FACTORS CONTRIBUTING TO TRANSFORMATION PROCESS IN KENYA'S MANUFACTURING SECTOR

Fatores que contribuem para o processo de transformação no setor de fabricação do Quênia

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Abstract: Kenya's manufacturing sector provides a clear footing in industrialization advancement. However, the sector is faced with challenges in its efforts to build a competitive manufacturing base as well as cultivating business and industrial environs. Therefore, the paper intends to ascertain factors contributing to manufacturing sector transformation process and its position in Kenya's economic growth. We analyze annual data for the period 1975-2017. The findings of this study using time series regression analysis confirms that new investments by manufacturing sector to credit issuance by financial institutions and commercial banks ratio, labor involvement to output to manufacturing output ratio, value addition output to manufacturing output ratio positively contributes to transformation of Kenya's manufacturing sector and Economic Growth. The study also reveals that lack of political good will during election period does affect manufacturing sector operations. The study recommends manufacturing sector to embrace innovation concept and technological advancements for betterment of operational efficiency and effectiveness.

Key words: Manufacturing sector; Transformation; Kenya; Economic growth

FATORES QUE CONTRIBUEM PARA O PROCESSO DE TRANSFORMAÇÃO NO SETOR DE FABRICAÇÃO DO QUÊNIA

Factors contributing to transformation process in kenya's manufacturing sector

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Resumo: O setor manufatureiro do Quênia fornece uma base clara no avanço da industrialização. No entanto, o setor enfrenta desafios em seus esforços para construir uma base de fabricação competitiva, além de cultivar ambientes comerciais e industriais. Portanto, o artigo pretende verificar os fatores que contribuem para o processo de transformação do setor manufatureiro e sua posição no crescimento econômico do Quênia. Analisamos dados anuais para o período 1975-2017. As conclusões deste estudo, utilizando a análise de regressão de séries temporais, confirmam que novos investimentos do setor manufatureiro para emissão de crédito por instituições financeiras e bancos comerciais, participação do trabalho na produção e produção, produção de valor agregado na produção contribuem positivamente para a transformação do Quênia. setor manufatureiro e crescimento econômico. O estudo também revela que a falta de boa vontade política durante o período eleitoral afeta as operações do setor manufatureiro. O estudo recomenda que o setor de manufatura adote o conceito de inovação e os avanços tecnológicos para melhorar a eficiência e eficácia operacional.

Palavras-Chave: Setor manufatureiro; Transformação; Quênia; Crescimento econômico

1 Introduction

Manufacturing Sector is very essential in industrial revolution and growth for any given economy. Transformation has not been easy for manufacturing firms in developing countries (Marival Segarra-Oña et al., 2016; Navas Antonio, 2014; Beckmann B. et al., 2016) due to lack of capability to innovate and adopt technological advancements. The world economy at large has been influenced by competition at both national and international level whereby each firm tends to fight for a better position (Jacob Chege et al., 2016; Reischauer G., 2018).

The growth and structure of manufacturing sector has not provided even level playing field for its investors due to unrealistic policies (Odhiambo Walter, 1991; Rioba Martin E. 2013; Yash Mehta, A. John Rajan, 2017). However, facts provided by Kenya National Bureau of Statistics (KNBS) have showed how the manufacturing sectorial activities contribute to Kenya's Gross Domestic Product. In 2017, there was a tremendous deceleration on industrial contribution to GDP; hence service-oriented sectors seemed to contribute more to Kenya's overall economic growth. For the manufacturing sector to be revived and become main contributor of economy, strategies towards long-term sustainability are vital.

According to Kenya National Bureau of Statistics report Kenya has witnessed varied performance in the manufacturing sector which is largely associated to lack of total commitment and proper resources allocation towards industrial development (Rioba Martin E., 2014; Aaron Atteridge, Nina Weitz, 2017). Navas Antonio argued that market competition for manufactured products do dictate transformations in manufacturing firms that depend on innovation (Schumpeter, 1934; Helena Forsman, 2011; Heredia Pérez et al., 2018). Mendi P., Mudida R. highlighted how past informalities affect innovation in Kenya's firms which still proves a major challenge for firms transforming from informal to formal classification. Mendi P., Mudida R. research failed to put more weight on fund availability as an enabler of innovation implementation in firms while (Rioba Martin E., 2013; Jacob Chege, 2016) found out how unfriendly Kenya's reform policies towards manufacturing sector transformation were.

It is therefore evident that past studies have given emphasis on innovation concept and policy implementation in manufacturing firms excluding attention towards manufacturing sector new investments, manufacturing productivity, value addition, mode of financing and labour productivity regardless of political situation. With inclusion of innovation and technological advancements, the study aims at ascertaining the factors leading to major transformations in Kenya's manufacturing sector since independence before and after multi-party democratic system of governance.

2 Manufacturing Sector Developments

Agricultural activities are considered to be main contributors of GDP for Least Developing Countries (LDCs). In Kenya, agricultural sector is the number one contributor of country's GDP (KNBS, 2018) but is currently faced with challenges, such as, global warming leading to adverse climate change, natural calamities and bio-diversity loss.

To exit low-income status, manufacturing sector development is considered to be a likely alternative (Olamide Oguntonye, Steve Evans, 2017).

Innovation concept cannot be ignored, if sectorial development in LDCs is to be achieved (J. J. Wakeford et al., 2017; Ueasangkomsate P., Jankkot A., 2017; Beckmann B. et al., 2016; Mendi P., Mudida R., 2017). Through innovated systems, competition at firm, sector, national, and international levels is boosted. It is through innovation that manufacturing firms are able to do away with traditional methods or processes of production by embracing science, technology and creativity (Helena Forsman, 2011; Heredia Pérez et al., 2018).

Proper resource allocation is also of significance in manufacturing development through optimal input allocation (Zhang Xun et al., 2017; W-C. Lee, S-S. Wang, 2017) hence, increased output, reduced waste reduction and increased efficiency in production (Konstantinos Salonitis, Christos Tsinopoulos, 2016). Infrastructural development especially capital investments, technological advancements, state-of-the-art equipment, skilled

labour and R&D need to be given priority through allocation of necessary funding towards their successful implementation (Ueasangkomsate P., Jankkot A., 2017; Yash Mehta, A. John Rajan, 2017).

Political goodwill is another aspect that cannot be ignored. Corruption in LDCs is one major challenge towards realization of industrialization through manufacturing development (Mijiyawa A. G., 2017). LDCs' governments and democratic processes should provide favourable manufacturing environment by supporting right policies and discouraging slow and tedious bureaucracies (Navas Antonio, 2014).

Last but not least, financial structures are crucial in manufacturing development. Financial institutions and commercial banks play key role in ensuring credit is allocated to most industrious manufacturing firms. Also, it is ideal to financially support Small and Medium Enterprises (SMEs) in the manufacturing sectors (Hoxha Indrit, 2013) that are characterized by weak R&D and incapacity to innovate (Helena Forsman, 2011). Findings have proved how degree of competition in banking sector does have an impact on external financing towards manufacturing sector whereby, industrialized countries are largely dominated by monopolistic banking competition. (Munacinga Simatele, 2015).

Therefore, agenda by Kenya government to revitalize of the manufacturing sector is ambitious priority towards industrial development, job creation for youth as well as boosting of local and overseas market accessibility for its products (KNBS, 2018). It is evident from the literature review above that with proper resource allocation, labour productivity, implementation of innovation towards value addition, availability of external financing and presence of political good do play part in various transformations in manufacturing sector.

3 Econometric Modeling

The research model is based on Ordinary Least Square Principle (OLSP) in efforts to determine effects of manufacturing transformation on economic growth using Eviews10. Secondary data for dependent, independent and control variables was from KNBS for the years between 1975 and 2017. The model specification is based on the function below;

$$EG=F(IF, LQ, VQ, P) \tag{1}$$

The estimation time series linear equation; econometric model is then written as follows;

$$EG=\beta_0+\beta_1 IF+\beta_2 LQ+\beta_3 VQ+\beta_4 P+\varepsilon \tag{2}$$

Where, Measure for economic growth (EG) is the dependent variable represented by real GDP growth rate while independent variables are; new investments by manufacturing sector to credit issuance by financial institutions and commercial banks ratio (IF), labour involvement to output to manufacturing output ratio (LQ), value addition output to manufacturing output ratio (VQ) and political good will (P) is a dummy variable used to capture election and campaign period during the study period. ε is the error term. β_0, β_1, β_2, β_3 and β_4 are OLS estimators.

In dealing with data deviations due to changes in respect to time, logarithms are introduced to equation 2.

$$LogEG=\beta_0+\beta_1 logIF+\beta_2 logLQ+\beta_3 logVQ+\beta_4 P+\varepsilon \tag{3}$$

The OLS estimators are expected to give desired properties; Best Linear Unbiased Estimators (BLUE), consistent, normal distribution of residuals among other time series properties for the variables.

4 Statistical Results

The empirical analysis commenced by conducting unit root tests through Augmented Dickey-Fuller (ADF) test that confirmed that all variables except EG and P were stationary after first differencing. By comparing Test Statistic Value (TSV) and Test Critical Value (TCV) for each variable as shown in Table 1 at 5% significance level, inferences for Unit Root Test are also indicated. **Table 1 Stationary Test through ADF**

Variables	Test for Unit Root	Include in Test Equation	ADF(TSV)	ADF(TCV)	Inference
LogEG	Level	Intercept	-4.7869	-2.9331	Stationary
LogEG	ΔLevel	Intercept	-8.7767	-2.9350	Stationary
LogIF	Level	Intercept	-2.1524	-2.3201	Non-Stationary
LogIF	ΔLevel	Intercept	-9.1895	-0.5498	Stationary
LogLQ	Level	Intercept	-0.105	-1.4387	Non-Stationary
LogLQ	ΔLevel	Intercept	-6.3834	-3.5407	Stationary

LogVQ	Level	Intercept	-0.9448	-0.9492	Non-Stationary
LogVQ	ΔLevel	Intercept	-6.8178	-0.2871	Stationary
P	Level	Intercept	-5.9819	2.9389	Stationary
P	ΔLevel	Intercept	-9.9352	2.9411	Stationary

Source: Computed by Author Using Eviews10 Software

Table 2 Johansen Co-Integration Tests

		Trace Test		Maximum Eigenvalue	
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Max-Eigen Statistic	0.05 Critical Value
None	0.777924	113.0488*	69.81889*	61.69424*	33.87687*
At Most 1	0.439511	51.35436*	47.85613*	23.73681	27.58434
At Most 2	0.336632	27.61775	29.79707	16.82742	21.13162
At Most 3	0.226709	10.79034	15.49471	10.54111	14.26461
At Most 4	0.006060	0.249223	3.841466	0.249223	3.841466

Source: Computed by Author Using Eviews10 Software
* Denotes rejection of the hypothesis at the 0.05 level

Further, the study also rejects the null hypothesis of no co-integration at 5% significance level. Table 2 shows Johansen Co-integration tests for both Trace and Maximum Eigenvalue. From Table 2 Trace test indicates two co-integrating equations while maximum Eigenvalue indicates one co-integrating equation at the 5% level of significance. However, the study fails to reject the null hypothesis for at Most 2, 3, 4 for Trace value and at Most 1, 2,3 and 4 for Maximum Eigenvalue since respective statistics values are less than critical values at 5% significance level. The results therefore confirms existence of long run relationship among EG, IF, LQ, VQ and P with co-integrating relationship as shown in Table 3.

Table 3 Result of the Long Run Economic Growth Model (Standard Error in Parenthesis)

LogEG	LogIF	LogLQ	LogVQ	P
1.00000	-0.12958	0.131533	0.214848	-11.9001
	(0.63912)	(0.44997)	(1.1663)	(1.1267)

Source: Eviews10 Output

Through regression analysis, Table 4 provides values for estimation equation in the short run with EG as the Dependent Variable. The results indicate that all independent variables except Political goodwill have positive impact on countries economic growth. Unit increase in value addition output to manufacturing output ratio increases economic growth by 0.61. Unit increase in labour productivity increases EG by 0.29 while unit allocation of financial credit to new manufacturing investments contributing 0.1 increase in EG. Meanwhile, lack of political goodwill especially during election and campaign period have negative impact on EG.

Table 4 Short Run Estimate Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.016107	0.056471	0.285212	0.0077
LogIF	0.097172	0.399759	0.359289	0.0011
LogLQ	0.285607	0.298577	7.889552	0.0001
LogVQ	0.612050	0.213054	6.034190	0.0000
P	-0.002351	0.132970	4.602904	0.0002
R-squared	0.675512	Mean dependent var		0.008781
Adjusted R-squared	0.660422	S.D. dependent var		1.933834

S.E. of regression	2.403313	Durbin-Watson stat	2.188528
F-statistic	58.02126		
Prob(F-statistic)	0.000000		

Source: Eviews10 Output

The R-Squared results in Table 4 also indicates that the variables in question contributes 67.55% to economic growth while 32.45 takes care of other variables not factored in this study.

5 Conclusion

In conclusion, based on research findings above, Kenya's manufacturing sector plays a big role in growth of the country's economy though it's has not reached its peak. It's obvious, with ongoing industrial uprising in Kenya and other developing countries whose economies largely depend on agriculture, more transformations are yet to be witnessed. With innovation and technological advancements, manufacturing outputs will be through efficient and effective operations and quality aspect will not be compromised.

Political environment seems to have impact on manufacturing firms' operations. Therefore, political goodwill need to be embraced especially during electioneering period. From the study, it's is evident that during general election periods, manufacturing outputs, new annual investments as well as credit issuance by financial institutions are sluggish hence a negative impact on manufacturing activities contributing to GDP and Kenya's overall economic growth.

Kenya's manufacturing sector is the leading in East and Central Africa, as a result, other countries in Sub-Saharan Africa have developed a greater interest towards Kenya. With the recent signing of African Free Trade Area Agreement and manufacturing revitalization pillar under ―Big Four‖ agenda, the government and the private sector under Kenya Association of Manufactures alliance need to collaboratively work as team by formulating policies, channeling more resources in support of R&D, investment in state-of-the-art equipment and technological advancements in efforts to ensure the manufacturing sector continues to transform in an accelerating manner.

Further, the research recommends that the management of local manufacturing firms embrace the innovation culture in their internal structures in efforts to promote local sector competition as well as meeting global competition standards. In terms of labour productivity, the manufacturing sector need to be in the forefront in ensuring its maximum outputs are met at minimum costs without interfering with its socio-economic role.

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