CONFIRMATORY ANALYSIS OF THE FACTORS OF COMPETITIVENESS IN THE TEXTILE INDUSTRY OF PAKISTAN

Sheraz Khan, Head of Department Managemnet Sciences, University of Haripur. Email: shirazkhan@uoh.edu.pk

Ghulam Murtaza, PhD Scholar, NUML University, Islamabad
Email: gmurtazaaa@gamil.com

Raja Ahmed Jamil, PhD Scholar, Riphah International University Islamabad
Email: raja.ahmed@uoh.edu.pk

Imran Qadir, Lecturer, University of Haripur
Email: iqadir808@gmail.com

Abstract. *This paper is focused on confirmatory analysis of key determinants of competitiveness in the textile sector, with special reference to Pakistan. Researchers have conducted a survey that is designed to use financial side, productivity side, supply side, and demand side determinants to measure firms' level Competitiveness. Primary data was collected at a seven point scale from 354 respondents representing145 Listed Textile Companies at KSE. Collected data was then analyzed by using the confirmatory factor analysis to find out the rate of interdependency between the dependent and independent variables. The result shows that highest impact is being shown by the demand side determinants followed by financial side determinants. While the impact of productivity side and supply side determinants remained comparatively low.*

Key words: Pakistan, competitiveness, textile industry

Introduction

Globalization and liberalization of economies at very fast speed, and also due to a great development in the means of transportation and communication whole world is becoming accessible market for large as well as medium and small business organizations. But developing countries are facing challenges, how to strengthen their capacity to benefit from emerging trade and investment opportunities.

It is now an axiom that acceleration in the movement of capital and goods globally, termed conventionally 'globalization' carries both serious potential threats and immense opportunities. Eventually, it will be the international competitiveness of firms, in particular economies, that will determine how far opportunities are converted into lasting national benefits or alternatively how far the loss by the potential threats been suffered. In the new and more liberal

international and domestic environment industrial competitiveness will have a critical bearing on economic prospects for the probable future. Due to inefficiency and poor competition at domestic level and relying heavily on imports which could lead to worse economic conditions for Pakistan (Choudhry & Amin, 2012).

Ricardo (1817) first time formulated the theory of comparative advantage. It is totally different from the competitiveness. Comparative advantage just means unique abilities of a country to produce cheaper goods which others cannot do. By competitiveness we mean the best and maximum utilization of the available resources at macro as well as a micro level. A country can only be competitive when its firms are competitive. It is firms that compete not the nations (Krugman, 1996).

Competitiveness has been studied extensively through-out the world. But comprehensive study regarding competitiveness at an enterprise level from the point of view of the critical factors of competitiveness in Pakistan textile sector is lacking. This study is an attempt to explore the rate of interdependency among the critical factors of competitiveness of textile sector of Pakistan at a micro level.

Literature Review

Whenever a reader tries to make him/her more clear towards competitiveness, always gets confused with the three tiers of competitiveness; that is enterprise, industry and nation. Enterprise competitiveness leads to national level competitiveness or national level competitiveness give birth to the enterprise level competitiveness. So the competitiveness can also be measured at three levels. Competitiveness should only be regarded as a domestic productivity problem because when it is applied to national economies becomes meaningless, and also "obsession with competitiveness is both wrong and dangerous" (Krugman, 1994). Therefore, in the present study we are only concerned with the competitiveness of industries and enterprises in Pakistan's textile sector.

The conservative view of enterprises' competitiveness focuses on costs: those enterprises that are able to deliver the lowest product prices to markets are likely the most competitive and viable. Total factor productivity (TFP), labor productivity (LP) and unit labor cost (ULC) are the most widely adopted approaches for measuring industrial competitiveness. Measuring TFP and ULC growth measurement is probably the simplest, most convenient methods, as enterprises and industries cost of production can be compared by these.

Competitiveness is traditionally considered modeled as possessing the abundant natural and well as human resources. But it is not true in case of many countries

like Switzerland and Sweden having highest per capita nominal wages but also ranked in the first tire of the world. Therefore ULC alone cannot exactly measure the competitiveness of a concern. We see that Italy in 2007 having the higher labor cost as of India, China other developing countries but is number one in the world of textile and apparel. Fashion industry of Italy is also considered as the pillar of the Italian economy.

Hu (2004) studies the Chinese industries and examine the contributions of internal R&D, technology transfers and FDI to their productivity. They find that the internal R&D of an enterprise could significantly replace the effect of a technology transfer of FDI using enterprise data for 29 two-digit manufacturing industries and over 400 four-digit industries over the period of 1995–1999.

Porter (1979) of Harvard Business School presented a framework "Porter's five forces" for the industry analysis and business strategy development. Developing Industrial Organization (IO) is the main concept behind this framework, to determine the competitive intensity and therefore attractiveness of a market. Here overall profitability of the industry means attractiveness. An "unattractive" industry is one where the combination of forces acts to drive down overall profitability. Porter's five force include three forces from 'horizontal' competition: threat of substitute products, the threat of established rivals, and the threat of new entrants; and two forces from 'vertical' competition: the bargaining power of suppliers, bargaining power of customers.

Markus (2008) used the theoretical framework of Porter's Diamond Model to measure the company level competitiveness with 8 variables but by ignoring the larger business organizations. He used varimax rotation resulting in four factors. The variables which he selected worked were, (i) Knowledge base, (ii) Financial prospects, (iii) Lack of qualified experts, (iv) Cooperation with other organizations, (v) Demand Index, (vi) Past tendencies of sales revenue growth and expected future tendency (sales revenue trend), (vii) Past tendencies of headcount growth and expected future tendency.(headcount trend) and (viii) Innovation activities. He selected his variables according to the Porter's Diamond model factors: (a) Factor Conditions, (b) Related and Supporting industries Clusters, (c) Demand Conditions, (d) Firm strategy, structure and rivalry, and also added one additional factor i.e., (e) Innovation.

A study made by Narayana (2004) for determinants of competitiveness of small scale industries in India, taking a sample of 373 SSIs (Small Scale Industries) looking for the impact of quality and cost of infrastructure and business environment on the competitiveness for the SSIs. Infrastructure includes transport, market information, credit, power, water, telecom and technology up gradation facilities while business environment indicated by Government

permissions ad clearances. The result showed that poor quality and high cost of infrastructure effects are less server in Bangalore region than in the regions, whereas, getting credit sanctioned from banks, tax and duty-drawbacks, temporary and permanent registration, clearances for export, permission for expansion and diversification, power and water connections, and clearance form pollution control board reduce the competitiveness of the SSIs by adding costs.

Lau (2009) while finding out the determinants of the competitiveness in the textile and apparel industries of China divided the determinants of competitiveness of an economic entity into three groups: productivity, supply side determinants and demand side determinants. Questions have been asked from the respondents about each determinant by dividing it into various dimensions.

Methodology

The research at hand is quantitative in nature. The researchers have been guided by the Diamond Model by Porter (1985) and the same used by Lau et.al in China (2009) with some modification and addition of a variables and detailed variables. This part of the study will enable us to see the relationship between the competitiveness (Dependent variable) and its determinants (independent variables) also how these are impacting the performance of the industry. The sample companies are listed at Karachi Stock exchange in the year 2012. Structural Equation Model (SEM) has been used to find out the key contributing factors to the competitiveness of the textile industry of Pakistan.

Data Set and Sample

Multidimensional approach of Sectoral analysis was adopted in order to conduct a thorough analysis across the Textile Value-added Products. Textile Sector consists of numerous sectors and sub sectors based on inputs and finished products. Each sector has its own characteristics. Variety and diversity of sectors starts from cotton ginning till Garments and Made-Ups. For a comprehensive study Primary and Secondary sources were used to collect required information and data.

Competitiveness is the key to productivity growth (Porter, 1990), the leading competitiveness theorist, defines competitiveness as sustainable increases in productivity that the lead to increases in prosperity. The World Economic Forum (WEF) defines competitiveness as the "set of institutions, policies, and factors that determine the level of productivity of a country." Competitiveness is simultaneously driven by a combination of macroeconomic policies, a sound institutional framework, modern infrastructure and an efficient financial system to ensure an enabling business and investment climate.

In the light of Porter's diamond model following are the four major determinants of the competitiveness used in the paper and the detailed aspects that provided the base for the questions asked in questionnaire.

Financing	Equity Markets efficiency. Raising funds Issuing of Bonds Fair cost and time efficient Financial Markets: Timely availability of funds timely Available at low cost Short as well as long term loans.
Productivity	Labor Productivity Material utilization Material Wastages Reuse of wastages Production technology up gradation New brands New structures
Supply Side Determinants	Availability of material inputs Cost of material inputs Availability of labor inputs Cost of labor inputs Supplies inputs Government support Supply chain management
Demand Side Determinants	Access and volume of local demand Customers' demand specific Average demand throughout the year Customers' complaints R & D/innovation for improvements.
Competitiveness	Financial competitiveness level Productivity competitiveness level Supply side competitiveness level Demand Side competitiveness level

(1) Financing (Independent variable): This determinant includes two dimensions: (1) capital markets efficiency and (2) financial markets efficiency.

(2) Productivity (Independent variable)

Productivity of a business unit can be measured through the ability of that organization to produce maxim but most economically. Existing of policies for the maximum utilization of material labor and machine hours ensures the best utilization of resources. New technologies tend to reduce the wastages and produce efficiently, so the how frequent is the organization to adopt the new technologies also add to its productivity. Introducing new brands and new structures confirms the productivity competitiveness.

(3) Supply-side Determinants (Independent Variable)

Availability of the cheapest input resources enhances the supply side competitiveness. Locally available inputs are less in cost and need comparatively less space for storage. Organizations adopting the supply chain management techniques are considered to be more competitive. Role of government for the provision of uninterrupted power supply, quality road access, gas and other infrastructure enable the local organizations to survive and compete nationally and internationally.

(4) Demand-side Determinants (Independent Variable)

Greater the demand from local markets lessor the dependency on foreign markets. Local demand enhances the production, quality and marketing skills of the local manufactures. Secondly greater local demand also attracts the FDI and larger foreign manufacturers (Lau, 2009). Caring attitude of the organizations for their customers develops the customers' loyalty. Average demand throughout the year can be achieved managerial and marketing skills. Organization successful in managing the demand evenly proves to be more competitive. Bulk of demand at one part of the year demands lager capacity to store and also enhances the risk of obsolescence and expiring. Amount and efforts invested in research and innovation to increase the demand reflects the organizational commitment to achieve the goal.

5) Competitiveness (Dependent Variable)

Existing level of certain indicators of competitiveness reflects the rank of the firm to compete. Respondents have been asked at a scale, represents the dependent variable in the study.

Data relating to 2014-2015 formed the basis of our calculations. The Sample is based on 352 respondents of 145 listed textile companies at Karachi Stock Exchange. Source of other relevant information used in this study are as: some selected non-listed textile firms at Faisal Abad industrial Estates, data available at the website of different Firms, different state Departments, Organizations and Regulatory Authorities.

Survey was conducted through a close ended questionnaire. The questionnaire is divided into two main parts. First part, a very short one, has been designed to collect demographic information: organization name, age, level of product, and designation/job title. The second part contained 42 questions for four independent and one dependent variable. These questions have been worded in the first person and applied to the real situation. Respondents have been provided with the options to rate their responses on a 7-point Likert scale (1= Strongly disagree, 7 = Strongly agree). Besides this, respondents have been provided with space to offer their comments/opinion if they like to say something about the competitiveness. Statistical technique of SEM has been applied to confirm the volume of impact of the determinants on the firm level competitiveness.

The conceptual model figure 2 depicts the picture of the independent and dependent variables along with their theoretical impact.
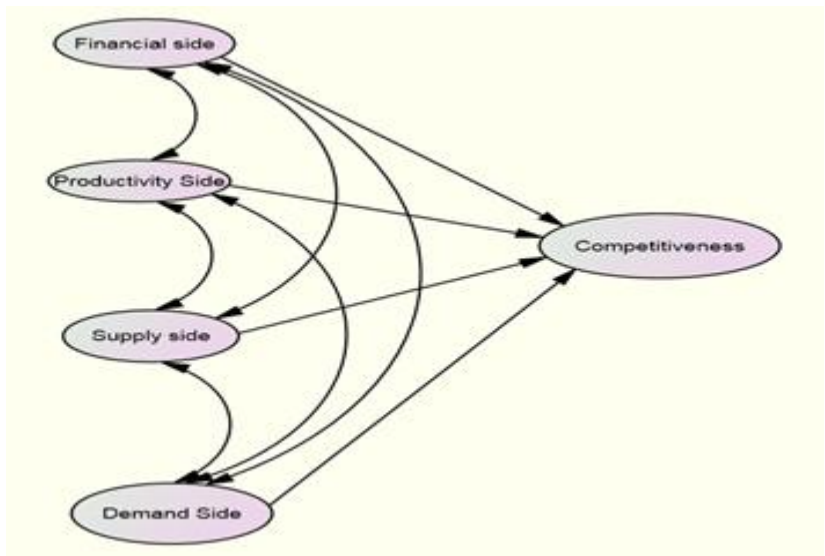

Figure 2. Theoretical Model

Demographics of the data collected:

Total Assets

In this study detail of the companies having total assets in billions (Pak Rupees):

Table 1 *Total Assets of the Sample.*

Assets in Billion (Rs)	Companies	Percentage

Rs.1----2	25	44
Rs.2---4	16	28
Rs. Above 5	16	28

Out of the total sample of 57 companies 45 organizations are ISO (International Standard Organization) certified while 12 are not certified. Analysis of the age of the total sample of 57 companies reveals that 22 were established before 1974, which shows the most experienced management and production skill, 25 were established in between 1975 to 1991, highest number established from the sample in this period. Which also reveals the mentioned period was helpful and very much friendly for the establishment of the new industrial units? Companies established between 1992 and 2002 were 8, companies established after 2002 were only 2 (table 1).
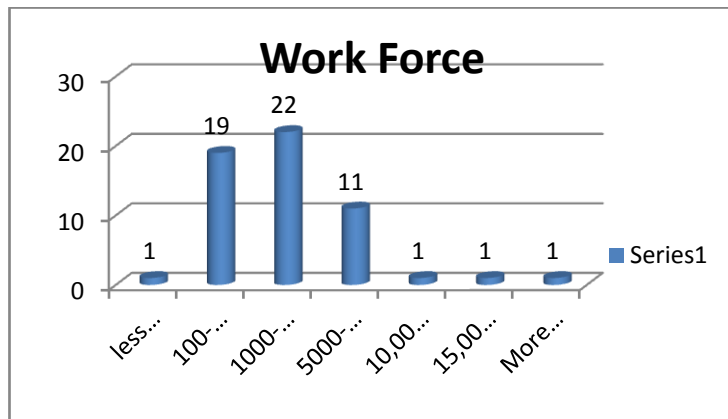

Figure 2 Workforce employed

Product Wise Division

Surveyed units divided as spinning, weaving and composite are engaged in producing Yarn, Cloth, Garments and some are making only household thing like towel etc. Of the total sample 32 are spinning, 19 are composite and 4 weaving (table 2).

Table 2   *Product-wise Division of the Firms*

Spinning	Composite	Weaving
32	21	4
56%	37%	7%

Exports of textile sector contain a major portion of yarn export. What Pakistan's international trade is lacking is the export of value added goods. In the previous two to three years government took few measures to stop the extraordinary export of yarn, because of the shortage for domestic industries. But even then most of the surveyed spinning units more than 90% business is for exporting yarn. Which on the one hand showing a great rise in the total exports of the textile sector but on the other hand damaging the domestic industry.

Of the total companies 95% are engaged in the mass production, only 5% of the sample engaged in producing specialized goods for specialized/targeted customers see figure 4.4.

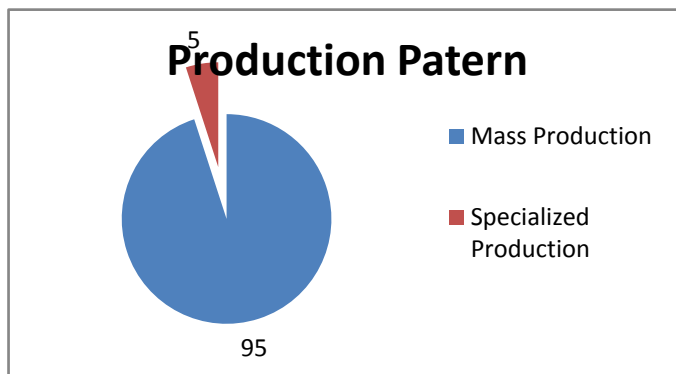All the selected companies are engaged in satisfying the general customers, except

Figure 3   Production Pattern

Operational level

Of the total sample 49 were operational for 100% capacity available. Only few pointed out certain hurdles. 5 out of total 57 claimed for lack of market for their less capacity utilization, 4 claimed government rules, 2 for the unavailability of raw material, 1 each for unavailability of spare parts and machinery breakage, See table 8. Only two out of 57 called electricity shortage a major reason for being not utilizing the 100% capacity. While responding to another question 100% of the sample pointed out the shortage of Gas and Power for the basic infrastructure deficiency. It's may be due to shifting towards own power generation. While surveying the textile units it was found that most of the big units have shifted towards the business of power generation.
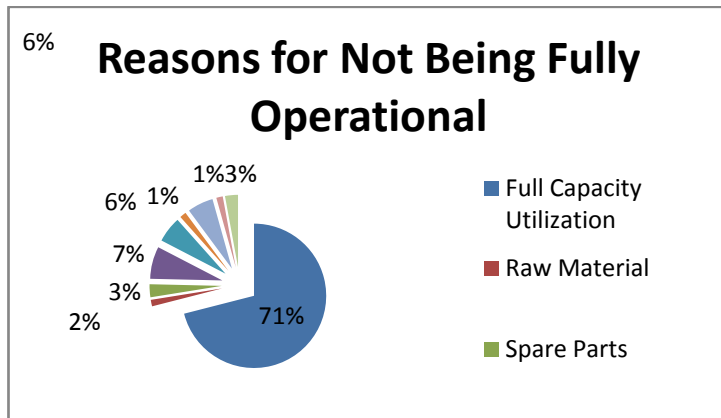
Figure 4   Reasons for being non-operational

Of the total surveyed units 30 having a future plane to make it operational while 12 do not have any such plane.

Descriptive Analysis of all Items

Details of descriptive analysis of all items of questionnaire are given in the Annexure 1. Questionnaire was based on 7-points liker scale (1 strongly disagree, 7 strongly agree). Mean values of all indicators show that none of the item had very high or very low mean score. Items in each construct had mean score just above the midpoint of the scale. This provided support that all data were normally distributed.

Contribution of Determinants to Competitiveness

Annexure 1 at the end indicates the reliability analysis quite satisfactory. "There are different reports regarding the acceptable value of Alfa ranging from 0.70 to 0.95. A low value of Alfa could be due to low number of questions, poor interrelatedness between items or heterogeneous constructs" (Tavakol & Dennick, 2011). Alpha values for the construct 0.786, .843, 0.851, 0.881, and 0.886 are well in the range of acceptable slots.

Component factor analysis (annexure 2) technique has been used to find out the uni-dimensionality of the data as suggested by Droge and Daugherty (as cited in Hoe, 2008, p. 80). Annexure 3 shows all the constructs hold the first Eigen values greater than 1 this provided support for the uni-dimensionality of these scales. Sekaran, (2003) is of the view that reliability can also be achieved if the respondents attach the same meaning to each of the item while measuring the same concept and that the items should "hang together as a set" (Akhtar, 2009).

It has been intended to measure the impact of an individual facto having on the competitiveness; confirmatory factor analysis (SEM) confirms the role of the contributing factor of the competitiveness in the textile industry of Pakistan. An exploratory study has been conducted by Lau. et.al (2009) in China for the textile and apparel sector through exploratory factor analysis technique (Factor analysis). The same model with some additions has been used over here in Pakistan, with a view that the adjacent neighbor, having almost same climatic and environmental effects.

Results Analysis

Confirmatory Factor Analysis (CFA) has been employed to analyze the appropriateness of the measurement model for each construct separately. For parameter estimation several goodness of fit statistics, including Chi-square, Comparative Fit Index (CFI), Root mean square residual (RMR), Root Mean Square Error of Approximation (RMSEA), Goodness-of-fit Index (GFI), and Root Mean Square Residual (RMSR), were employed.

The confirmatory factor analysis technique provides the theoretical model fit in three steps: (i) individual model fit for all contributing factors, (ii) overall measurement model fit for all the factors used, and (iii) the theoretical model fit, (see figure 2). For a model fit the critical value of RMR (Root mean residual) < .1, GFI (Goodness of fit index) > 0.85 , CFI (Comparative fit index)> 0.90 and the most important RMSEA (Root mean square error of approximation) < .08 are ideal (Hair, Black, Babin, Anderson, & Tatham, 2006).

Measurement Model

Financial Side: Financial side determinants have been investigated through 8 dimensions. The values for financial model were within the critical limit only for CFI, GFI, RMSEA and CMIN. Looking at the modification indices the element 1-3 and 5-6 were showing the highest I.M values so these were correlated with covariance double arrow. The individual model for financial side determinants showed the CMIN/DF1.730, GFI at 0.980, CFI at 0.983, RMR at .030, and RMSEA at 0.045 makes the individual model fit for financial side determinants.

Productivity Side: Productivity side determinants have divided into 9 dimensions. The individual model fit for productivity side determinants showing the values of CMIN/DF at 2.520 significant at P 0.000, GFI at 0.972, CFI at 0.974, RMR at .053, and RMSEA at 0.066 makes the determinants fit for productivity side.

Supply Side: Supply side asked through 8 dimensions. Showing CMIN/DF at 2.5, GFI at 0.971, CFI at 0.974, RMR at .049, and RMSEA at 0.066 make the model fit.

Demand Side: Values for the nine sub-dimensions of demand side showing CMIN/DF at 2.540, GFI at .970, CFI at 0.978, RMR at .053, and RMSEA at 0.066 make the model fit.

Competitiveness: Values for the dependent variable i.e. competitiveness are CMIN/DF at 2.457, GFI at .976, CFI at 0.980, RMR at .048, and RMSEA at 0.064 make the model fit.

Structural Model

The results for the overall model fit are also within the desired parameter i.e. CMIN/DF at 2.041, RMR at 0.085, GFI at 0.917, CFI at 0.966 and RMSEA at 0.054.
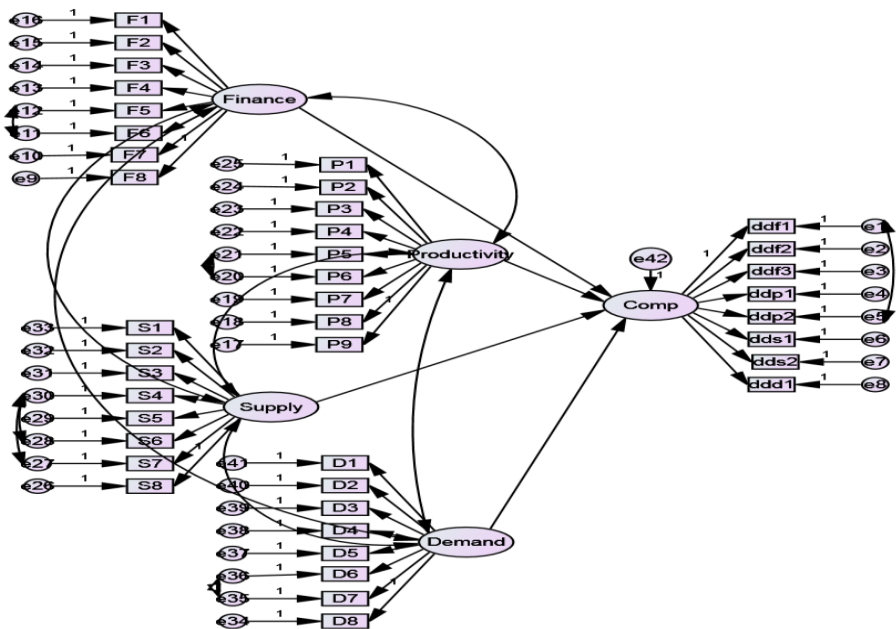

Figure 5   Structural model

Discussions

The main objective of this paper was to validate some previous research regarding the determinants of competitiveness in the textile industry of Pakistan. The results of the current research have revealed that:

- The highest coefficient is shown by the demand side i.e. 0.37.
- The second highest coefficient is shown by finance side i.e. 0.20.
- The lowest coefficients 0.13 and 0.04 are shown by productivity and supply side respectively.

Findings indicate that the competitiveness level currently availed by the textile industry of Pakistan is mainly due to the strong demand side determinants and easy availability and low cost of the finance facilities. Productivity side and supply side are contributing a very low towards the competitiveness of the textile industry of Pakistan.

Conclusion

In the current study among the four determinants of the competitiveness of the textile industry of Pakistan, financial side, productivity side, supply side, and demand side determinants. Study revealed that the demand side determinants are having the highest impact on the competitiveness, followed by financial side. While the productivity side and supply sides are showing a very meager impact on the competitiveness. The study further suggests that main focus of the industrialist and government must be on demand side and financial side determinants to strengthen the prevailing level of competitiveness. Access to local markets by better communicational and road transport system can enhance the impact. Similarly maintaining the prevailing conditions in financial and capital markets by state bank regularities and state relevant policies to make the availability of finance more easily shall add to the overall competitiveness of the textile sector.

It could be worth exploring factors of competitiveness in relation with other countries and regions, for example in China, India and in other Asian countries; they are Pakistan's textiles and clothing enterprises' main potential competitors.

References

Akhtar, (2009). *The Relationship of Organizational Learning and Competitive Advantage: A Case Study of Petroleum Companies of Pakistan*. PhD Dissertation, National University of Modern Languages, Islamabad.

Balassa, B. (1965). Trade liberalization and revealed comparative advantage. *Manchester School of Economic and Social Studies, 33*(2), 99-124.

Bartlett, A., & Ghoshal, S. (1989). *Managing Across Borders*. Boston, MA: Harvard Business School Press.

Barney, J. (1986). Strategic factor markets: expectations, luck and business strategy. *Management Science 21*, 1231- 1241.

Chaudhary, M. A., & Amin, B. (2012). Impact of trade openness on exports growth, imports growth and trade balance of Pakistan. *Forman Journal of Economic Studies 8*, 63-81.

Hair, J. F., Black, B., Babin, B., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate Data Analysis* (6th ed.): Upper Saddle River, NJ: Prentice-Hall.

Lau, C. K. T., Zhang, Z. K., & Chen, J. (2009). Determinants of competitiveness: Observations in China's textile and apparel industries. *China & World Economy, 17*(2), 45-64.

Porter, M., E. (1990). The Competitive Advantage of Nations. Free Press (New York, 1990).

Sekaran, U. (2003). Research methods for business (4th ed.): Hoboken, NJ: John Wiley & Sons.