TECHNO PATRONAGE AND INDUSTRIALIZATION IMPERATIVES IN DEVELOPING COUNTRIES: EXAMINING INDIGENOUS TECHNOLOGY STIMULATION IN NIGERIA

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Abstract

Nigeria like most African countries has been clamouring for industrialization ostensibly through public policies for over five decades without success. Can there be sustainable industrialization without deep-rooted indigenous productive forces? This paper, therefore, examines the rate of patronage and stimulation of indigenous technologies in Nigeria between 2010 and 2013. What is the comparative budget for indigenous technology development in Nigeria? Did the 2011 National Policy on Science, Technology and Innovation (STI) stimulate the growth of indigenous technologies in Nigeria? Has Nigeria recorded tangible positive changes in major stages of its technological development? Is Nigeria producing and exporting as much as what it is consuming and importing? This article specifically seeks: (i) how much the Nigerian national government has budgeted for indigenous technology development compared to other sub-sectors and developed economies (2010-2013); (ii) the growth rate of indigenous technologies in Nigeria since the new National Policy on STI (2011); (iii) the tangible changes in major stages of scientific development; and (iii) the production (export) and consumption (import) rates in Nigeria (2010-2013). Using the theory of Political Modernization and the Observation Method, the paper argued that industrialization is a function of ingrained homegrown productive forces. Thus, Nigeria's dream to be among the top twenty industrialized nations of the World by the year 2020 cannot be achieved without deliberate development and utilization of indigenous productive forces.

Keywords: *Techno Patronage, Industrialization Imperatives, Developing Countries, Indigenous Technology, Homegrown Productive Forces and Stimulation.*

Introduction

Technology is as old as human existence. It is a precursor to man's activities for survival through the ages. Technology emanated from the era of stones and fruit gathering / hunting. Three significant stages are discernible in the history of technology. These include the stage of using simple tools (agrarian technology), the stage of mechanized tools (industrial technology), and the stage of automation tools (post-industrial technology). As the role of man changes in every era and stage of technology, so as the chances of a country's actualization of its vision of industrialization and attendant sustainable development changes based on such country's efforts at a particular period to develop its frontiers of intellectual property towards meeting the dynamics of technology. As Gendron (1977:32) simply put it that, the technology of an agrarian society is devoted mainly to the production of foodstuffs, while that of industrial societies is devoted mainly to the production of manufactured goods, and that of post-industrial societies is primarily devoted to the production of services as in the areas of education and health, predominantly.

The main driver of industrialization and / or economic growth in the post-industrial era as projected by industrialized nations that Nigeria is dreaming to becoming one of twenty of such nations by the year 2020 is, increased human expertise. As earlier professed by some erudite scholars of

technology, economic growth and public policy, that though increases in capital and labour were the major contributors to economic growth at the height of the industrial revolution, increased education and knowledge are now the new major contributors to economic growth (Nelson and Kalachek, 1967:45; and Shapiro 1970:460-465). This implies that a nation's vision of industrialization without conscious efforts for human capital development to boost indigenous productive forces is as good as a pipedream. No wonder, about seven years to the time limit, Nigeria's vision 20:2020 is already shifting ground as key officials of the federal government have started laying foundations of escape tarmacs. In a statement credited to the Minister of Planning (Dr. Shamsudeen Usman), and the Governor of Central Bank (Malam, Sanusi Lamido), The Guardian Newspaper (April 25, 2013:1-2) reported that, "Nigeria may not be one of the 20 most developed economies in the World in 2020".

The failure or success of Nigeria's vision 20:2020, therefore, is largely a function of the degree of techno patronage by Nigeria's ruling class. Of a fact, Itua (2011:1) was apt as he argued that the development of science is critical to the attainment of the vision 20:2020, but at present the national approach to the development of science in secondary and tertiary institutions is poor. Ibidapo-Obe (Former Vice-Chancellor, University of Lagos) also confirmed that, science forms the basic root of national development because it is predictive, precise, logical and value-free for national development (see Itua 2011:1). Reagan (1969:10-15) also argued that since the state owns and controls all resources in the country, government should provide the necessary tool for technological advancement to reduce scarcity and promote industrialization. This underscores America's position as one of the nations in the fast lane of post-industrialism. The federal government of U.S.A was as conscious as possible as far back as 1968 to be a major patron of science and technology for providing two-thirds of all research and Development (R&D) funds expended in U.S and sponsors 75% of university research (Reagan 1969:7). It is bothersome, therefore, that more than five decades after the United States of America sent its scientists to the moon for techno breakthroughs Nigeria and most developing countries are still busy importing machetes and other agrarian tools for farming. All consumer durables, automobile, premium motor spirit, generators, and so on, used in every nook and cranny of Nigeria are imported. Itua (2011:1) concluded that, there is a gross negligence on the part of the federal government on which the onus of technology development lies. For a country to be industrialized, technology and politics, therefore, are expected to be in a reciprocal relationship. It is this reciprocal relation of politics and technology with specific reference to the extent of government stimulation of indigenous technologies in Nigeria that this paper interrogates.

Operational definition of key concepts

The following key concepts in this paper deserve clarification:

(i) Techno Patronage
(ii) Industrialization Imperatives
(iii) Developing Countries
(iv) Indigenous Technology
(v) Homegrown Productive Forces
(vi) Stimulation

(i) Techno Patronage: - This refers to the support, sponsorship and investment on science and technology by government for the overall development of a country. Techno here is coined to denote science and technology.

(ii) Industrialization Imperatives: - In this article, Industrialization Imperatives refer to the essentials and/or drivers of economic development viz: technology, capital, and

above all human expertise.

(Iii) Developing Countries: - This refers to the less-developed countries in Asia, Africa and Latin America. In Africa, for instance, Cameroun, Chad, Congo, Cote d' Ivoire, Ghana, Madagascar, Malawi, Mali, Mauritania, Niger, Nigeria, Rwanda, and so on.

(iv) Indigenous Technology: - In this study Indigenous Technologies refer to the home-made tools, products and values of Nigerians through their own knowledge. The term indigenous, therefore, is used in this paper broader than ethnic and the central distinguishing element of tribal/non-tribal people that co-exist in a single state. It encompasses both the material and non-material tools of labour of Nigerians from time immemorial, viz:

(a) Communal labour and trade by barter such as group farming, group fishing, group hunting, group construction of shelters, group canoe carving, group lumbering, and so on;

(b) Home-made agricultural implements such as hoes, machetes, knives, Dane guns/gun powders, hunting guns, arrows, traps, climbing ropes, climbing ladders, etc, and home-grown agricultural technologies such as production of tree crops e.g. oil palm, coconut, raffia palm, cocoa, cotton, bush mango, mango, soap and pomade-making, etc. Andfood crops such as yam, cassava, maize, cocoyam, sweet potato, sugar cane, plantain, groundnut, etc. Also livestock such as pigs, goats, sheep, dogs, cats, fowls, etc. And marine resources such as fisheries, shrimps, water snails, etc;

(c) Indigenous music/dance such as cultural dances (agene, ogele, awigiri), masquerade dance, etc. Indigenous musical instruments such as the talking drum, small drums, the proclaiming drum, the gong, hand piano, horns, wooden flutes, etc. Cultural sports such as wrestling, swimming, canoe racing, boat regatta, tug of war, etc. Home-made art works/crafts such as raffia works, ceramics works, bronze works, ivory works, potteries, wooden chairs/tables, canerope/stick chairs/tables, bamboo beds, mats, chairs/tables, wooden face masks; and textile works such as hides/skin abrics, bamboo fabrics, raffia fabrics, cotton fabrics, etc. And indigenous dressing such as the wrapper tying, the wooden walking stick, the hat for men, the double wrapper and the head tie (the egele) for women and

(d) Home-made fishing implements such as canoe, paddles (male/female), raffia-rope and bamboo fish traps/containers (ekou, egogo, igen,bomu, akere, ado, etc), and fishing technologies such as fishing screen (the fence technique), drag net, throwing net, floating net,stagnated netting, etc; and indigenous commerce such as intra/inter village/tribal trading through canoes/feeder roads, and so and so forth.

(v) Homegrown Productive Forces: - The word Homegrown is used in this article as a synonym to Indigenous. Thus, Homegrown Productive Forces denote Nigeria's technological know-how (human expertise) and capital flow (financial resources) without foreign dependence.

(Vi) Stimulation: - In this paper, Stimulation refers to the encouragement, inspiration and promotion of indigenous technologies in Nigeria.

The problematic

According to Gendron (1977:30-38), industrialization is a function of the level of productivity, principal product, principal factor of production, organization of production, role of the worker, and the type of instrument in a country. After five decades of political independence, Nigeria's economy is still struggling between agrarian and industrial, not to talk of post-industrial. There seems to be no harmony between Nigerians traditional values and modern values on one hand, and on the other hand, there is no understanding between Nigeria's ruling class and the ruled on which way forward in the march to industrialization. The earlier Nigeria's Vision 2010 failed with little or no lessons learnt by the Nigerian ruling class. A new national policy on science, technology and innovation (STI) was published in September, 2011, ostensibly to retool and retract Nigeria for industrialization. As President Jonathan revealed in the Statement of Commitment on the new policy of STI thus:

We are going to run our economy based on science and technology…because nowhere in this World now that you can move your economy without science and technology. For the next 4 years we will emphasize so much on science and technology because we have no choice, without that we are just dreaming (STI Policy 2011:1). In spite of President Jonathan's statement of commitment, Vision 20:2020 is also misted up with confusion and the reverberation of failure is fast unmasking. While the United States of America started consolidating the government-technology-public relationship in the late sixties (Reagan 1969:12), Nigeria is at the foundation stage of statement of commitment (President Jonathan, as in STI Policy 2011:1) and yet to establish the complex but fruitful relationship between politics and technology for economic growth. As Thurow (1999:7-12) rightly pointed out that, the old foundations of success are gone. In the past, according to him, the source of human success has been the control of natural resources – land, gold, oil, and so on, but now, the answer is 'knowledge'. He made reference to Bill Gates, the World's richest (wealthiest) man as owning nothing tangible – no land, no gold or oil, no factories, no industrial processes, no armies. And that for the first time in human history, the World's richest man owns only 'knowledge'. Thurow (1999:12) concluded that, the central issue in a knowledge-driven economy is 'how a country controls its own knowledge'. The problematic of this article, therefore, can there be sustainable industrialization in Nigeria without deliberate development and utilization of deep-rooted indigenous human expertise? Thus, to guide its enquiry on techno patronage and industrialization in developing countries with reference to stimulation of indigenous technologies in Nigeria between 2010 and 2013, the paper raised the following measurable units of question:

(i) What is the comparative budget for indigenous technology development in Nigeria?

(ii) Did the 2011 National Policy on Science, Technology and Innovation (STI) stimulate the growth of indigenous technologies in Nigeria?

(iii) Has Nigeria recorded tangible positive changes in major stages of its technological development?

(iv) Is Nigeria producing and exporting as much as what it is consuming and importing? As a result, the article specifically seeks:

a. How much the Nigerian national government has budgeted for indigenous technology development between 2010 and 2013 compared to other sub-sectors and developed economies.
b. The growth rate of indigenous technologies in Nigeria since the new National Policy on STI (2011).
c. The tangible changes in major stages of scientific development in Nigeria.
d. The production (export) and consumption (import) rates in Nigeria (2010-2013).

This is done within the context of the Nigerian political modernization theoretical perspective.

Conceptual / theoretical framework

On the issue of techno patronage and industrialization, all the authors reviewed pointed to the fact that the development of science, technology and innovation (STI) is central in the drive to industrialization. As identified by the Vision 2020 Technical Work Group on STI (2009:14), amongst the key challenges to making STI drive industrialization in Nigeria is funding of research and development (R&D) which is the most outstanding issue that requires government intervention. According to the Work Group, Nigeria ranks amongst the lowest in STI funding with 0.01%, India (2.5%) of GDP, Germany (2.8%) of GDP, U.S.A (2.8%) of GDP, Russia (5%) of GDP, and so on. The Vision 2020 Technical Work Group (2009:30-31), therefore, confirmed that the major driver of industrialization in the United Kingdom, U.S.A, Japan, Brazil, Korea, China, India, and so on, is technological advancement. And that it is through technological development that countries can double their per capita output. The Work Group remarked that newly developed countries recognized that the foundation for industrialization is science, technology and innovation. In sum, the Nigeria Vision 2020 Technical Work Group (2009:31) aptly concluded that a clear vision and focused STI policy backed by honesty and commitment in the political leadership of developed countries is highly instructive to Nigeria and other developing countries in Africa, Asia and Latin America.

President Obama (2012:86) in his 2013 budgetary speech confirmed the provision of $7bn for the National Science Foundation (NSF), which was calculated as 16% increase over the previous budget. According to him, it is part of his plan for science and innovation. The U.S President further stated that there will be increased support for the education of technicians in high-technology fields that drive the nation's economy. He concluded that investment in science and technology fosters economic growth, creates millions of high-tech, high-wage jobs that allow American workers to lead the World economy, improve the quality of life for all Americans, and strengthen national security.

Itua (2012:1-2) also contended that if Nigeria is prepared to be amongst the twenty most industrialized economies in the World by the year 2020, then priority attention must be taken by government to fund science, technology and innovation. The new Nigerian Science, Technology and Innovation Policy (2011:2), while recognizing inadequacy of previous STI policies in Nigeria, such as the STI policies of 1986, 1997, and 2003 noted that, one notable feature of the new policy is the emphasis on 'Innovation', which has become a global tool for fast-tracking sustainable development…and that, the new policy is a clear demonstration of Nigeria's renewed commitment to ensure that R&D

patronages stimulate new business breakthrough, create employment opportunities, and create wealth amongst others. Consequently, as the entire extant literature reviewed above and the ones earlier reflected on in the introductory section of this article viz: (Gendron 1977:32; Nelson and Kalachek, 1967:45; and Shapiro 1970:460-465; Reagan 1969:7; and Thurow 1999:7-12), pointed to an inextricable link between mindful technological development and industrialization, the main task of this paper is to find out how realistic these pointers are in Nigeria as it affects the efforts of the ruling class between 2010 and 2013 (with the introduction of a new STI Policy in 2011) towards the actualization of vision 20:2020 i.e. Nigeria to become at least the twentieth industrialized nation-state in the World. Since virtually all the examples of countries that employed STI as the predominant tool for industrialization were foreign, a case study on Nigeria, therefore, is imperative. It is only after an empirical analysis of the Nigerian political leaders' efforts towards the use of STI to drive economic growth that we can hold forth on who and/or what to blame for Nigeria's long gestation period of industrialization after political independence from Britain in 1960. Thus, this is the major gap this paper attempts to fill.

Theoretical perspective

The paper adopts the Theory of Political Modernization as its theoretical framework for analysis. There are many perspectives that make up modernisation theory. However, while there are common strands within these perspectives, there is no 'monolithic structure' (Hulme & Turner 1990:39). The central idea of Political Modernisation is that after political independence, developing countries should be on the way towards establishing an ideal type European or Western model of democratic state to pursue economic growth. Political Modernisation, therefore, reflects the ability to bring about change by way of politics through an emerging indigenous ruling class. It is also an evolving research area which looks at political development in mostly developing countries, holistically. Political development is a project of both academics and policy–makers. The Theory of Political Modernization, hence, is a product of decolonization which provided a fertile ground for the transfer of an 'ideology of modernization'. Proponents of the Theory of Political Modernization include: Osei (2013) in his work, Political Modernization: Modernization Theory and Third World Development, Gendron (1977) in his work, Technology and the Human Condition, Tornquist (1999) in his work, Politics and Development; Leftwich (2000) in his work, States of Development: On the Primacy of Politics in Development; Hulme and Turner (1990) in their work, Sociology of Development; Smith (1996) in his work, Third World Politics; and so on.

The main assumptions of the Political Modernization Theory that are relevant to this study include:

a) That, the introduction of informational technology, the stress on human expertise, the perfection of planning techniques, and the trend towards automation creates new opportunities for the growth of productivity and hence, technological growth. Unprecedented high rate of technological growth, therefore, is the pivot to industrialization and attendant post-industrialization (Gendron 1977:38).

b) That, progressive continuity involved two sets of transformations: (i) Increased

complexity; and (ii) Greater specialisation in human organisation and activity in the socio-economic and political spheres (Osei 2013:6).

c) That, in the Mid-20th Century, political modernisation placed emphasis on two things, (i) universal vs. ascription criteria in governance: - i.e. ascribed status is contrasted with achieved status.

(ii) Secularisation: The divide between 'traditional' and 'modern' (Osei 2013:6).

d) That, if politics is about 'the authoritative allocation of values', political modernisation is about tackling the issue of how to manage development, (Easton 1965).

e) That, economic development should embrace the global diffusion of many technical and social innovations that are essential to modernization (Rogers 1962).

g) That, literacy and cultural development help to arouse a 'state of mind' favorable to modernity, e.g. the imagination of an alternative way of life beyond the traditional way.

That, national identity development in new nations (former colonies) and attention to democratic policies (elections) stimulate industrialization (University of Twente 2013:1).

That, in the process of political modernization, there is a clash of Western and non-Western cultures of the world and a World that is both falling apart and coming together (Barber 1996).

That, the process of modernization involves a combination of unification and fragmentation in society (Meyrowitz 1993 ;Dijk 1991; and 1999).

It is against the above theoretical foundation that this paper poses the following propositions for empirical verification:

(i) The higher the patronage for indigenous technology development by Nigeria's ruling class, the higher the chances of becoming an industrialized nation.

(ii) The more conscious the Nigerian ruling class over Nigeria's technological backwardness and underutilization of its abundant natural resources, the better the pursuit of industrialization in a fast unifying World with lopsided human and natural resources.

(iii) As far as Nigeria consumes more than what it produces in the global arena, visions of industrialization will continue to fail in Nigeria.

Based on the assumptions of the Theory of Political Modernization and the foregoing propositions, it is hereby hypothesized that:

(i) If the comparative budgets for STI in Nigeria between 2010 and 2013 is low, government's patronage for indigenous technology is likely low.

(ii) If the 2011 National Policy on Science, Technology and Innovation (STI) is not properly implemented, the growth rate of indigenous technologies in Nigeria between 2010 and 2013 will be likely low.

(iii) If government's patronage for indigenous technology is low, tangible positive changes in major stages of technological development will be likely low.

(iv) If Nigeria is consuming more than what it is producing, the growth

rate of indigenous technologies is likely low.

Methodology

This paper employs a quasi-quantitative method. As a result, the observation method is used for the collection of primary and secondary data. Relevant books, official documents, journals, newspapers, the internet, and so on were consulted. Primary data were also gathered from a sample of 60 respondents selected from the Nigerian population of herbal medicine producers, arts/crafts producers, fishing/farming implements producers, indigenous fabric makers, and producers of ceramics products. All to find out through observation/personal interviews: (a) the comparative budget for STI in Nigeria between 2010 and 2013; (b) the access to government funding by indigenous producers of traditional articles of trade from the inception of the new STI Policy in 2011 to 2013; (c) the growth rate of indigenous technologies in Nigeria between 2010 and 2013; (d) the export and import rates in Nigeria between 2010 and 2013; and so on. Finally, the simple percentage method and tabular presentations were used to analyze both the primary and secondary data collected from the field.

Discussion of findings

We now present and discuss our findings by way of answering the research questions and testing the hypotheses.

Science, Technology and Innovation Budgets in Nigeria (2010-2013)

On the issue of how much patronage the Nigerian ruling class gave to Science, Technology and Innovation (STI) in pursuit of industrialization between 2010 and 2013, four-year budgetary provisions for five key sectors in Nigeria's economy were observed. Table 1 depicts the low attention given to the most vital sector for industrialization i.e. STI.

Table 1: Key Sectors of 2010-2013 Budgets of Nigeria (In Billion/Trillion Naira)

Year	Security	Education	Health	Agriculture	Science, Tech. & Innovation
2010	448bn	249bn	162bn	148bn	26bn
2011	1trn	489bn	339bn	139bn	28bn
2012	921bn	400bn	283bn	80bn	31bn
2013	1trn	427bn	279bn	81bn	32bn

Sources: Budget Office, Nigeria (2013); and Field Work (2013)

It is observed from the above data that STI received the lowest vote through the four year period (2010-2013) under review, whilst security received the highest vote throughout the period. The irony here could be likened to the biblical standard of 'penny wise, pound foolish'. Instead of investing on science, technology and innovation that have the potency to resolve domestic security problems, Nigeria now spends whooping sums of naira and kobo on national security that brings no tangible returns to stimulate economic growth and attendant industrialization. President Obama's 2013 budgetary speech earlier quoted in this paper, therefore, is apt, insightful and instructive to Nigeria as he concluded that; "…investment in science and technology fosters economic growth, creates millions of

high-tech, high-wage jobs that allow American workers to lead the World economy, improve the quality of life for all Americans, and strengthen national security". In spite of America's long years of attaining the status of industrialization (since 1886 i.e. 127 years ago), U.S is still consistently voting $7bn (N1.092trn equivalent) to science, technology and innovation as maintenance and improvement budget for STI on top of an average of $65bn for general education for the past four years (2010-2013). This is evident in Table 2.

Table 2: Key Sectors of 2010-2013 Budgets of U.S.A (In USD)

Year	Education	Health	Agriculture	Science, Tech. & Innovation
2010	47bn	77bn	26bn	7bn
2011	68bn	77bn	23.2bn	7bn
2012	67bn	76bn	23.7bn	7bn
2013	70bn	76.4bn	23.0bn	7.4bn

Source: U.S. Office of Management & Budget (2013)

Table 2 also depicts four key sectors of 2010-2013 budgets in the United States of America. Comparatively, while USA is budgeting as high as an average of $7bn (N1trn) for STI, Nigeria that is still creeping to catch the twentieth position in the global train of industrialization by the year 2020, is budgeting as paltry as an average sum of N25bn ($160.1m). This is in contradistinction with the claims of the new STI policy of Nigeria and the global order of industrialization. It is observed from the insights of President Obama that in STI there is skill, employment, poverty eradication and attendant national security. This is evident in the widespread argument that, the main causes of the Nigerian Boko Haram insurgency include illiteracy, unemployment and poverty. This explains why the N1trn budget per annum for security in Nigeria for the past four years (2010-2013) has not provided answers to the Boko Haram sectarian violence. It is clear that the high budgetary provision for security in Nigeria is only symbolic but not tangible as it will only have window-dressing effects on the security challenges in the country. Besides, in the midst of low budgeting for STI in Nigeria between 2010 and 2013, were the indigenous technicians, handicraft men, herbal medicine producers, fishing/farming implements producers, indigenous fabric makers, and producers of ceramics products benefit from the piecemeal STI budgets? Thus, the sample of 60 respondents selected from the aforementioned Nigerian population was observed through personal interviews. Table 3 depicts the responses/experiences of indigenous technologists.

Table 3: Responses from Indigenous Handwork Population

S/N	Variable	High	Medium	Low	No Idea	Total Respondents
1.	As a self-employed and handicraft person i n Nigeria, how would you rate your benefits from the STI federal Budgets of 2010-2013?	0 (0%)	2 (3%)	16 (27%)	42 (70%)	60 (100%)
2.	How would you rate government's real patronage in terms of encouraging you to produce through homegrown technologies between 2010 and 2013?	1(%)	1 (%)	56 (93%)	3 (8%)	60 (100%
4.	How well your products have been competitive in the global market between (2010 -2013)?	4 (7%)	7 (12%)	48 (80%)	1 (2%)	60(100%)

Source: Field Study (2013)

Table 3 depicts the low government funding of indigenous technologies and products in Nigeria. Worse still, 42% of respondents confessed that they do not have even the slightest idea of budgetary provision for indigenous technologies. And 93% rated government's patronage in terms of encouragement of indigenous technologies through funding and training as low. Also, 80% of respondents rated the competitiveness of products of indigenous technologies in the international market as low. How did these affect the growth of indigenous technologies in Nigeria between 2010 and 2013? This we now turn to.

Growth Rate of Indigenous Technologies in Nigeria (2010-2013)

In the absence of proper funding of science, technology and innovation as clearly demonstrated above, the growth of indigenous technologies were stunted in Nigeria within the period under review and this affects the process of industrialization. Nigeria has a lot of products of indigenous technology but rely on foreign goods to survive, thereby rendering its intellectual property, as it affects 'creativity and innovation', useless. Some of such products of indigenous technology and/or others that can be produced locally as export earners are captured in Table 4.

AGRICTURAL PRODUCTS
COCOA

Cocoa beans light crop
Cocoa beans main crop
Cocoa butter
Cocoa cake

GUM ARABIC
Gum Arabic grade 1
Gum Arabic grade 2
Gum Arabic grade 3

EDIBLE NUTS
Cashew nut (Raw)
And kernels
Walnuts (in shell)
MEDICINA HERBS
Wide indigo
Neem,
Papain,
Garlic,
Lemon grass,
Aloe Vera,
VEGETABLES
Asparagus, Beans,
Baby corn,
Beetroot, sprout, carrot
Cauliflowers, curettes,
Cucumbers, garlic,
karalla, leek, Lettuce,
mange tout, mushroom,
Okra, onions, peas
potatoes, Radish,
spinach, tinder,
ediaeval,
(lemon grass) red &
white sorrel,
(Herbaceous sabdariffa)
Dehydrated vegetables.

HORTICULTURAL PRODUCTS
SPICES
Chilies (funtua small)
Ginger
(Dried, peeled, split)
Pepper
(Black and
White cloves)
Nutmeg (unsorted)
HORTICULTURAL PRODUCTS
FRUT
Avocados, Apricots,
Bananas, grape fruit
Guava (white & Pink)
Lemons, mangoes,
lemon.
(Water), orange,
pawpaw .
peaches,
pineapples,
plantains
strawberries
tomatoes, passion fruits
CRUDE DRUG
Kola nut (dried)
Kola nut (fresh)
Quincy seed
(Bitter kola)
CUT FLOWERS
Roses
PAPER & PAPER PRODUCTS
Poster paper
Print paper coated / impregnated,
Kraft liner in rolls or in sheets,
Paper board,
Card board

SEMI MANUFACTURE PRODUCTS/OTHERS
Processed H.I Brown
Grade 16|20, 21|25, 26|36, 31|35, 36|50, 51|60, 61|70, 71|90, 91|100, 110 & above
H.IWHITE 8|12, 12|15, 26|36, 31|35, 36|50, 51|60, 61|70, 71|90, 91|100, 110, etc

RUBBERS
Grade RSS1, RSS2, RSS3, TRS5L, NSR5L, WL5L, CL5L, TSR5, NSR10, WL 5, CK 5, TSR 10, NSR 10, WL 10, CL10, TSR 10, TSR20, NSR 20,MX3

OTHERS
Coconut (desiccated)
Cow Horns/bone/hoofs
Soya Beans
Coconut (flesh)
Copra
Shea nut
Coffee Arabic
Coffee Robusta,
Sesame seed,
Yam, etc.

MANUFACTURED PRODUCTS
COTTON PRODUCTS
Cotton thread,
Cotton grey cloth,
Textiles fabric,
Tapestry cloth,
cotton bag & bags,
Towels, absorbent cotton wool,
Cotton yarn,

READY MADE GARMENTS
Adire batiks wears,
Suits, shirts, safari coats,
Trousers, costume & fashion,
Children wears,
bubo,
Beach wears,

TEXTILE PRODUCTS
Cotton super print (African print)
Cotton real wax,
Cotton sheet, bedspread & sheets
Mosquito nets, table covers, linens,
Furnishing articles, napkins, Pillow cases
FINISHED LEATHER
Goats, sheep & leather
GRADE (standard, medium &lining)

PETROLEUM &PETROCHEMICAL PRODUCTS
Liquefied gas, petroleum jelly,
Bitumen, steam coal, PVC
Carbon black, polypropylene,
Polythene bags, paraffin & Wax,
aviation fuel, motor Spirit, lubricants
insecticides

CHEMICALS
Borax (anhydrate & decanhydrate)
Alcohol, ammonium nitride,
Acetic acid, benzene, butadiene,
Glycerin, methanol, photograph
Chemicals, magnesium carbonate,
Hydrochloric acid, hydrogen peroxide
Caustic soda, phenol, sulphuric acid,
Toluene yeast

FERTILIZERS
Urea, Nitro Phosphate,
Calcium Ammonium Nitrate,
Super phosphate

FOOTWEARS & LEATHER PRODUCTS
Foot wears,
Leather sandals,
Leather slippers,
Leather foot wear,
Canvas shoes,
Leather folders & bags
Shoes,
Shoes soles,
Belts
Men's shoes
Ladies shoes
Children shoes
PLASTIC & PLASTIC PRODUCTS
Plastic house wares, chairs,
Tables & house furniture,
Pharmaceutical packaging,
Shoes & slippers, poly bags,
Storage tanks & containers
TEXTILES SECONDRY ACCESSORIES
Zippers, Fasteners,
Buttons
CANVAS GOODS
Tents, tarpaulins,
Carpet & rugs,
Other floor covering,
Canvas shoes

AUTHOMOBILES PARTS
Brake pads & linings
Batteries & casings
Auto cables mirrors,
Tubes & tyres, rubber
Mats, headlights &side
Lights, fan belts

IRON & STEEL PRODUCTS
Machine tools,
Industrial parts
Wires & cables for telegram,
Cables & wire for electrical installation,
Galvanized pipes,
Nails,
Screws, nuts etc,
Corrugated Iron sheets,
Aluminum sheet,
Zinc alloys,
Iron sheets, bars,
Rods, gas cylinder & cookers
Mini cooker:
Cookers – single
Cookers – double

STATIONERIES
Paper bag, boxes etc,
Paper for packaging,
Packaging containers,
Envelopes, wall papers,
Writing pads,
Paper stationeries,
Registers,
Diaries, file covers,
Paper toiletries

Source: Azeez (2012), http://www.thethyglobalexport.com.ng, Retrieved April 30, 2013

Table 4 clearly shows the indigenous wealth of Nigeria that is wasting away. The implication is long gestation period for industrialization. It is only when a good number of the above export earners are properly harnessed and consistently maintained that Nigeria's gross domestic product (GDP) will rise and attendant industrialization as in other industrialized countries in the World. It was also observed during field study that it takes more years for countries to be industrialized during the transition from agrarian era to the industrialized period and at same time it takes countries with conscious political leadership a shorter period to be industrialized in the ongoing transition period from industrialized to post-industrialized. This is captured in Table 5.

Table 5: Global Trends on Industrialization Periods in Selected Countries

S/N	Country	Year of Independence	Period of Industrialization	Years Taken to Industrialize	Remarks
1.	United Kingdom	N/A	1780-1836	58yrs	Industrialized
2.	U.S.A	1776	1839-1886	47yrs	Industrialized
3.	Japan	N/A	1885-1919	39yrs	Industrialized
4.	Brazil	1822	1961-1979	18yrs	Industrialized
5.	Republic of Korea	1945	1960-1977	11yrs	Industrialized
6.	China	1912	1977-1987	10yrs	Industrialized
7.	Nigeria	1960	1970-Date	Over 42yrs	Still Searching

Sources: Adapted from the Report of Vision 2020 Tech. Working Group (2009); and Field Study (2013)

It is becoming clearer from Table 5 that Nigeria's problem of industrialization is largely a function of weak political will amongst successive indigenous ruling classes. It is observed in Table 5 that it takes the Republic of Korea which is a former colony of Japan only 11 'conscious' years to become industrialized in the post-industrialized era. Also, it takes China only 10 years to become industrialized. Conversely, Nigeria started pursuing industrialization 42 years ago after political independence and attendant oil boom in early 1970s, but is still searching. Thus, Nigeria has the natural, financial and human resources to pursue sustainable economic growth but the right political leadership that will exhibit the required 'political will' to harness the right resources to drive industrialization is the greatest missing link in Nigeria's ostensible struggle for industrialization. This is likely to make Nigeria consume more (imports) from the global market than what it produces (exports) which is a permanent state of dependency. This we now turn to.

Export and Import Rate in Nigeria (2010 – 2013)

A comparative analysis of the consumption and production rate of Nigeria in terms of exports and imports showed that Nigeria is constantly living on imports. A census of exports and imports between Nigeria and United States of America showed shocking results. Every unit of export from Nigeria to U.S.A attracts an average of triple dozes of imports from U.S to Nigeria. The implication is that Nigeria pumps in more money to the U.S economy than U.S. does to Nigeria thereby creating a constant the poor-gets-poorer-and-the-rich-gets-richer economic relationship between Nigeria as a developing country and U.S.A as a developed country. Table 6 depicts this lopsided export-import relation.

Table 6: Value of Goods Traded between the U.S. and Nigeria in Dollars (2010-2012)

2010 Exports – Imports b/w Nigeria and United States of America	2011 Exports –Imports b/w Nigeria and United States of America	2012 Exports –Imports b/w Nigeria and United States of America
In 2010-01-01, $2,084,079,411 USD of goods was imported by the US from Nigeria, and $221,778,877 USD of goods was exported from the US to Nigeria. In 2010 -02-01, $2,033,382,217 USD of goods was imported by t he US from Nigeria, and $310,772,233 USD of goods was exported from the US to Nigeria. In 2010 -03-01, $2,251,303,312 USD of goods was imported by the US from Nigeria, and $495,587,584 USD of goods was exported from the US to Nigeria. In 2010-04-01, $2,927, 508,759 USD of goods was imported by the US from Nigeria, and $322,740,356 USD of goods was exported from the US to Nigeria. In 2010 -05-01, $2,495,679,040 USD of goods was imported by the US from Nigeria, and $338,872,572 USD of goods was exported from the US to Nigeria. In 2010 -06-01, $2,409,045,748 USD of goods was imported by the US from Nigeria, and $309,818,444 USD of goods was exported from the US to Nigeria. In 2010-07-01, $2,691,102,614 USD of goods was imported by the US from Nigeria, and $291,327,956 USD of goods was exported from the US to Nigeria. In 2010 -08-01, $2,849,378,620 USD of goods was imported by the US from Nigeria, and $285,964,726 USD of goods was exported from the US to Nigeria. In 2010 -09-01, $2,467,147,949 USD of goods was imported by the US from Nigeria, and $351,947,528 USD of goods was exported from the US to Nigeria. In 2010-10-01, $2,433,483,179 USD of goods was imported by the US from Nigeria, and $365,125,187 USD of goods was exported from the US to Nigeria. In 2010 -11-01, $2 ,220,357,245 USD of goods was imported by the US from Nigeria, and $365,177,201 USD of goods was exported from the US to Nigeria. In 2010 -12-01, $3,114,663,150 USD of goods was imported by the US from Nigeria, and $380,598,243 USD of goods was exported from the US to Nigeria.	In 2011-01-01, $2,657,728,604 USD of goods was imported by the US from Nigeria, and $269,038,699 USD of goods was exported from the US to Nigeria. In 2011 -02-01, $2,583,854,120 USD of goods was imported by the US from Nigeria, and $331,412,851 USD of goods was exported from the US to Nigeria. In 2011 -03-01, $3,122,216,071 USD of goods was imported by the US from Nigeria, and $489,022,331 USD of goods was exported from the U S to Nigeria. In 2011-04-01, $3,002,518,394 USD of goods was imported by the US from Nigeria, and $397,074,448 USD of goods was exported from the US to Nigeria. In 2011 -05-01, $2,710,740,493 USD of goods was imported by the US from Nigeria, and $504,317,28 1 USD of goods was exported from the US to Nigeria. In 2011 -06-01, $3,916,582,283 USD of goods was imported by the US from Nigeria, and $365,070,452 USD of goods was exported from the US to Nigeria. In 2011-07-01, $3,413,368,206 USD of goods was imported b y the US from Nigeria, and $380,085,600 USD of goods was exported from the US to Nigeria. In 2011 -08-01, $2,914,641,605 USD of goods was imported by the US from Nigeria, and $387,546,762 USD of goods was exported from the US to Nigeria. In 2011 -09-01, $2,558,953,913 USD of goods was imported by the US from Nigeria, and $472,894,694 USD of goods was exported from the US to Nigeria. In 2011-10-01, $2,522,303,407 USD of goods was imported by the US from Nigeria, and $364,733,988 USD of goods was exported from the US to Nigeria. In 2011 -11-01, $2,436,926,586 USD of goods was imported by the US from Nigeria, and $376,200,728 USD of goods was exported from the US to Nigeria. In 2011 -12-01, $1,994,754,070 USD of goods was imported by the US from Nigeria, and $477,9 06,451 USD of goods was exported from the US to Nigeria.	In 2012-01-01, $1,507,857,650 USD of goods was imported by the US from Nigeria, and $305,621,534 USD of goods was exported from the US to Nigeria. In 2012 -02-01, $1,019,019,871 USD of goods was imported by the US from Nigeria, and $320,728,660 USD of goods was exported from the US to Nigeria. In 2012 -03-01, $1,523,723,459 USD of goods was imported by the US from Nigeria, and $419,470,915 USD of goods was exported from the US to Nigeria. In 2012-04-01, $2,124,825,187 USD of goods was imported by the US from Nigeria, and $428,407,749 USD of goods was exported from the US to Nigeria. In 2012 -05-01, $2,216,099,158 USD of goods was imported by the US from Nigeria, and $574,596,671 USD of goods was exported from the US to Nigeria. In 2012 -06-01, $1,467,498,305 USD of goods was imported by the US from Nigeria, and $413,252,320 USD of goods was exported from the US to Nigeria. In 2012-07-01, $1,206 ,314,809 USD of goods was imported by the US from Nigeria, and $380,138,880 USD of goods was exported from the US to Nigeria. In 2012 -08-01, $1,610,729,421 USD of goods was imported by the US from Nigeria, and $437,731,681 USD of goods was exported from th e US to Nigeria. In 2012 -09-01, $1,495,196,183 USD of goods was imported by the US from Nigeria, and $440,774,817 USD of goods was exported from the US to Nigeria. In 2012-10-01, $1,707,823,145 USD of goods was imported by the US from Nigeria, and $467,639,574 USD of goods was exported from the US to Nigeria. In 2012 -11-01, $1,806,579,927 USD of goods was imported by the US from Nigeria, and $386,669,734 USD of goods was exported from the US to Nigeria. In 2012 -12-01, $1,394,732,438 USD of goods was importe d by the US from Nigeria, and $539,063,116 USD of goods was exported from the US to Nigeria.

Sources: Panjiva (2013), http://www.panjiva.com , Retrieved April 30, 2013; and Field Work (2013)

Table 6 is a big eye opener for Nigeria if we are willing to change the status quo. A poorer economy feeding a richer economy is the greatest undoing to Nigeria's pursuit of industrialization. Even in the oil sector that Nigeria is known globally as one of the biggest producers, Nigeria is still running at loss due to underdevelopment of indigenous productive forces (technology and capital). This implies that Nigeria as an oil-producing country is only producing for producing sake. Table 7 depicts this ugly state.

Table 7: Three Top Exports and Imports b/w Nigeria and U.S. in Dollars

S/N	3 Top Products Imported from Nigeria to the U.S.	3 Top Products Exported to Nigeria from the U.S.
1.	$1,389,718,921 of Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes.	$172,530,250 of Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes.
2.	$2,053,059 of Special classification divisions.	$93,150,998 of Vehicles other than railway or tramway rolling stock, and parts and accessories thereof.
3.	$1,112,042 of Cocoa and cocoa preparations	$80,149,501 of Cereals.

Sources: Panjiva (2013), http://www.panjiva.com , Retrieved April 30, 2013; and Field Work (2013)

Summary of findings

It is clear from the findings of this paper as depicted in Tables 1-7 above that: (i) government's patronage for indigenous technology in Nigeria is very low as shown in the comparative budgets for STI between 2010 and 2013; (ii) the brand new 2011 National Policy on Science, Technology and Innovation (STI) has not been properly implemented and as such, the growth rate of indigenous technologies in Nigeria between 2010 and 2013 is phenomenally low; (iii) government's attention on technology development in Nigeria is still low, and as such, tangible positive changes in major stages of technological advancement are yet to be recorded; and (iv) Nigeria consumes (imports) far more than what it produces (exports), and as such, gets poorer day-in-day-out in spite of its oil-producing fame.

Conclusion

Based on the findings above, the paper, in line with its theoretical foundation (Theory of Political Modernization), argued that industrialization is a function of ingrained homegrown productive forces. Thus, Nigeria's dream to be among the top twenty industrialized nations of the World by the year 2020 cannot be achieved without deliberate development and utilization of indigenous productive forces through conscious effort in advancement of science, technology and innovation (STI).

Policy implications

In line with the findings and conclusion above, the paper recommends thus:

a. Governments at all levels in Nigeria and other developing countries should rededicate efforts on STI and drastically improve on their current budgetary provisions for the development of the science, technology and innovation sub-sector as key to industrialization.

b. The Nigerian ruling class should effectively implement the new 2011 STI policy with a view to harnessing indigenous technologies and all relevant resources for possible industrialization of the country, come 2020.

c. A strategy to map out different stages of development is required to monitor the advancement of major stages of technology in Nigeria and other developing countries.

d. Deliberate appreciation and patronage for products of indigenous technology is required to check the existing lopsided export-import relationship between Nigeria and U.S and/or developing countries and developed countries.

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