



Key Factors of Competitiveness: A case of Textile Industry of Pakistan

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ABSTRACT

This paper is focused on finding out the key determinants of competitiveness in the textile sector, with special reference to Pakistan. Researcher has 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 five point Likert scale for 145 Listed Textile Companies at Karachi Stock Exchange (KSE). Collected data was then analyzed by using the SEM statistical tool to find out the key components of competitiveness and the rate of interdependency between the dependent and independent variables. The result shows that financial and demand side determinants having a greater positive impact on the competitiveness. Research also suggests that the improvements in financial as well as capital markets to keep the edge along with the more efforts to improve the productivity and supply side can improve the firm's level competitiveness.

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Introduction

The rapid pace of globalization and liberalization of economies and 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 like 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.

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 critical factors of competitiveness of textile sector of Pakistan at a micro level.

Pakistan ranked at 101 out of total 133 countries exactly explains the competitiveness position of an agricultural country (see table 1). While its first competitors China and India stand at

29th and 49th position in global competition respectively (Global competitiveness report 2009-2010).

Literature Review

Competitiveness of a country can be defined as its ability to compete for export markets; to maintain economic growth and employment rates (Klemetti, 1989). Competitiveness of a country is based on the competitiveness of various industries and/or enterprise (Porter, 1990). Competitiveness of a country depends on the competitiveness of enterprises and their products (Peura, 1979, p. 15). Competitiveness is the ability of a country to acquire and maintain a market share in international markets (Figuroa, 1998). Competitiveness of a country depends on the growth of gross production and the later becomes possible only if the foreign trade (export) is increased (Koskivaara, 1989).

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.

Various traditional elements of economic analysis are used in evaluation of competitiveness. This could result the misinterpretation of terminology as well as mistakes in using the traditional methods of analysis. Competitiveness is a meaningless word when applied to national economies and therefore its practical usage is not justified (Krugman, 1996).

Michael E. 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 and 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 from 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.

Drawing from the above literature review, following hypotheses have been formulated for the study.

Methodology

The research at hand is quantitative in nature. The researcher has 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 & Sample

Multidimensional approach of Sectorial 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 (Michael 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. Competitiveness at the industry level is often driven by the pressures of competition, direct signals from demanding consumers, improvements in factor conditions and the state of cluster development. Michael Porter (1990) examined the determinants of competitive industry clusters in varying national environments. The findings were summarized in the Porter’s Diamond Model.

The key insight is how these elements interact dynamically. Government policy affects all of these elements. Economies compete to provide the most productive environment for businesses. The macroeconomic environment is important but the microeconomic policy environment having the equal value if not more important.

In the light of above Porter’s diamond model table 2 shows 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 (Independent variable)

This determinant includes two dimensions: (1) financial and capital markets availability to the concerns and (2) Cost of Capital (depends at the structure of capital) i.e. Cost of debt, Cost of Preferred Stock and Cost of Equity capital.

Productivity (Independent variable)

Productivity is affected by three factors. First is the capital intensity; that is, the amount of capital (machinery and equipment) available to the concern. Second is the organizational structure, which explains how job tasks are formally divided, grouped and coordinated. third is the quality of the labor and capital inputs available, which is determined by the factors under mentioned: (i) skill level of the workforce as a result of education and training; (ii) amount of productive physical assets in the capital structure; (iii) extent of industrial

restructuring toward higher value-added activities; and (iv) degree of technical progress, which reflects advances in knowledge, innovation, and other qualitative improvements, including work attitude.

Supply-side Determinants (Independent Variable)

There are three main factors considered: infrastructure, external economies and joint action and technology upgrading. Infrastructure includes the provision of basic needs for initial industrial setup and smooth running. These include power, gas, transportation, communication and other basic facilities. Second factor external economies include specialized labor markets, local availability of inputs, easy access to information, and foreign market availability. Third factor joint action and technology upgrading includes backward and forward vertical linkages, horizontal bilateral and multilateral linkages for joint action and all levels of product process, functional and inter-sectorial upgrading; cluster and market management; and preferential policies.

Demand-side Determinants (Independent Variable)

How enterprises compete with their counterparts domestically and internationally is the subject matter of these determinants. Product quality; marketability at home and abroad; foreign competition; exporting; and product differentiation are included in it. Conclusion is how enterprises make efforts to win local or foreign markets.

Competitiveness (Dependent Variable)

Current competitiveness position of the firm being asked at likert scale represents the dependent variable in the study. Competitiveness level is being asked from all the four determinant's aspects.

Model Specifications

Data relating to 2012-2013 formed the basis of our calculations. The Sample is based on the 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 to find out the key determinants of the competitiveness of textile sector of Pakistan. 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 41 questions on the 5 variables of the study. 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 5-point Likert scale (1= Strongly disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= 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 model shown at figure 2 depicts the picture of the impacts of the independent variables on the dependent variable through longer arrows. It also shows through the short arrows the impact of independent variables on each other.

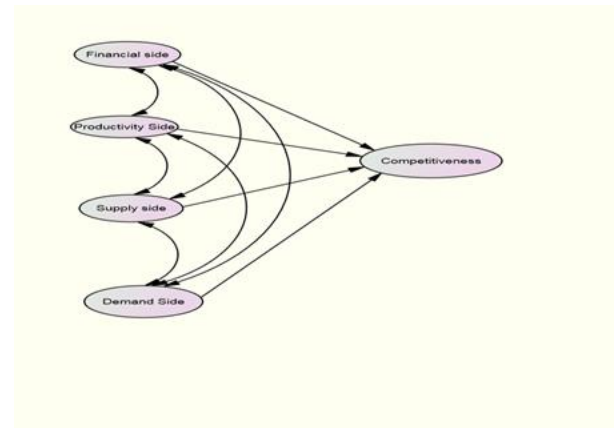


Figure 2. Theoretical Model

Data Analysis

Sample for this study consists of all textile (spinning, composite and weaving) units listed at Karachi stock exchange in the year 2012. Of the total 183 textile companies only 145 are stated as working while the remaining were delisted by the KSE due to various issues. Scale survey was delivered, 67 were returned after completion. Among those returned, 57 were deemed valid and allowable for statistical analysis. Demographics of the respondents are shown as under.

Total Assets

In this study detail of the companies having total assets in billions (Pak Rupees): In terms of assets, 44 per cent of the companies had assets worth Rupees. 1 to 2 Billion. 28 per cent had assets between 2 to 4 billion rupees worth and 28 per cent of the firms had assets worth above 5 billion rupees.

Work force

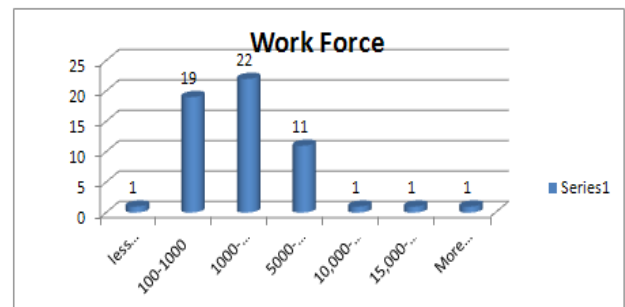


Figure 3. Work force composition

Figure 3 depicts the work force composition of the sample population. 19 firms had work force 100 employees or above, 22 firms have more than 1000 employees while 11 firms had more than 5000 employees.

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 see table 4. 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.

Table 1. Ranking of Pakistan, India, and China in Global competitiveness

Country	Ranking out of 133 countries	Points out of 7
China	29	4.7
India	49	4.3
Pakistan	101	3.6

Source: Global Competitiveness Report 2009-2010

Table 2. Four major determinants of competitiveness

Financing	Money and Capital Markets.
	Cost of Capital
	<input type="checkbox"/> Cost of Debt
	<input type="checkbox"/> Cost of Preferred Stock
Productivity	<input type="checkbox"/> Cost of Equity Capital
	Capital Intensity
	Organizational Structure
	Quality of labor and capital inputs:
	<input type="checkbox"/> Education and training
	<input type="checkbox"/> Industrial Restructuring
Supply Side Determinants	<input type="checkbox"/> Technical Progress
	<input type="checkbox"/> Infrastructure
	External Economies:
	<input type="checkbox"/> Specialized Labor market.
	<input type="checkbox"/> Local availability of inputs
	<input type="checkbox"/> Easy access to information
	<input type="checkbox"/> Foreign market availability of inputs
	Joint action and technology upgrading:
	<input type="checkbox"/> Backward and forward vertical linkages
	<input type="checkbox"/> Horizontal bilateral and multilateral linkages
	<input type="checkbox"/> Product process:
	<input type="checkbox"/> Product quality
	<input type="checkbox"/> Supply Chain Management
	<input type="checkbox"/> R & D innovation
<input type="checkbox"/> Cluster and market management.	
Demand Side Determinants	<input type="checkbox"/> Preferential policies
	<input type="checkbox"/> Product Quality
	<input type="checkbox"/> Domestic Demand
	<input type="checkbox"/> Abroad Demand
	<input type="checkbox"/> Foreign competition
	<input type="checkbox"/> Product differentiation

Table 3. Total Assets of the Sample

Assets in Billion (Rest.)	Companies	Percentage
Rs.1----2	25	44
Rs.2---4	16	28
Rest. Above 5	16	28

Table 4. Product-wise division of the firms

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

Table 5. Reliability Analysis

Constructs/Variables of the Study	No of Items	Cronbach's Alpha Coefficient
Financial Side Determinants.	8	0.88
Productivity Side Determinants.	8	0.814
Supply Side Determinants	11	0.772
Demand Side Determinants.	9	0.718
Competitiveness	8	0.70

Production Pattern

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 5.

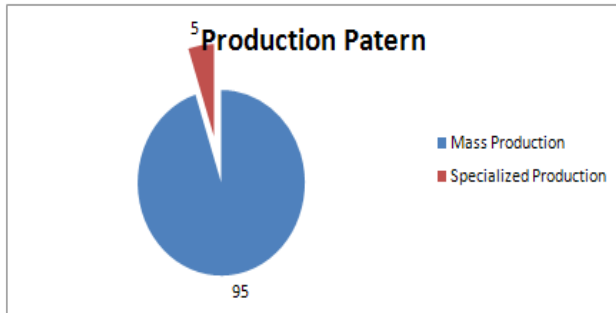


Figure 5. Production pattern

Operational level

Out of total 57 surveyed units all units were fully operational except few. 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.

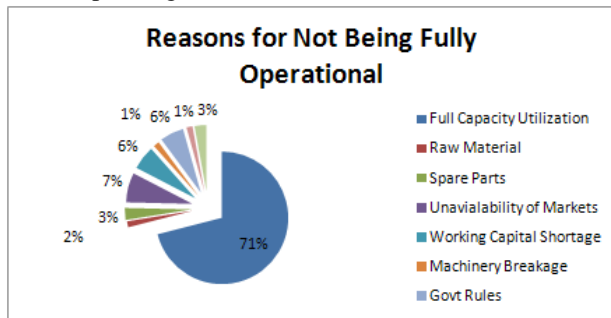


Figure 6. Operational level

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

Contribution of Determinants to Competitiveness

Table 3 below 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). Confirmatory analysis technique SEM (sequential equation model) has been used to confirm the contributing factors of competitiveness and the value of their impact upon the competitiveness of the textile industry of Pakistan.

It has been intended over here to find out the factors having impact on competitiveness; confirmatory factor analysis (SEM) confirms the role of the contributing factor of the competitiveness in the textile industry of Pakistan, as has been explored 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. 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 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<.05 (Root mean residual), GFI > 0.85 (Goodness of fit index), CFI > 0.90 (Comparative fit index) and the most important RMSEA < .08 (Root mean square error of approximation) are ideal (Joseph F. Hair, 2006).

Individual Model Fit

Financial Side: The individual model fit for the financial side determinants having two detailed dimensions, a) financial and capital markets, and b) the cost of capital (including cost of equity as well as borrowed capital) shows the RMR at 0.043, GFI at 0.989, CFI at 1.00 and RMSEA at 0.000 makes the individual model fit for financial side determinants.

Productivity Side: Productivity side determinants further divided into two detailed dimensions a) capital intensity, and b) quality of labor. The individual model fit for productivity side determinants showing the values of RMR at .049, GFI at 0.959, CFI at 0.985, and RMSEA at 0.073 makes the determinants fit for productivity side.

Supply Side: Supply side divided into further four dimensions showing RMR at 0.029, GFI at 0.986, CFI at 1.0 and RMSEA at 0.000 make the model fit.

Demand Side: Values for the nine sub-dimensions of demand side showing RMR at 0.065, GFI at 0.911, CFI at 0.999 and RMSEA at 0.009 are making the individual model fit for the demand side also.

Competitiveness: Values for the dependent variable of the i.e. competitiveness are RMR at 0.054, GFI at 0.936, CFI at 0.91 and RMSEA at 0.000 are ideal for a model fit.

Overall Model Fit

The results for the overall model fit are also within the desired parameter i.e. RMR at 0.097, GFI at 0.80, CFI at 0.809 and RMSEA at 0.073. The theoretical model values also within the range of acceptance (see figure 7).

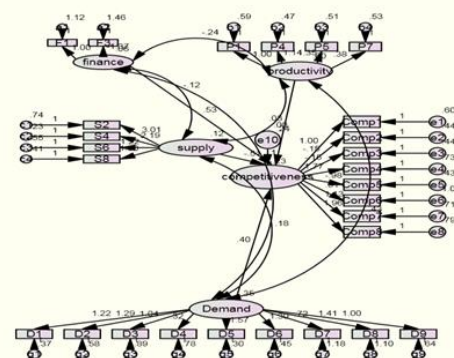


Figure 7. Theoretical model with estimated values

Theoretical model fit showing the RMR at 0.05, GFI at .80, CFI at .87, and RMSEA at 0.069. The theoretical model fitness confirms the estimation of the competitiveness with the four determinants, financial, productivity, supply and demand side. Chi square at 398.3, and the standardized estimates are financial determinants at 0.53, productivity side at 0.026, supply side at -.0513 and demand side 0.404.

Conclusion

In the current study among the four determinants of the competitiveness of the textile industry of Pakistan, the financial side determinants is the factor having a highest impact on the competitiveness at .53, followed by demand side at .404, while the productivity side and supply side are showing a very meager impact of .02 and -.05 on the competitiveness. The study further suggests that i) the supply of inputs including power and gas should be made available to the industry at the lowest possible rates, ii) productivity side including labor and capital intensity are needed to be improved for a competitive industry.

Future research

It is 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

Figueroa, A. (1998). Equity, Foreign Investment and International Competitiveness in Latin America. *The Quarterly Review of Economics and Finance*, 38(3), 391-409.

Hu, B., & Michael.M. (2004). Input output structure and growth in China. *Mathematics and computers in Simulation*, 64(1), 193-202.

Joseph F. Hair, J. (Ed.). (2006). *Multivariate Data Analysis (Low Price Edition ed.)*. Dehli, India: Dorling Kindersley India.

Klemetti, T. (1989). *International Competitiveness and Business Strategies*. Golf Industry. Helsinki School of Economics, Arto-Project 1988-1989., Nr. 31, 177 pp.

Koskivaara, J., Pilli-Sihvola, J. (1989). *International competitiveness and business strategies*. Sportswear industry. Helsinki School of Economics, Arto-Project 1988-1989(27), 174.

Krugman, R., P. (1996). *Making sense of the competitiveness debate*. Oxford Univeristy Press and the Oxford Riview of Economic Policy Limited.

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

Márkus, G. (2008). Measuring company level competitiveness in Porter's Diamond model framework. In *FIKUSZ 2008 Business Sciences-Symposium for Young Researchers: Proceedings* (pp. 149-158).

Narayana, M. (2004). Determinants of competitiveness of small scale industries in India. *The Journal Of Business in Developing Nations*, 8, 93-142.

Peura. (1979). *International Competitiveness and Business Strategies*. Helsinki School of Economics, Arto-Project 1989-1990, 84.

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

Porter, M. E. (1979). How competitive forces shape strategy (pp. 21-38). Boston: Harvard Business Review.

Ricardo, D. (1817). *On the Principles of Political Economy and Taxation*.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53-55.

World Economic Forum (2010). *Global Competitvness Report*. Retrieved from:www.weforum.org/issues/global-ompetitiveness.