research' also corroborate with the findings on this study on auto sector in Pakistan that related and supporting industries (clusters) have positive effect on CAN which is the concept of Porter (1990) presented in the CAN context. On objectively based results, the research study rejects the null hypothesis H0: Porter's diamond related and supporting industries determinant does not affect firm's performance in the automotive industry of Pakistan which is consistent with (Porter, 1990; Dögl et al., 2012; Delgado et al., 2010; Brosnan et al., 2016) and Sasson and Reve (2015). The study supports the argument that Porter's diamond determinant, that is, related and supporting industries does influence the automotive industry of Pakistan and that it can serve as motivating force for the firms to achieve the CA and high performance.

6. Conclusions

The research study objectively sought to analyze the influence of Porter's diamond determinant related and supporting industry clusters on the organization's performance in Pakistan's automotive industry. The study found out that sub-constructs of related and supporting industries have positive linear relationship with the performance of the industry players. The sub-constructs constituting influencing force included: presence of related and supporting industry suppliers accelerates the process of innovation, supporting industry suppliers upgrade the industry cluster business, existence of related industries provides appropriate strategic opportunities to the organizations to share information being located in the cluster, nation possessing clusters of sophisticated suppliers results into national competitive advantage, existence of 'advanced clusters' supports the firms to remain competitive in the world, presence of 'advanced clusters' is the determinant key factor in achieving of high performance by the firms, world-class firms' clusters over value chains results in national competitive advantage, transactional efficiencies across value chain leads to national competitive advantage. The study concluded that related and supporting industries determinant of Porter's diamond framework affects the progressive manufacturers and assemblers of trucks and buses, cars and light commercial vehicles (LCVs), motor cycles, and three wheelers performance and predicts an increase .076 for every boost in related and supporting industry attribute in the automotive industry of Pakistan.

7. Recommendations

On the strength of the underlying fact that relationship is positive and linear between Porter's (1990) diamond related and supporting industries determinant and firm's performance in the study on the auto industry of Pakistan, it is recommended for existing and potential progressive manufacturers and assemblers of trucks and buses, cars and light commercial vehicles (LCVs), motor cycles, and three wheelers in Pakistan to fully grasp and internalize the importance of related and supporting industries attribute and its influence on firm's performance. Essentially, the sub-constructs like: presence of related and supporting industry suppliers within the cluster, upgrading the business of the industry cluster, sharing of information by firms located in the cluster, possessing clusters of sophisticated suppliers, presence of 'advanced clusters' to support the firms, positive knowledge and transactional efficiencies created through clusters of world-class organizations across value chain, could render impetus in improving the performance of the firm, and more importantly resulting into realizing the national competitiveness for the industry.

Based on this research it is further recommended that government of Pakistan should place focus on the quintessential virtue of Porter's diamond related and supporting industries determinant and align the automotive industry policy coupled with supportive measures to develop clusters including advanced clusters in order to realize the national competitive advantage in the automotive industry of Pakistan. The study recommends undertaking further empirical studies to determine the effect of Porter's diamond along with its broad based attribute particularly on the crucial role of 'advanced clusters' of related and supporting industries to augment the industry's competitiveness and strategic policy crafting parameters to govern the automotive industry in Pakistan and realizing the full scale national competitiveness advantage.

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