

The Effect of Capital and Labor on Productivity on Turkish Textile Companies

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Abstract: The Turkish textile industries has contributed to the economic growth of Turkey for years now which has brought a considerable amount of output in business areas and world trade markets. The Turkish Textile companies played an important role in exportation, job availability and technological development. Due to the constant remark in the progressive industrial performance of the Turkish textiles industries which have improved daily life of people in the society, hence the present study aims to analyze the effect of the relationship of labor and capital on the productivity for 8 different Turkish textile firms which covers a duration of 9 years from 2009 to 2017. Therefore, 8 textile companies were chosen from Turkish Istanbul Chambers of Commerce 500 Largest companies, thus, gross added value was considered as the output are capital and labor (number of employees) as inputs. Capital and labor are the independent variables and gross value addition the dependent variable. The main objective of study applied correlation analysis to ascertain the strength of the relationship between the dependent and independent variables that is the relation between capital, labor and productivity. The regression analysis model analyzed the effect of change of capital and labor on the productivity for the Turkish textile industries. The findings from the analysis concluded that there is a relationship between capital and labor on productivity and capital and labor have an effect on the productivity for the Turkish textile industries from the peroid of 2009 to 2017 for the study.

Keywords: Productivity, Textile industries in Turkey, Ready to wear, Output, Input.

Date of Submission: 07-04-2019

Date of acceptance: 23-04-2019

I. Introduction

Productivity in a broad view is an essential scope for manufacturing companies or industries and is crucial in every country's industrial sector as the centre to infrastructural development, technological change, globalization and economic growth. A Firm's productivity is the major key for the organization to continue in their production operations expand in the capacity of distribution, production and allocation of resources and compete in the international markets with other manufacturing countries. The productivity of firms is determined by many factors acting at the internal utilization of inputs in the production process and other activities. The two main input factors are capital and labor of the study, which have a strong hold on the firm's productivity. In a situation where there is no knowledge about productivity, then the output can only be determined from the input that is the measure of the ratio between goods and services produced from resources, which include raw materials, land, capital, labor, fuel, machines in the manufacturing process.

In a general view, the way to think of productivity is by thinking of production and to make the Turkish textile and clothing industry a global leader in textile products. Istanbul Textile & Clothing Exporter Association (ITCEA) was created to oversee the activities of these industries through increasing the inputs in the study. This has led to an advanced infrastructure of the Turkish textile industry with a complete manufacturing system and skilled workers. Adding to becoming a global leader, the Turkish textile and clothing industry has increased its exports of textiles and raw materials acquisition recently by 8 per cent, 5.3 billion in 2018 and the exports market for Turkey in the sector was Italy (ITKIB, 2012).

The origin of the textiles processing firms in Turkey was taken from years ago with the discovering of clothing design or textile materials is referred to have been used in the manufacturing industries in the nation. In the 16th and 17th centuries, the textile processing firms became more improved and were stretched to many other provinces of the country. It was believed that clothing production was the biggest firm in the Ottomans period; the cultural views were put into consideration.

Turkey's geographical location is partly in Asia and Europe, acting as a barrier and bridge between two continents while serving as the crossroad for Balkans, Caucasus, and Mediterranean and

Middle East countries to Europe. From the past events and wars, Turkey was an emerging economic country in industrialization well known for its rich held cultural heritage. The country itself consists of 79.7 million people who are primarily from the Turkish (75 percent) and Kurdish (18 percent) ethnic groups, and 99.8 percent of the populations are Muslims. (CIA World Factbook, 2012).

II. Review Of Relevant Literature

The International Labor Organization publication defined productivity as the proportion between the volume of output to the inputs. Productivity is regarded as the major cause of economic growth, competitiveness and as such, are the bases for providing statistical information for many international comparisons between the country's productivity performance assessments. (Kendrick John W and Creatner Daniel, 1965), stated that productivity is the ratio of output to all associated inputs in the organizations.

Adding to the concept of productivity, (Robert Solow,1995), cited in the OECD publication of productivity (2001), that productivity is the measure of efficiency in different dimensions. According to the OECD publication, productivity is summarized in technology, efficiency gain and benchmarking the production process. The measure of productivity with the aspect of technology is traced to the knowledge required to produce goods and services to improve the firm's efficiency with respect to inputs. A firm is efficient both in technology and market prices when combining the inputs and technology. It is referred to as technical efficiency which is the capability of the firm to maximize output from a set of inputs and technology. In the benchmarking of output, productivity is measured across firms in the same industry that often use similar inputs to produce similar outputs and determines the firm's position in terms of productivity from the final results of the production process.

In every organization or firm, the economic goal is the existence of value creation. The economic gains are measured in value added that is attained from increase inputs and improved productivity. In most situations, value addition is achieved by a good capital structure and increase labor force. As widely discussed, productivity is primarily a topic for economists with the growth of the national income. Since capital and labor are the main variables that have an effect on the productivity of firms in the study, (Mahoney,1998), further explained productivity as a performance of variables and comparison with other firms. The relationship between capital and labor definitely will have an effect on value addition. Therefore, (Gharneh,1997), stated variables performance for

productivity is the pathway to competitive enterprises, economic development of countries, wealth and living standards of nations.

Ultimately, productivity is viewed in a multidimensional and dynamic scope by managers. In the modern world, productivity is measured as the efficiency and effectiveness of doing the right things perfectly that is producing goods at the least possible cost and given time to get the highest quality with maximum satisfaction to customers in the organizations or firms. During the production process, the number of resources are needed to produce a certain number of goods and services which the main occupation of professional managers of firms. Bernolak viewed productivity and cited in Monga 2000, that managers have to know (1) what actually productivity means (2) how to produce goods and services for the organization (3) the developmental significance of productivity (4) how to measure productivity (5) examine the factors that affect productivity (6) how to enhance productivity. Therefore, managerial productivity is the capability of the managers to transform inputs to output in the production process for the firms or industries.

From the overall concept of productivity, the total efforts of producing goods and services at a gain to customers is reflected at the end result of productivity. However, the term productivity has been defined by many authors in different societal aspects. (Baig,2002) defined productivity with reference to productivity to different categories of persons and functions.

Accordingto (Baig,2002), productivity is summarized in thefollowing:

- To employers: Productivity defines and improves the firm's competitive position in the foreign market.
- To employees: Productivity increases the compensation of labor to workers, development of skills and other capabilities in the manufacturing industry.
- For customers: High-quality goods with adequate timely delivery are produced to customers with relative prices based on productivity of the firm.
- For the Society, productivity reduces inflation, improvement in living standards, provides environmental protection
- And finally for the country, productivity increases government revenues and foster economic growth through infrastructural development.

The Relationship Effect of Capital and Labor on Productivity for the Turkish Textile Industry.

From the study, the number of inputs, capital and labor influence the productivity for the textile and clothing industries in Turkey. Capital and labor are both relatively required by the manufacturing Turkish textile and clothing industries to increase their productive performance and promote the economic activities of the country. Like other manufacturing industries, the productivity of the Turkish textile and clothing industry is efficient when there is labor intensity and capital intensity that is a large amount of labor used to produce goods and services in proportion to capital.

Labor: The number of employees affects the productivity for the textile and clothing industries through its cost which is the expenses incurred through the physical human effort to manufacture goods and services. The textile sector in the industry has a less labor-intensive meanwhile the ready to wear firms are more labor-intensive than textiles firms where the machines function highest for the production processing (Nordas, 2004). The changes in labor cost have a direct effect on the export bases and production process. This period, Turkey was progressing in the textiles and ready to wear exports to Europe due to the cheap labor costs that played an important role of the firm's expansion and productive performance. India and China have a low-priced production cost (Ceglowski and Golub, 2012) and China can produce tremendous large amount of goods affecting the prices of goods in foreign markets (Yücel, 2010).

Capital Investment: Capital investments in the Turkish textiles and the ready wear industries for the long-term profits have an effect on productivity through the acquisition of raw materials, labor, machinery, exports and other facilities required for the manufacturer of goods and services. Due to the closeness of Turkey to the foreign markets in Europe, the European Union facilitate the delivery of goods and also for foreign investors to invest in the Turkish textile products. The overall capacity of the European Union plays a critical function in the Turkish economy which has increased textile and ready to wear exports throughout the previous years.

The extra-working hours also explains the increase of productivity in Turkish textile and clothing industries. The average hours of work per week are 52 hours for men while it is 48 hours for women in Turkey (Jo-in, 2005). The environment of work shows that workers in the clothing sectors have 14 to 16 hours per day at work and 6 in the week. (Tezcan, 2008). Working extra time is quite common in the Turkish Textile and apparel industry. Although working hours are 8 hours and extra-time hours are 3 hours a day in the existing labor law, workers work more than 11 hours daily. Turkey is far behind the European Union countries and in ILO statistics, while comparatively in a better position than Far East countries, particularly China. For example, according to the Turkish statistics in 2008, employees often work for 48-49 hours in Textile and Apparel Industry and 54-55 hours on weekly basis for European Union countries, but less in China (İTKİB, 2011).

The historical trajectory to the textile and the clothing sector provide an indication of a special mechanism for labor intensiveness, the production chain tends to be established with new countries that lower the wages were found. There is a transformation of the experienced mechanisms in the historical shifts from Japan and "finally" to China (Nordas, 2004). Regarding the increasing global competition in the industry, which provides a movement of capital and labor for erosion in the strong side for Turkish textile, and clothing industry? The reason provided is that the internal subcontracting systematic, some garments for the companies that report for the beginning of the contract in the manufacturing abroad in the context of the reduction of the tax, energy, and labor costs. The lack of Research and development, innovation and branding provide a basic weakness for the industry in the state and business cooperation seeking to construct a more competitive, innovative based industry for the manufacturer and transformation of the current labor mechanism and values for the high global commodity chain.

The mechanism for lowering the labor cost and the authority to the production in the system in the region is the provision of evaluation of the responses to the global competition. The mechanisms for the development of the regions, generates the cheap labor force in the region related to the socio-economic development and the permanent solution for Turkey with the special focus on the creation of the brands and attaining an innovative and labor environment a textile sector for depending on the research and development that is urgent for the need (Kılınc, Ersöz & Gürsoy, 2012).

The Production Function

The production model is an economic evaluation method used in analyzing the productivity of the textile industry. The Production model identifies the attributes of productivity that are present in the study which are output (gross value added) and inputs (capital and labor) expressed in the production function.

The Cobb–Douglas production function is best known for constructing the approximate output of the manufacturing textile industries. To measure the productivity of the textile and clothing industries this study

utilizes the Cobb–Douglas production function (Cobb Douglas 1928) estimated using the time series as specified below:

$$Y = A K_t^{\beta_1} L_t^{\beta_2} e^u \dots \dots \dots \text{eq}(1)$$

Where:

Y = Output (Grossvalueaddition) at a given time t,

L = Labor (number of employee) at a given time t,

K = Net capital at a given time t,

A = a constant term and β_1 and β_2 are the coefficients of capital and labor, respectively measure the proportion of productivity.

U = Random measurement error

In production function, there exist is a non-linear relationship between the inputs L and K and the output Y, in eq(1) of the Cobb Douglas production function. The study will take the Cobb-Douglas production function equation to estimate the multiple linear regression between the Y and the K, L variables.

Taking natural logarithms, the model becomes:

$$\ln Y = \ln A + \beta_1 \ln(K) + \beta_2 \ln(L) + e^u \dots \dots \dots \text{eq (2)} \dots \dots \text{where}$$

$$\ln Y = Y, \ln A = \beta_0, \ln K = X_1, \ln L = X_2.$$

The production function for the *i*th firm is the observed output relative to the potential inputs when applying the multiple linear regression models. In the Study, we must consider the production function where the percentage change in the growth of production is directly proportional to the percentage change in the growth of the factors of productivity (capital and labor).

Bayrak Ozcan, Anil and (Emre 2003-2004) established that the measurement of productivity within the 25 textile industries in Istanbul. From study, number of employee, shareholder equity were the inputs and the profits before taxation and export revenue for the outputs to the findings. The study findings show that 5 companies were operating efficiently and 7 of the companies had an efficiency ratio for more than 50 percent whereas the 13 companies had the productivity for the ratios below 50 percent average.

Productivity-based on performance evaluations are required to make a valid comparison among the industries within the country to implement changes in areas that require concern. In Turkey, approximately 2 to 3 Million people were employed in the textiles' industry, while the 2 million people employed in the same industry in Europe. The revenue for Turkish textile and clothing industry is between 25-45 Billion dollars and 250 Billion for the European countries. The profit in the textile is between 4 to 10 percent from the products in the market and customers whereas from 10 to 20 percent in European countries (Ayvaci, 2011).

III. Data And Methodology

Objective of the study

The focus of this study is first to analyze the productivity for the selected Turkish textile and clothing industry from 2009 to 2017. Secondly to analyze the effect of capital and labor productivity trends for the listed textile and apparel industry in Turkey from 2009 to 2017. Thirdly to analyze the strength of the relationship between the selected determinants (capital and labor) on productivity of the Turkish textile industry. Forthly To make recommendations that will enhance the contribution of capital and labor to increase the productivity of the Turkish textile industries.

In order to state the purpose of the study, two critical questions are:

Q₁: Is there any relationship between capital and productivity for the Turkish textile companies?

Q₂: Is there any relationship between labor and productivity for the Turkish textile companies?

From the above questions, the following hypothesis are:

H₁: There is relationship between productivity and the number of labor for the Turkish textile industry.

H₁, There is a relationship between productivity and the number of capital for the Turkish textile industry.

Methodology and Data

The data source for various aspects of the Turkish textile industry is collected from the Annual Survey of Industries, Istanbul Chambers of Commerce Statistics board for a of period of 9 years from 2009-2017 for eight separate Turkish textile-manufacturing industries. The research method for the study applied the descriptive analysis to analyze the panel of data, which involve the correlation analysis and regression analysis. For the correlation analysis, the relationship between the variables of the study will be established to mean that there is a relationship between gross added value, capital and labor where one variable is hypothesized to be influencing another. Furthermore, the regression analysis will analyze the effect of the independent variables on the dependent variable that is capital and labor on productivity through the production function equation will be linearized by taking logarithms of the values of capital; labor and gross added value are estimated separately.

The descriptive data analysis summarizes the different sets of data variables through measures the central tendency, which include mean, median, and variability (spread out) that is standard deviation, variance, the minimum and maximum variables to explain the data to the findings. In the research method of descriptive analysis, the two main computerized and processes applied the correlation analysis and regression analysis.

The correlation analysis of data is the specific focus on assessing the relation of labor, capital and value addition for Turkish textile and clothing industry. The focus assessment was done through the Pearson correlation coefficient to estimate the relationship between capital, labor and value addition. Pearson's correlation coefficient carried out represents the strength of the multiple relation of the independent and dependent variable. The Pearson's correlation coefficient was calculated using SPSS using the logarithms functions for selected variables into the program at a coefficient of one tail of the study.

The regression analysis was based on assessing the effect of labor and capital on gross value addition of the textile firms in Turkey is the multiple linear regression. The multiple linear regression equation for more than two variables in the study with capital and labor as the independent variables and gross value addition as the dependent variable is expressed in the logarithms of the production function equation (eq 1):

Taking natural logarithms, the model becomes:

$$\ln Y = \ln A + \beta_1 \ln(K) + \beta_2 \ln(L) \dots \dots \dots \text{eq (2), thus}$$

$$\ln Y = Y, \ln A = \beta_0, \ln K = X_1, \ln L = X_2,$$

Where: Y = dependent variable, X = independent variables, β_1 = the elasticity of capital and β_2 = the elasticity of labor.

Hence, from the results when calculated, the hypotheses will be predicted from the same test to confirm the stated hypothesis in the study. Testing of the hypotheses was done using the P-values. The decision rule was taken at the 0.01 level of significance. This implies that the level of significance above 0.01 with one tailed results in the null hypothesis and the one below the 0.01 with one tailed the null hypothesis would be rejected. Again, applied to regression parameters is the ANOVA technique to determine the degree to which changes in the independent variable X can the explain changes in a dependent variable

IV. Research Findings

In this section, the researcher presents the analysis carried out and interprets the findings. The presentation and interpretation of the data analysis are dependent on the objectives. The assessment was based the descriptive analysis for 8 textiles and apparel industries in Turkey on gross value addition, capital and labor for the organizations for the period from 2009 to 2017.

Descriptive statistics on value additions For The Manufacturing textiles Firms in Turkey (2009 to 2017)

The data shows the information collected from the different manufacturing textiles companies regarding the state of value additions, the study reveals the present mean of 110,696,225 TL was attained from Aunde Teknik Tekstil San. and Tic. Inc. which had the highest mean comparing the mean for all other textiles' companies. Aunde Teknik Tekstil San. and Tic. Inc. Had the highest mean and comparing the means, the Akbaslar Textile Energy San. And Tic. Inc. Had the lowest mean value in the

provisions. The study findings reveal that the organizations have had quite improvements in the quality of value additions based on the differences between maximum and minimum revealing that the value additions were significant in all the organizations.

Table 4.1: Descriptive Statistics On The Gross Added Value For The Manufacturing Textiles Firms in Turkey (2009 to 2017)

Descriptive Statistics				
Organization	Minimum	Maximum	Mean	Std. Deviation
Menderes Tekstil San. and Tic. Inc	798,959,720.0	282,573,093.00	110,370,759.00	594,414,040.7
Kucukçalik Tekstil San. and Tic. Inc.	344,742,650.0	781,360,310.0	527,673,460.0	158,203,106.6
Mem Tekstil San. and Tic. Inc.	735,017,100	209,711,135.00	466,360,462.9	268,537,859.9
Aunde Teknik Tekstil San. and Tic. Inc.	249,126,490.0	203,068,466.00	110,696,225.30	837,464,892.3
Sireci Tekstil San. and Tic. Inc.	199,399,280.0	199,399,282.00	677,447,688.3	632,650,858.3
Matesa Tekstil San. and Tic. Inc.	484,632,460.0	168,604,520.00	813,898,538.6	410,545,340.3
Ozdilek Ev Tekstil San. ve Tic. A.S.	477,493,990.0	116,029,532.00	823,088,036.7	256,660,168.6
Akbaslar Textile Energy San. and Tic. Inc.	180,010,700.0	837,498,050.0	470,289,327.7	255,165,534.7

Source: Statistical program SPSS, 2018

The study results further reveal that there has been significant value added for the textile manufacturing organisations in the period years from 2009 to 2017, because the means are mostly significantly close.

Descriptive statistics on capital for The Manufacturing textiles Firms in Turkey (2009 to 2017)

The data shows the information collected from the different textiles manufacturing firms regarding the state of capital, the study reveals that the textile manufacturing firms have had an increase in terms of the capital. The provisions undertaken here reveal that Aunde Teknik Tekstil San. And Tic. Inc. Had the maximum values of 517.996.412 TL of the textiles manufacturing firms, regarding the mean of Menderes Textile San. And Tic. Inc had the highest mean responses of 293.213.322 TL considering the mean, maximum and minimum, the results reveal that capital structure has been increasing, in this context the provisions are that the state of the firms in the capital was increasing. The study findings reveal that the organizations have had quite improvements in the capital based on the differences between maximum and minimum revealing that the value additions were significant in all the firms.

Table 4.2: Descriptive Statistics for Capital of the Textile Manufacturing firms in Turkey from 2009 to 2017

Descriptive Statistics				
	Minimum	Maximum	Mean	Std. Deviation
Menderes Tekstil San. And Tic. Inc	220,874,275.00	328,093,049.00	293,213,322	302,082,912.4
Kucukçalik Tekstil San. And Tic. Inc.	141,088,438.00	204,190,690.00	175,814,925.55	225,226,273.5
Mem Tekstil San. And Tic. Inc.	941,652,61.00	302,855,459.00	179,951,728.00	737,934,322.9
Aunde Teknik Tekstil San. And Tic. Inc.	238,529,71.00	517,996,412.00	185,722,163	206,034,044.4
Sireci Tekstil San. And Tic. Inc.	424,787,17.00	203,598,790.00	911,832,94.88	641,692,042.6
Matesa Tekstil San. And Tic. Inc.	133,223,767.00	398,176,479.00	269,463,248.11	954,786,998.5
Ozdilek Ev Tekstil San. Ve Tic. A.S.	127,643,957.00	376,368,225.00	196,659,420.33	914,076,676.1
Akbaslar Textile Energy San. And Tic. Inc.	825,329,48.00	130,982,388.00	106,160,237.00	167,727,343.1

Source: Statistical program SPSS, 2018

Descriptive statistics on labor for The Manufacturing textiles Firms in Turkey (2009 to 2017).

The data shows the information collected from the different 8 textile manufacturing firms regarding labor in the organizations. The study implies that textile manufacturing firms have been increasing and decreasing. The manufacturing firms have employed the labor-intensive mechanisms and the state of the labor in the textiles industries has increased though at lower levels. The labor is not increasing progressively, an implication of a possible mechanism in the industry that has limited employment of the labor. In this context, the provisions are that the state of the firm in the capital was increasing. The findings reveal that the firms had an improvements in the labor employed with the maximum and minimum value showed much labor changes that have been witnessed for a period of 2009 to 2017 in the all the organizations.

Table 4.3: Descriptive Statistics on Labor for the Textile Manufacturing Companies in Turkey(2009 to 2017).

Descriptive Statistics				
	Minimum	Maximum	Mean	Std. Deviation
Menderes Tekstil San. And Tic. Inc	1854.00	3764.00	2959.00	769.65
Kucukçalik Tekstil San. And Tic. Inc.	1100.00	1544.00	1316.55	158.67
Mem Tekstil San. And Tic. Inc.	400.00	2083.00	1472.66	570.99
Aunde Teknik Tekstil San. and Tic. Inc.	933.00	2692.00	1960.00	696.60
Sireci Tekstil San. And Tic. Inc.	985.00	2701.00	1884.44	630.89
Matesa Tekstil San. And Tic. Inc.	2020.00	2500.00	2217.77	145.49
Ozdilek Ev Tekstil San. ve Tic. A.S.	803.00	3870.00	1854.44	948.91
Akbaslar Textile Energy San. and Tic. Inc.	321.00	1307.00	1004.77	323.73
Valid N (listwise)				

Source: Statistical program SPSS, 2018

Correlation Between Capital, Labor and Gross Value Addition in the Textile Manufacturing Firms in Turkey

In the bid to form the relation of capital, labor and value addition in the textile industry, the assessment are taken based on the Pearson correlation analysis as presented in table 4.4 below.

Table 4.4: Correlation Analysis Between Labor, Capital and Gross Added Value

Correlations				
		Capital	Labor	Added-value
Capital	Pearson Correlation	1	.757**	.610**
	Sig. (1-tailed)		.000	.000
	N	8	8	8
Labor	Pearson Correlation	.757**	1	.840**
	Sig. (1-tailed)	.000		.000
	N	8	8	8
Value Added	Pearson Correlation	.610**	.840**	1
	Sig. (1-tailed)	.000	.000	
	N	8	8	8

** . Correlation is significant at the 0.01 level (1-tailed).

Source: Statistical program SPSS, 2018

The correlation between the variables is statistically significant at 0.05 for 1-tail and critical value of 0.549 with a total population of 8 observations. The analysis suggests that there is a significant relation between capital and value addition in the textile manufacturing firms in Turkey from the panel of data for the period of 2009 to 2017. The Pearson correlation of labor and capital r value = 0.757 with a p-value (0.000) which was also highly notable with p-value different from zero (p > the critical value for 0.05 significant level). The Pearson correlation of labor and value-added r value = 0.840 with a pvalue (0.000) which was also highly notable with p-value different from zero (p > the critical value for 0.05 significant level). The Pearson correlation coefficients of value-added and capital r value =0.610 with a pvalue (0.000) which was also highly notable with p-value different from zero (p > the critical value for 0.05 significant level).

At a remarkable level value of 0.05, we reject the null hypothesis and conclude that capital, labor and value-added are strongly related statistically. The correlation relationship is stated as: With p-value =0, we accept the null hypothesis that there is no linear relationship between capital, labor and value-addition while p-value not equals to zero, we reject the null hypothesis, that is there is a linear relation between the dependent and independent variable. It was finally established that capital, labor and value additions are correlated positively implying that value additions can be generated and improved through labor and capital in the Turkish textiles industries.

Regression on Effect of Capital, Labor on Value Addition in The Textile Manufacturing Organizations in Turkey.

Table 4.5: Regression on Capital, Labor on Value Addition in the Textile Manufacturing Organizations in Turkey.

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.861 ^a	.741	.640	0.212269738		
a. Predictors: (Constant), Labor, Capital						
ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	0.644	2	0.323	7.143	.0034 ^b
	Residual	0.225	5	0.045		
	Total	0.869	7	0.367		
a. Dependent Variable: Value Added						
b. Independent Variables: Labor and Capital						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t-stat	p-value
		B	Std. Error	Beta		
1	Intercept	11.385	3.894		2.924	0.000
	Capital(lnK)	-0.009	0.261	0.752	-0.041	0.000
	Labour(lnL)	0.920	0.315	0.167	2.924	0.000

Source: Output of the statistical program SPSS, 2018

From table 4.5 the regression model table above show the value of R= 0.861 means the regression of capital, labor and value addition is positive. The model can explain the R regression expresses that 86.1% of the change on the dependent variable (value addition) is caused by the independent variables (capital and labor). The R2 value = 0.741, is expressing the goodness of the regression which suggests that 74.1% of the ‘y’ variation is explained by the x1 and x2 variables from the data accounted. The adjusted R2, of 0.640, shows the effect of change of labor and capital on value additions in the textile-manufacturing firms in Turkey. In this case, labor and capital accounted to value additions by 64% percent and changes in value additions. The standard error estimate of 0.212269738 shows the close scatter of the data.

The ANOVA include the analysis of variance and explains the relation of the independent variables (capital, labor) and the dependent variable (value additions) of the study. The sum of squares regression (SS Regression value 0.644) is the variation that is explained by the regression line and sum of square for residual (SS Residual value 0.225) is the variation for the dependent variable that is not explained. The mean square is calculated either by dividing the SS Regression or SS Residual by the differences of freedom. From table 4.5, the value of F is 7.143 calculated from the ratio of the mean square regression to mean square of the residual. The critical F-test statistic for testing the null hypothesis state b1, b2, b3.....bx is zero and the alternatives hypothesis state that at least one b1 is not equal to zero. The value of significance 0.034 is below the 0.01 for the one tail statistics value implying that capital, labor and value additions are significantly related. Therefore, we reject the null hypotheses. The table further illustrates the regression analysis between capital and labor on value additions for the textile-manufacturing firms in Turkey for the period of 2009 to 2017. In the ANOVA, the F-test statistic is 7.143 with a p-value denoted as sig value of 0.034; we do not reject the null hypothesis that the regression parameters are zero at significance level 0.01 that is the model has no explanatory power. From the data analysis in the above table established, the regression equation can be expressed as:

$$Y = 11.389+(-0.009)K +0.920L, \text{ with 8 observations and 3 regressors (intercept and X1, X2).}$$

The regression equation revealed that holding capital and labor to a constant zero, the value additions for the textile manufacturing firms would be at 11.389, that is a unit increase in capital would lead to a change in value addition by 0.009 and the unit increase in labor would lead to an increase in the value addition by 0.920.

The relationship between labor and value addition is positive: the larger the labor, the higher the value addition. The coefficient of labor is 0.920 indicates that any additional labor, increases the value addition by \$0.920.

The capital coefficient is -0.009 negatively related to the value addition, but this due to an interaction with the labor variable because increase productivity will tend to have more labor to the textile firms.

At the 5% significance and the 95% level of confidence, capital had 0.662 level of confidence, while labor had a value of 1.731. The results are positive having an influence on the value additions. Regarding the findings, the researcher contends that the study findings imply that capital and labor are key determinants of value additions in the textile manufacturing firms in Turkey.

The regression coefficient of capital has a standard error of 0.261, t-statistic of 0.041 and p-value of 0.973. It is therefore statistically insignificant at notable level where $\alpha = 0.01$ as $p > 0.01$. While the regression coefficient of labor has a standard error of 0.315, t-statistic of 2.924 and p-value of 0.033, therefore statistically significant at a remarkable level where $\alpha = 0.01$ as $p > 0.01$.

Finally, to predict the Y value for the regressor, the researcher considers a case where $x_1 = 19600$ and $x_2 = 1472$.

$$y = A + B_1X_1 + B_2X_2 + eu = 11.389 + (-0.009) \times 19600 + 0.920 \times 1472 = 1,189.229.$$

V. Conclusion

To conclude, the overall study of the effect of capital and labor on productivity of Turkish textiles and clothing manufacturing industry from 2009 to 2017 for 8 Turkish textile and clothing industries. In the study, Pearson's correlation analysis and regression approach were used in the study. The findings from the correlation analysis carried out suggest that both dependent and independent variable are significantly related "thereby", concluding that capital and labor have an effect on the productivity for the textiles and clothing manufacturing industry in Turkey. The Turkish textiles and clothing manufacturing industry contributes a lot to the economy, jobs and other areas of life. It is important to focus on increasing the output for the textile and clothing manufacturing firms in Turkey with appropriate inputs to achieve the highest possible output at the lowest cost and labor intensiveness. The efficiency of the Turkish textile and clothing industries will mean total optimization of productivity effectively and get accurate results at the end of production. The study stipulates that capital and labor are the two main factors that affect productivity in economics point of view. From the Pearson's correlation table 4 in the study, there exist a high correlation relation between labor and capital with r-value of 0.757 and value-addition indicating r value = 0.840. This means that labor has a higher significance with value-addition. An increase in labor will greatly affect productivity positively and definitely, output will be high. In table 4 Pearson's correlation of the study, the correlation relation between capital and value-addition r value = 0.610. The relationship is not as strong with that of labor even though its positive. To analyze the productivity of the Turkish textile and clothing industry, first, we calculate the industry averages and inspected their evolution over time. From the findings, it was observed that productivity was gained.

The study at the end concluded that there is an effect of labor and capital on the value additions for the Turkish textile industries. The study results are in an agreement with previous authors Nordas (2004) who contended that the textile sector in the industry must have a good labor intensive framework and capital structure for the firm's productivity. The ready to wear firms are more labor intensive than the textiles in the organizations. A change in the labor costs will have a direct influence on the export base, the main reason for the global focus shifts to the development of the countries in the textile industry with cheap labor costs. Afterward, Turkey was considered successful in the exports of textiles and ready to wear products, low labor costs with high labor intensity which played a successful role in the organizations and capital was invested when necessary to increase productivity.

Acknowledgement

This study summarizes the MBA Thesis titled "The Effect of Capital and Labor on Productivity on Turkish Textile Companies" conducted by Max Dula Jaff and supervised by Prof. Nurgun Komsuoglu Yilmaz. (Lecturer, Faculty Of Social Science, Istanbul Aydin University, Turkey)

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IOSR Journal of Business and Management (IOSR-JBM) is UGC approved Journal with SI. No. 4481, Journal no. 46879.

Max Dula Jaff. " The Effect of Capital and Labor on Productivity on Turkish Textile Companies". IOSR Journal of Business and Management (IOSR-JBM), Vol. 21, No. 4, 2019, pp. 54-63.