A Quantitative Analysis for the Tanzania Industries Performance and Productivity

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Abstract

Literature evidence manifests that the Tanzania manufacturing sector's contribution to economic development is inadequate, and the targeted performance and productivity of the sector were never realized. With that regard, the fundamental question for Tanzania Industries' performance and productivity becomes the centered debate and significant for the investigation. This study focuses on investigating the performance of the industries and the labor force productivity during the period from 1996 to 2015 in Tanzania. The study considers employing the Ordinary Least Square (OLS) method to analyze the average annual growth rates of the total Gross Domestic Product (GDP), employment, and export during the period from 1996 to 2015. Time series macroeconomic data during the period from 1996 to 2015 for Tanzania were collected from the World Bank. To assess the performance of the Tanzania industries, particularly the annual average marginal performance, the Gross Domestic Product (GDP), and the export's yearly average growth rate for the periodic 1996-2000, 2001-2005, 2006-2010, and 2011-2015 were evaluated. While investigating the labor force productivity, the extra productivity of the employed labor force was evaluated during the period from 1996 to 2015 in Tanzania. The results of the investigatigation were catching up the attention. The findings of the study reveal that the performance of the Tanzania industries is positive and meaningful, while the labor force productivity is negative and insignificant during the period from 1996 to 2015 in Tanzania.

Keywords: Tanzania Industries, Performance, GDP and Productivity

Introduction

Since the year 1996, Tanzania has initiated significant efforts to transform the manufacturing sector and its productivity, particularly to increase its contribution of the sector to the Gross Domestic Product (GDP) of the country. Among the key efforts initiated by the country through the ministry of trade and industry is launching and starting the implementation of the industrial policies to pilot the manufacturing sector ahead of achieving the industrialization and middle-income status country by the year of 2025. Despite the significant efforts taken by the Tanzania Government focusing transforming the manufacturing sector to become the leading Gross Domestic Product (GDP) contributor and more productive for the economic growth of the country, the recent literature explores that the contribution of the manufacturing sector to the country Gross Domestic Product (GDP) is still insufficient and the targeted results were never realized. The following evidence supports this statement.

Tanzania's literature proves that the manufacturing sector of Tanzania's performance and productivity decline, and the contribution of the sector to the country GDP becomes smaller than expected. Regardless of the Government efforts, including initiating and implementing industrial Policies and investments in the sector, still, the productivity of the sector and its industries were insignificant. Mbelle, (2005,.Pg.13) explored the situation stated that" First was the fact that the performance of the manufacturing sector was deteriorating, despite increased investments in the sector in the form of capacity expansion."

Regardless of the less contribution of the manufacturing sector to the country Gross Domestic Product (GDP), and insufficient implementation of the Tanzania industrial policies since were launched during the year of 1996; In Tanzania, there is no academic work have been undertaken to investigate the productivity of Tanzania industries and its contribution to the Gross Domestic Product (GDP) of the country. This study is focusing on evaluating the Tanzania industry's productivity during the period from 1996 to 2015 in Tanzania.

Motivation of the Study and Objective

From the fact that the Tanzania literature explores that the contribution of the manufacturing sector and its industries to the economic development of the country is of very small amount and the desired economic development targets through the productivity of the manufacturing sector were never realized in Tanzania. This fact pushed the probe for the Tanzania industry's productivity during the period from 1996 to 2015 in Tanzania. The following grounds support this statement.

Tanzania's literature proves that the manufacturing sector of Tanzania's performance and productivity decline, and the contribution of the sector to the country Gross Domestic Product (GDP) becomes smaller than expected. Regardless of the Government efforts, including initiating and implementing industrial Policies and investments in the sector, still, the productivity of the sector and its industries were insignificant. Mabelle, (2005,.Pg.13) explored the situation stated that" First was the fact that the performance of the manufacturing sector was deteriorating, despite increased investments in the sector in the form of capacity expansion."

The Tanzania Manufacturing sector and its industries for a very long period stand to under-perform and inactive in the development of the country. This circumstance pointed out by (Africa Development Bank Tanzania Country Report 2014., Pg.3) stated that "Tanzania's Manufacturing sector is relatively small and over the long-run has failed to develop."

Despite the significant efforts taken by the Tanzania Government focusing transforming the manufacturing sector to become the leading Gross Domestic Product (GDP) contributor and more productive for the economic growth of the country, the recent literature explores that the contribution of the manufacturing sector to the country Gross Domestic Product (GDP) is still insufficient and the targeted results were never realized. Regarding the insufficient contribution of the manufacturing sector to the economic development of Tanzania, the present study is undertaken to evaluate the performance and productivity of Tanzania industries during the period from 1996 to 2015 in Tanzania.

In addition to that, the study will generate new knowledge that manifests the fact about the Tanzania industries' performance and productivity during the period from 1996 to 2015 in Tanzania. Concerning the usefulness of the study, The study will be useful to the economics discipline, specifically industrial economics, and Tanzania, as a country at large.

Objective of the Study

This study focuses on investigating the performance of the industries and the labor force productivity during the period from 1996 to 2015 in Tanzania.

Literature Review

Tanzania's literature proves that the manufacturing sector of Tanzania's performance and productivity decline, and the contribution of the sector to the country Gross Domestic Product (GDP) becomes smaller than expected. Regardless of the Government efforts, including initiating and implementing industrial Policies and investments in the sector, still, the productivity of the sector and its industries were insignificant. (Mbelle, 2005) explored the situation stated that" First was the fact that the performance of the manufacturing sector was deteriorating, despite increased investments in the sector in the form of capacity expansion."

The world evidence shows that the industrial sector is the one contributing to the large percent of the different countries' economies and quickly transforming their economies to better and achieving industrialization. This is very different from the Tanzania manufacturing sector and its industries, where the sector is not in the larger contribution and success of the Tanzania economy. (John 2016)

insisting and writing, "A sector that has been largely absent from the Tanzania success story is an industry."

It has been evident that since the Tanzania government undertook the different reforms to stimulate its economic development to its people's different sectors including mining and tourism showed the positive and desired results, however, the manufacturing sector stayed stagnant and back as planned. Kahyarara (2013, Pg. 86) describes the circumstance stating, "This is a puzzle because some sectors such as mining and tourism have shown impressive performance after taking advantage of reforms, whereas Tanzania manufacturing still lags."

The Tanzania Government made substantial efforts to transform the manufacturing sector of Tanzania, including the initiating of the Tanzania industrial policies in the year 1996 and encourage the private sector to control the productivity of the Tanzania industries and lead the sector towards industrialization process. The Tanzania Invest (2019, Pg. 1) explained that "The Government of Tanzania introduced its Sustainable Industrial Development Policy (SIDP) in 1996 to phase itself out of investing directly in productive activities and let the private sector take that role".

Tanzania, from the independence on the process to transform its economy and industrial developments, one of the strategies was the initiation of the Arusha Declaration during the year 1967 to restructure the Tanzania economy and social parameters including equality, socialism and self-reliance within the country. Darkoh, (1984, Pg. 47) insisting that; "Since the adoption of the Arusha Declaration in 1967, Tanzania has charted a course for its industrial development within the framework of the economic and social objectives of equality, socialism, and self-reliance".

Literature explores the weight undertaken subject to strengthening the organizations and different firms' abilities to raise productivity while the innovation factors left behind and stagnant within the manufacturing sector in Tanzania. This matter is well elaborated by (Goedhuys, Janz, and Mohnen, 2006. Pg. 14) stating that; "The importance of the institutional set up in explaining productivity differences among manufacturing firms in a

developing country like Tanzania, and the lack of importance attached to direction innovation factors."

Evidence shows that different countries count the manufacturing sector as the most important sector towards the process of transforming the economy into rapid economic development and industrialization. Likewise, Tanzania literature insists on the significance of the manufacturing sector towards building the economy of the country and economic development in general (Wangwe, Mmari, Mikael, Rutatina, Mboghoina and Kinyondo, 2016. Pg. 9) clarifies that; "Importance of the manufacturing sector to the national economy has varied across different periods since independence, however, in recent years its contribution to the national income and hence its importance has been on the rise."

The Tanzania Manufacturing sector and its industries for a very long period stand to underperform and inactive in the development of the country. This circumstance pointed out by (Africa Development Bank Tanzania Country Report 2014, Pg. 3) stated that "Tanzania's Manufacturing sector is relatively small and over the long-run has failed to develop."

The Tanzania manufacturing sector has come across different obstacles since the independence of Tanzania. Some of these challenges are high oil prices and interest rates from outsiders' forces. Due to the challenges the development of the sector has become unachievable, Mbelle (2000, Pg. 16) explained that; "Tanzania's manufacturing sector has long suffered serious constraints. In the 1970s and 1980s, they predominantly consisted of external shocks such as high oil prices and interest rates".

The estimation economic growth of Tanzania by the year of 2020 counts many contributions by the industry and manufacturing sector. This justified by the Africa Development Group Report (2020, Pg. 1) written; "A markedly diversified economy, characterized by robust private consumption, substantial public spending, strong investment growth, and an upturn in exports underpinned the positive outlook. Tourism, mining, services, construction, agriculture, and manufacturing are notable sectors".

The role of the policies and its importance to the transformation of the Tanzania manufacturing sector

to better has become the most centered instrument to achieve the desired economic development in Tanzania. Recently Tanzania undertaking the industrialization process and the policy agenda well elaborated by Wangwe and Miami (2016. Pg. 1) clarifying that; "The current development agenda, however, has brought industrial development back to be one of the policy priorities."

To practice industrialization successfully, the literature suggested that the agriculture sector must be well prepared in terms of productivity to support the industrial sector. The meaning is the agriculture sector must be very ready to produce enough production, which needed the manufacturing sector in Tanzania. Szirmai and Lapperre (1999, Pg.6) insist that; "One of the important prerequisites cited by Lapierre is that industrialization requires prior increases in agricultural productivity."

Tanzania experiences the high mobility of the labor force in the industrial sector market, which leads to the slow down of the industry's productivity in Tanzania. The world bank Group (2018, Pg.5) explaining this fact in detail, stated that "Raising productivity, however, remains difficult because the labor shifts to manufacturing and services have mainly taken place in the informal sector."

Some of the Tanzania literature manifests how the Tanzania country counted among the last countries involved in the process of industrialization. Szirmai, Prins, and Schulte (2002) describe the concept of Tanzania as from the last point to initiate the industrialization journey stating that; "Tanzania is a late late-comer to the process of industrialization."

The Sustainable Industrial Development Policy (SIDP) 1996 was adopted with the objective of implementing the government's decision of withdrawing the public sector from engagement in production activities and enabling the private sector to become the principal vehicle for economic growth. (Tanzania Ministry Of Industry and Trade, 2011, Pg.1).

Methodology

To evaluate the performance and productivity of Tanzania industries in Tanzania the contemporary academic work employed the Time series data from the World Bank during the period from 1996 to 2015 for the Tanzania Gross Domestic Product (GDP), Manufacturing sector (GDP), Tanzania Employment, Manufacturing sector Employment, Tanzania Export, and Manufacturing sector Export. The study evaluated the yearly growing percent rates of Gross Domestic Product (GDP), Employment and Exports of Tanzania Industries during the period from 1996 to 2015. The growing rate evaluated by the following regression semi-log model:

$$In\ EQi = X0 + X1t + Xi \qquad (1)$$

From the above equation: A0 and A1 stand as coefficients, Xi stands as random disturbance, and EQi stands as a dependent variable factor in the natural log, while t stands for period from the year 1996 to 2015.

The growing amount and figure (Rate) evaluated by the following equation

$$Rxy = X1 * 100 \qquad (2)$$

The present study to compute the yearly growing figure for the divided periods of 1996 - 2000, 2001 - 2005, 2006- 2010, and 2011- 2015, the slope dummy and the intercept dummy have been applied (Gujarati, 2003). The study particularly employed the regression equation:

$$In\ EQi = Xo + X1t + X2D1 + X3(D1*t) + X4D2 + X5(D2*t) + X6D3 + X7(D3*t) + Xi \qquad (3)$$

From the above equation:

D1 (First Dummy) =   1996 to 2000 = 0
                      2001 to 2015 = 1
D2 (Second Dummy) =2001 to 2005 = 0
                      2006 to 2015 = 1
D3 (Third Dummy) =   2006 to 2010 = 0
                      2011 to 2015 = 1

From the equation, X0, X1, ….. Stand as Coefficients, Xi stands as the random disturbance, while EQi and t stand as referred from the equation number 1.

Referring to the regression equation, a growing amount figure for the four divided periods were estimated by the following equation:

Rxy 1996 - 2000 = (X1) * 100   (4)
Rxy 2001 - 2005 = (X1 + X3) * 100   (5)
Rxy 2006 - 2010 = (X1 + X3 + X5) * 100 (6)
Rxy 2011 - 2015 = (X1 + X3 + X5 + X7) *100 (7)

Key policy stakeholders and investigators believe and assume that all economic variables employed in this study were subject to increase as the time goes,

the economic variables applied by the present study including Tanzania Gross Domestic Product (GDP), Manufacturing sector GDP, Tanzania Employment, Manufacturing sector employment, Tanzania Export, and Manufacturing sector export.

In addition to that, the present study assumes a yearly growing amount in the given factors during the period 2011 to 2015 is greater than that of during the period 2006 to 2010. While assumes yearly growing amount in the given factors during the period 2006 to 2010 is greater than that of during the period 2001 to 2005. In addition to that, the study assumes a yearly growing amount in the given factors during the period 2001 to 2005 is greater than that of during the period 1996 to 2000. This assumption could be equated as follows:

Rxy 2011 to 2015 > R xy 2006 to 2010

Rxy 2006 to 2010 > R xy 2001 to 2005

Rxy 2001 to 2005 > R xy 1996 to 2000

From the above equations, the meaning is:

$(X1 + X3 + X5 + X7)*100 > (X1 + X3 + X5)*100$

$(X1 + X3 + X5) * 100 > (X1 + X3) * 100$

$(X1 + X3) * 100 > X1 * 100$

Evaluating the Employment labour marginal productivity this academic work employed the Cobb - Douglas production function (Cobb and Douglas, 1928) and constant Elasticity of Substitution (CES) production function (Arrow et al., 1961), same applied by Sadhu and Mahajan (1982) and Gaur and Padney (2003), and Greene (2005) respectively, which are classified and stated as below:

$$Oi = EL1 Ui \qquad (8)$$

From the above equation, Oi is the output, EL represents Employment labor, and 1 is the quantity of labor applied in the production mechanism, and Ui stands for random disturbance factor.

Extra productivity of Employment labour evaluated in the Double Log model below:

$$In Oi = In A + X In EL \qquad (9)$$

From the above equation: X represents the Elasticity of Employment Labour during the time production took place.

Performance of the Tanzania Industries

To investigate the performance of Tanzania industries during the period from 1996 to 2015 in Tanzania, the contemporary study employs the two macroeconomic variables that are Gross Domestic Product (GDP) and the Export particularly Tanzania Gross Domestic Product (GDP), Manufacturing Gross Domestic Product, Tanzania Exports and Manufacturing sector Export. Given the macroeconomic data from the World Bank during the period from 1996 to 2015, the study computes the average performance annually, for the dived period (1996-2000, 2001-2005, 2006-2010, and 2011-2015), and for the whole period from the year 1996 to 2015 to evaluate the performance of the Tanzania industries for the given period.

Gross Domestic Product (GDP)

Regarding the Gross Domestic Product (GDP), the present study explores the performance of Tanzania industries through manifesting the increase of the Tanzania Gross Domestic Product (GDP) from 4.544% in the year of 1996 to 6.161% in the year of 2015. Similarly, the manufacturing sector GDP percentage contribution to the total Tanzania GDP increased from 13.03% in the year of 1996 to 24.49% in the year of 2015. Gross Domestic Product (GDP) annual average amount computation manifests that; Tanzania Gross Domestic Product (GDP) annual average rate recorded 5.03%, and recording the decrease of the rate from 27.28% in the year of 1996 to -8.48% in the year of 2015, while the divided four periods annual average rate manifests the record of 6.83% (1996-2000), 11.45% (2001-2005), -2.41 (2006-2010) and 4.24% (2011-2015). Apart from that, the manufacturing sector GDP annual average recorded 4.08%, and recording the improvement and increase of the sector annual average GDP from -2.95% in the year of 1996 to -2.61% in the year of 2015, while the divided four periods from the year 1996 to 2015 the manufacturing sector annual GDP recorded 9.38% (1996-2000), 3.73% (2001-2005), 0.69% (2006-2010) and 2.53% (2011-2015).

Referring to appendix number 2 the study shows extra (marginal) annually average productivity of both Tanzania Gross Domestic Product and the Manufacturing sector GDP declined respectively from the interval period (1996-2005)and (2006-2015). From the first ten years interval (1996-2005), Tanzania Gross Domestic Product recorded 9.142% while the Manufacturing sector recorded

1.61%, The percentage decline to the second ten years interval (2006-2015) were recorded 0.915% for Tanzania Gross Domestic Product and 1.61% for Manufacturing sector GDP. That means regarding the Gross Domestic Product, the Tanzania industry's marginal productivity were declining and deteriorating during the period from the year 1996 to 2015 in Tanzania.

Appendix 1: From the World Bank given data, the following table shows the Tanzania Gross Domestic Product (GDP) and the Manufacturing sector GDP during the period from 1996 to 2015 in Tanzania. Where, Y represents the Year , T-GDP represents Tanzania Gross Domestic Product (GDP) and MI-GDP represents the manufacturing sector GDP.

Y	T-GDP	MI-GDP
1995	3.57	13.425
1996	4.544	13.029
1997	3.525	13.001
1998	3.709	20.075
1999	4.864	19.787
2000	4.521	19.205
2001	6.071	19.374
2002	7.093	21.487
2003	6.673	23.237
2004	7.504	23.098
2005	7.476	22.94
2006	6.532	22.845
2007	6.769	23.197
2008	5.686	23.738
2009	5.269	21.677
2010	6.337	23.556
2011	7.672	26.382
2012	4.5	25.399
2013	6.782	25.447
2014	6.732	25.142
2015	6.161	24.487

Appendix 2: From appendix number 1, the following are the calculations for the annual average Tanzania Gross Domestic Product (GDP) and annual average manufacturing Gross Domestic Product (GDP) during the period from 1996 to 2015 in Tanzania. Where, Y represents the Year, T-GDP represents the Annual average Tanzania Gross Domestic Product (GDP), and MI-GDP represents the Annual average Manufacturing sector GDP.

Y	T-GDP	AV1	AV2	MI-GDP	AV1	AV2
1995				-2.95		
1996	27.28			-0.21		
1997	-22.43			54.41		
1998	5.22	6.832		-1.43	9.376	
1999	31.14			-2.94		
2000	-7.05					
			9.142	0.88		6.553
2001	34.28			10.91		
2002	16.83			8.14		
2003	-5.92	11.454		-0.6	3.73	
2004	12.45			-0.68		
2005	-0.37					
				-0.41		
2006	-12.63			1.54		
2007	3.63			2.33		
2008	-16	-2.412		-8.68	0.69	
2009	-7.33			8.67		
2010	20.27					
			0.915	20		
2011	21.07			-3.73		1.61
2012	-41.35			0.19		
2013	50.71	4.242		-1.2	2.53	
2014	-0.74			-2.61		
2015	-8.48					

The Correlation Between Tanzania Gross Domestic Product (GDP) and the Manufacturing Sector Gross Domestic Product (GDP)

The present study to find the correlation between the Tanzania Gross Product (GDP) and the manufacturing sector Gross Domestic Product (GDP) assumes the Tanzania Gross Domestic Product (GDP) stands as the dependent variable while manufacturing sector Gross Domestic Product stand as the independent variable.

The findings of the study reveal the positive and meaningful relationship between Tanzania Gross Domestic Product (GDP) and the manufacturing

sector Gross Domestic Product. The regression outcome manifests the coefficient of 0.2297, which means for every additional increase in the manufacturing sector Gross Domestic Product similarly the Tanzania Gross Domestic Product (GDP) increased by 0.2297 points (Table number 1 below).

Table: Regression Results Between Tanzania Gross Domestic Product (GDP) and Manufacturing sector Gross Domestic Product (GDP) during the Period from 1996 to 2015

V	CT	SD	T	P
SR	0.2297	0.09697	2.3687	0
C	0.9			
R2	0.4365			
AR	0.4052			
SER	1.5478			
NOB = 20				

Origin: Regression results from Appendix number 1

Where V is Variable, CT is Coefficient, C is Constant, SD is the Standard Deviation, T is T-Statistic, P is Probability, SR is Slope of the regression line, R2 is R-Squared, AR is Adjusted R-Square, SER is Standard Error of Estimation NOB is number of Observation.

Hypothesis Test for the Correlation between Tanzania Gross Domestic Product and Manufacturing Sector (Industry) Gross Domestic Product

From the regression calculations, the study assumes Tanzania Gross Domestic Product (GDP) to be a dependent variable while the Manufacturing sector (Industry) Gross Domestic Product (GDP) to be an independent variable. Regarding the regression calculation results, The study finds the least-squares regression line is

Y = 0.9 + 0.2297 X

The study finds the standard deviation is 0.09697.

From the above equation, b is 0.9, and because it is positive means greater than zero not to accept the null hypothesis instead accept the alternative hypothesis.

Null and Alternative Hypothesis:

Ho : B = 0

H1 : B > 0

Thus, The Test Statistic t0.01;(20-2) = 2.552

Rejection Part of Ho is t values of 2.552 or greater than. Given t < 2.552, the null hypothesis may not be declined. From the Regression results t =b/sb = 2.3687

= 2.3687 > 2.552

The meaning is there significant evidence the relationship between Tanzania Gross Domestic Product (GDP) and the Manufacturing Gross domestic Product (GDP) is strongly positive.

Export

The present study employed the macroeconomic indicator export to assess the performance of Tanzania industries during the period from 1996 to 2015 in Tanzania. From the World, the bank collected data the Tanzania export shows to decline where it recorded the amount of 19.937% in the year of 1996 as it decreased to 17.105% in the year of 2015. The situation is contrary to the manufacturing sector export, where the data shows the increase in export done by the sector from 0% in the year of 1996 to 0.853% in the year of 2015. Regarding the annual export average, Tanzania export recorded the annual export average of -0.665%, which means the marginal performance for export was declined by the amount of 0.665% during the period from 1996 to 2015 in Tanzania. While the manufacturing sector annual average export recorded the amount of 2.332%, which means the manufacturing sector average annual performance increased by the amount of 2.332% during the period from 1996 to 2015 in Tanzania. Apart from that the four divided sub-periods the Tanzania export recorded the annual average performance productivity amounted to -13.258% (1996-2000), 9.812% (2001-2005), 3.102% (2006-2010) and -2.316% (2011-2015). While the manufacturing sector exports annual average performance productivity for the four divided sub-periods recorded the amount of 0%(1996-2000), 0% (2001-2005), 13.472% (2006-2010), and -4.144% (2011-2015).

The study investigation outcome indicates that the performance of Tanzania industries through the assessment if its exports increased and improved during the period from 1996 to 2015 in Tanzania. From the appendix number 4, the study shows the

marginal annual export performance for the sub divided ten periods (1996-2005) and (2006-2015) were increased, where the Tanzania export marginal annual performance export were -7.723% in the first ten years interval of (1996 - 2005) while the amount increased in the second ten years interval (2006 - 2015) to become 0.393%. While the Tanzania industries manufacturing sector annual average marginal performance also increased from 0% during the first ten years interval (1996 - 2005) to become 4.664% in the second period of the ten years interval (2006 -2015) in Tanzania.

Appendix 3: From the Word Bank data indicators, the following are data for the Tanzania Export and manufacturing sector export during the period from 1996 to 2015 in Tanzania. Where Y stands for the year, T-EXP stands for the Tanzania Export, and MI-EXP stands for the manufacturing sector export.

Y	T-EXP	MI-EXP
1995	24.075	0
1996	19.937	0
1997	16.218	0
1998	10.025	0
1999	10.163	0
2000	10.809	0
2001	13.832	0
2002	14.277	0
2003	15.088	0
2004	16.04	0
2005	16.983	0
2006	18.415	0
2007	19.831	0
2008	19.465	2.229
2009	18.194	3.486
2010	19.608	3.868
2011	21.634	5.904
2012	22.372	11.35
2013	19.012	6.722
2014	18.069	3.387
2015	17.105	0.853

Appendix 4: From appendix number 3, the following table shows the marginal average annual export performance for Tanzania export and the manufacturing sector export during the period from 1996 to 2015 in Tanzania. Where Y stands for the year, T-EXP stands for the Tanzania export and MI-EXP stands for the manufacturing sector export.

Y	T-EXP	AV1	AV2	MI-EXP	AV1	AV2
1995						
1996	-17.19					
1997	-18.65					
1998	-38.19	-13.258			0	
1999	1.38					
2000	6.36					
			-1.723			0
2001	27.97					
2002	3.22					
2003	5.68	9.812			0	
2004	6.31					
2005	5.88					
2006	8.43					
2007	7.69					
2008	-1.85	3.102			13.472	
2009	-6.53			56.4		
2010	7.77			10.96		
			0.393			4.664
2011	10.33			52.64		
2012	3.41			92.24		
2013	-15.02	-2.316		-40.78	-4.144	
2014	-4.96			-50		
2015	-5.34			-74.82		

The Correlation between Tanzania Export and the Manufacturing Sector Export

The present study to find the correlation between the Tanzania Export and the manufacturing sector Export assumes the Tanzania Export to be a dependent variable while the manufacturing sector Export to be an independent variable.

The findings of the study reveal the positive and meaningful relationship between Tanzania Export and manufacturing sector Export. The regression outcome shows the coefficient of 0.7197, which means for every additional increase in manufacturing sector export similarly, the Tanzania export increased by 0.7197 points (Table number 1 below).

Table: Regression Results Between Tanzania Export and Manufacturing sector Export during the Period from 1996 to 2015

V	CT	SD	T	P
SR	0.7197	0.2150	3.3475	0
C	15.49			0
R2	0.3816			
AR	0.3472			
SER	2.8982			
NOB = 20				

Origin: Regression results from Appendix number 3

Where V is Variable, CT is Coefficient, C is Constant, SD is the Standard Deviation, T is T-Statistic, P is Probability, SR is Slope of the regression line, R2 is R-Squared, AR is Adjusted R-Square, SER is Standard Error of Estimation NOB is number of Observation.

Hypothesis Test for the Correlation between Tanzania Export And Manufacturing Sector (Industry) Export

From the regression calculations, the study assumes Tanzania Export to be the dependent variable while the Manufacturing sector (Industry) Export to be an independent variable. Regarding the regression calculation results, The study finds the least-squares regression line is

Y = 15.49 + 0.7197 X

The study finds the standard deviation is 0. 2150

From the above equation, b is 0.7197, and because it is positive means greater than zero not to accept the null hypothesis instead accept the alternative hypothesis.

Null and Alternative Hypothesis

Ho : B = 0

H1 : B > 0

Thus, The Test Statistic t0.01;(20-2) = 2.552

Rejection Part of Ho is t values of 2.552 or greater than. Given t< 2.552, the null hypothesis may not be declined. From the Regression results t =b/sb = 3.3475

=3.3475>2.552

The meaning is there significant evidence of the relationship between Tanzania Exports and the Manufacturing Export is strongly positive.

Productivity of the Tanzania Industries Employment

The study applied the employment labor force and found the annual average productivity of employed labor force within the Tanzania industries to assess the marginal productivity of industries during the period from 1996 to 2015 in Tanzania. The World Bank data given data manifests the Tanzania employment declined from 84.023% in the year of 1996 to 81.627% in the year of 2015. While the situation is different from the manufacturing sector, where employment increased from 5.474% in the year of 1996 to 12.79% in the year of 2015. Concerning the annual average employment labor force, Tanzania's annual average employment recorded -0.084%, which means there was a decrease of the marginal employment labor force annually by the amount of 0.084% for Tanzania. While the manufacturing sector annual average employment labour force recorded the amount of 4.5375% which means the manufacturing sector marginal annual employment labour force was increased by the amount of 4.5375% during the period from 1996 to 2015 in Tanzania. Regarding the four sub divided periods the annual average marginal productivity Tanzania recorded 0.286% (1996-2000), 0.212% (2001-2005), -0.332% (2006-2010) and -0.502% (2011-2015). While manufacturing sector the annual average marginal productivity for the four sub divided periods recorded 1.39% (1996-2000), 11.242% (2001-2005), 2.932% (2006-2010) and 2.586% (2011-2015).

The study findings discovered the deterioration of the marginal employment labor force for both Tanzania employment and Tanzania industries in the manufacturing sector during the period from 1996 to 2015 in Tanzania. Reference from the study appendix number six, particularly for the two separated interval time from the first ten years interval (1996-2005) to the second ten years interval (2006-2015). For the first ten years interval, Tanzania's employment recorded 0.249% (1996-2005), where the figure declined to the second ten years interval to -0.417% (2006-2015). Similarly to the manufacturing sector where the marginal employment labor force also declined from the amount of 6.316% during the first ten years interval (1996-2005) to 2.759%

during the second ten years interval (2006-2015) in Tanzania.

Appendix 5: From the World Bank Data indicators. The following are the Tanzania employment and manufacturing sector employment data during the period from 1996 to 2015 in Tanzania. Where Y is the year, T-EMP is the Tanzania employment, and MI-EMP is the manufacturing sector employment.

Y	T-EMP	MI-EM
1995	84.022	5.396
1996	84.023	5.474
1997	84.071	5.529
1998	84.222	5.668
1999	84.132	5.745
2000	84.228	5.781
2001	84.36	5.891
2002	84.469	6.735
2003	84.676	7.679
2004	84.889	8.644
2005	85.12	9.801
2006	85.49	10.964
2007	85.587	11.156
2008	85.397	11.332
2009	84.746	11.126
2011	82.723	11.663
2012	82.252	11.525
2013	81.782	11.963
2014	81.652	12.337
2015	81.627	12.79

Appendix 6: From appendix number 5. The following Table shows the annual average marginal employment labor force for Tanzania employment and the manufacturing sector employment during the period from 1996 to 2015 in Tanzania. Where Y is the year, T-EMPL is the Tanzania employment, and MI-EMP is the Manufacturing sector employment.

Y	T-EMPL	AV1	AV2	MI-EMP	AV1	AV2
1995						
1996	1.19			1.45		
1997	0.06			1		
1998	0.18	0.286		2.51	1.39	
1999	-0.11			1.36		
2000	0.11			0.63		
2001	0.16		0.249	1.9		6.316
2002	0.13			14.33		
2003	0.25	0.212		14.02	11.242	
2004	0.25			12.57		
2005	0.27			13.39		
2006	0.43			11.87		
2007	0.11			1.75		
2008	-0.22	-0.332		1.58	2.932	
2009	-0.76			-1.82		
2010	-1.22			1.28		
			-0.417			2.759
2011	-1.18			3.51		
2012	-0.57			-1.18		
2013	-0.57	-0.502		3.8	2.586	
2014	-0.16			3.13		
2015	-0.03			3.67		

The Correlation between Tanzania Employment and the Manufacturing Sector EmploymenT

The present study to find the correlation between the Tanzania Employment and the manufacturing sector Employment assumes the Tanzania Employment stands as a dependent variable while the manufacturing sector Employment stands as an independent variable.

The findings of the study reveal the negative and insignificant relationship between Tanzania Employment and manufacturing sector Employment.

Table: Regression Results Between Tanzania Employment and Manufacturing Sector Employment during the period from 1996 to 2015

V	CT	SD	T	P
SR	-0.1736	0.1130	-1.5358	0
C	85.55			
R2	0.1355			
AR	0.0875			
SER	1.3599			
NOB = 20				

Origin: Regression results from Appendix number 5
Where V is Variable, CT is Coefficient, C is Constant, SD is the Standard Deviation, T is T-Statistic, P is Probability, SR is Slope of the regression line, R2

is R-Squared, AR is Adjusted R-Square, SER is Standard Error of Estimation NOB is number of Observation.

Hypothesis Test for the Correlation Between Tanzania Employment and Manufacturing Sector (Industry) Employment

From the regression calculations, the study assumes Tanzania's employment to be the dependent variable while the Manufacturing sector (Industry) Employment to be an independent variable. Concerning the regression results, the study outcome regression line is:

Y = 85.55 - 0.1736X

While the study standard deviation is 0.1130

Regarding the above equation, b is -0.1736, and because it is negative means less than zero accept null hypothesis while not accepting the alternative hypothesis.

Null and Alternative Hypothesis

Ho : B = 0

H1 : B < 0

Thus, The Test Statistic t0.01 (20-2) = 2.552

Rejection Part of Ho is t values of 2.552 or less than.

From the regression results

t = b/sb = -1.5358

= -1.5358< 2.552

The meaning is there significant evidence of the relationship between Tanzania Employment and the Manufacturing Employment is strongly Negative.

Summary of the Findings

The results of the investigation were catching up with the attention. The findings of the study reveal that the performance of the Tanzania industries is positive and meaningful, while the labor force productivity is negative and insignificant during the period from 1996 to 2015 in Tanzania.

Limitation of the Study

Due to the absence of the present time data, the study did not manifest the performance and productivity of the Tanzania industries during the period from 2016 to 2020. This is the opportunity for the future and further studies to investigate the performance and productivity of the Tanzania industries from the year of 2016 onwards.

Conclusion and Recommendation

The present study was undertaken to investigate the performance and productivity of the Tanzania industries during the period from 1996 to 2015 in Tanzania.

The findings of the study reveal that the performance of the Tanzania industries is positive and meaningful, while the labor force productivity is negative and insignificant during the period from 1996 to 2015 in Tanzania.

Recommendation

Because labor force productivity for the Tanzania industries is negative and meaningless during the period from 1996 to 2015 in Tanzania, the Tanzania Government must review industrial policies and industrial employment policies guide to picture out the true obstacles for the deterioration of the productive labor force and suggesting the proper measures to overcome those challenges. The Tanzania Government should also consider to handle and eliminate the problem of high labor mobility in the manufacturing sector for the sustainable productivity and growth of the Tanzania industries.

Further study on this area must be done particularly to investigate the performance and productivity of the Tanzania industries through the other macroeconomic variables such as the initial production of industries, revenue, investment, and capital from the time industrial policies were launched and started to be implemented in the year of 1996.

For the sustainable industries' performance and productivity, the Tanzania Government should make great support to the private sector to pilot the manufacturing sector through providing a favorable environment for the investment, including creating the new industrial bank with the low interest and very long term loans specifically to the manufacturing sector.

The Tanzania Government should as well invest more in research, innovation, and new technology as the top priority to enhance the performance and productivity of the Tanzania industries.

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References

Africa Development Bank Tanzania Country Report, 2014.

Africa Development Group Report 2020, Tanzania Economic Outlook.

Country Partnership Framework for the United Republic of Tanzania, The World Bank, 2018.

Darkoh, M.B.K. "Tanzania's Industrial Development and Planning Experience." *Journal of Eastern African Research and Development*, vol. 14, 1984, pp. 47-80.

Goedhuys, M., Janz, N. and Mohnen. P. "What Drives Productivity in Tanzania Manufacturing Firms: Technology or Institutions?" 2006.

Kahyarara, G. "Market Competition and Performance of Tanzania Manufacturing." *Journal of Business and Economics*, vol. 4, no. 1, 2013, pp. 86-103.

Mbelle, A.V.Y. *Productivity Performance in Developing Countries*, Country Case Study - Tanzania, 2005.

Mbelle, A.V.Y. *The Manufacturing Sector in Tanzania*, Confederation of Tanzania Industries (CTI) and Confederation of Danish Industries, 2000.

Msami. J. and Wangwe. S. "Industrial Development in Tanzania." *Manufacturing Transformation: Comparative Studies of Industrial Development in Africa and Emerging Asia*, 2016, pp. 155-173.

Page, J. "Industry in Tanzania: Performance, Prospects, and Public Policy." *WIDER Working Paper No. 2016/5*, 2016.

Prins, M. and Schulte, W. *Tanzania Manufacturing Performance in Comparative Perspective*, GGDC Research Memorandum, 2002.

Szirmai. A. and Lapperre., P. *The Industrial Experience of Tanzania,* Palgrave Macmillan, 2001.

Tanzania Industry, Tanzania Invest, 2019, https://www.tanzaniainvest.com/industry.

Tanzania Ministry of Industry and Trade Report, 2011.

Vellore Arthi. "Not your average job: Measuring farm labor in Tanzania." *Journal of Development Economics*, vol. 130, 2018, pp. 160-172.

Wangwe. S. et al. "The Performance of the Manufacturing Sector in Tanzania: Challenges and the Way Forward." *WIDER Working Paper 2014/085*, 2014.

Xinshen Diao. et al. "Small Firms, Structural Change and Labor Productivity Growth in Africa: Evidence from Tanzania." *World Development*, vol. 105, 2018, pp. 400-415.

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