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CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1.	ROLE OF IT IN COMMERCE EDUCATION IN INDIA: A KEY TO ACHIEVE INCLUSIVE GROWTH AND SUSTAINABILITY <i>DR. SONAL SHARMA & DR. M. K. SINGH</i>	1
2.	AGRIBUSINESS POTENTIAL IMPACT OF HORTICULTURE CROPS: AN AGRICULTURAL ECONOMIC ANALYSIS OF CASHEW NUT IN TAMIL NADU <i>DR. R. LOGANATHAN & DR. M. CHANDRASEKARAN</i>	8
3.	REAL IMPACT OF IMPACT FACTOR RESEARCH JOURNALS ON RESEARCH PAPERS <i>SHUBHANGI JAIN & DR. PRATEEK SHARMA</i>	13
4.	GREEN CONSUMERISM: AWARENESS OF ENVIRONMENTAL ISSUES AMONG CONSUMERS IN TAMILNADU <i>DR. K. SALEEM KHAN, DR. A. MOHAMED SALI & K. SHARIFA NIZARA</i>	21
5.	REFINED HR SCENARIO IN INDIAN IT INDUSTRY <i>U. JEYASUTHARSAN & DR. N. RAJASEKAR</i>	27
6.	AN ANALYSIS OF FACTORS AFFECTING POST-HARVESTING FOOD LOSS IN PERISHABLE CHAIN <i>N. ARUNFRED & DR. D. KINSLIN</i>	32
7.	ANALYSIS OF LIQUIDITY AND PROFITABILITY IN TEXTILE INDUSTRY IN INDIA <i>DR. T. MADHU SUDANA & DR. B. PHANISWARA RAJU</i>	35
8.	TECHNOLOGICAL DEVELOPMENTS IN INDIAN BANKING SECTOR <i>N. SURESH BABU & DR. G.V. CHALAM</i>	43
9.	FOREIGN DIRECT INVESTMENT IN MULTIBRAND RETAILING IN INDIA: FROM STAKEHOLDERS PERSPECTIVES <i>DR. P. SANTHI</i>	48
10.	COMPARATIVE STUDY OF IMAGE ENHANCEMENT TECHNIQUES <i>SANJEEV KUMAR & NAVNEET GOLCHHA</i>	53
11.	IMPLEMENTATION OF SHORTEST PATH ALGORITHM FOR RECTILINEAR STEINER TREE PROBLEM <i>SAKSHI RAJPUT</i>	57
12.	A STUDY ON FAST MOVING CONSUMER GOODS MARKETING WITH SPECIAL REFERENCE TO SAKTHI MASALA PRODUCTS <i>R. BUVANESWARI, B. BHARATHI & MAHALAKSHMI VENKATESH</i>	61
13.	A STUDY ON CONSUMER BEHAVIOUR TOWARDS RETAIL STORES WITH REFERENCE TO BIG BAZAAR IN COIMBATORE CITY <i>B. DEVIPRIYA & DR. M. NANDHINI</i>	64
14.	ROLE OF MARKET ORIENTATION IN PERFORMANCE OF SMALL-SCALE INDUSTRIES: A STUDY OF UNISOPENT PVT. LTD. <i>NISHU MARWAH</i>	67
15.	STRATEGIC THINKING: A KEY FOR COMPETITIVENESS IN SMALL BUSINESS OPERATING IN NIGERIA <i>ONYEAGHALA OBIOMA, H. & UKPATA, SUNDAY IJUO</i>	70
16.	IS SMALL SCALE IRRIGATION A SOLUTION FOR ALLEVIATING RURAL POVERTY IN TIGRAY? (CASE STUDY IN HINTALLO WAJIRAT) <i>TEFERA KEBEDE LEYU</i>	77
17.	ENVIRONMENTAL CORRELATES OF SCIENCE, TECHNICAL, VOCATIONAL AND BUSINESS EDUCATION FOR ECONOMIC TRANSFORMATION IN NIGERIA <i>UKPATA, SUNDAY IJUO & DR. ONYEUKWU, PAULINE EBERE</i>	85
18.	EMPLOYEES PERCEPTION TOWARDS HRD CLIMATE IN THE BANKING SECTOR: A CASE STUDY OF JAMMU AND KASHMIR BANK <i>RAFIA GULZAR</i>	90
19.	POVERTY REDUCTION: A PREDICATE OF HUMAN CAPACITY DEVELOPMENT IN NIGERIA <i>ONYEAGHALA, OBIOMA, H., KAPPE, MAMMAN, P. & DIBAL, HYLADI STANLEY</i>	95
20.	A STUDY ON LEADERSHIP STYLES OF SELECTED ENGINEERING UNITS LOCATED IN GIDC, VITTHAL UDYOGNAGAR, GUJARAT <i>SAMIR P RATHOD & MEHUL J MISTRY</i>	101
21.	ADOPTION OF THE TECHNOLOGY ACCEPTANCE MODEL TO DETERMINE THE FACTORS THAT DRIVE TO SHOP ONLINE <i>ANKUR SANGWAN</i>	107
22.	TO ASSESS THE EFFECT OF INTELLECTUAL CAPITAL ON ORGANIZATIONAL PERFORMANCE IN THE MANUFACTURING SECTOR <i>JOHN WEKESA WANJALA</i>	113
23.	THE ANALYSIS AND DERIVATION OF A NEW FRAMEWORK TO INVEST IN GOLD <i>ANKUR SANGWAN</i>	119
24.	THE FINANCIAL STATEMENT ANALYSIS OF TAMIL NADU NEWSPRINT AND PAPERS LIMITED, KARUR <i>OMBEGA OGUTA KEPHAR</i>	127
25.	NATURAL RESOURCE AND CIVIL WARS: A CRITICAL ANALYSIS <i>SIDDHARTH RATHORE</i>	136
26.	EMERGENCE OF HEDGE FUNDS: IMPLICATIONS ON THE INDIAN CAPITAL MARKET <i>ANINDITA CHAKRAVORTY</i>	140
27.	TRAINING AND DEVELOPMENT PROGRAMMES IN TAMILNADU STATE TRANSPORT CORPORATION LIMITED, KUMBAKONAM <i>D. PAUL DHINAKARAN</i>	146
28.	INDIGENIZATION OF MILITARY HARDWARE: A NECESSITY FOR INDIA? <i>SIDDHARTH RATHORE</i>	150
29.	A STUDY ON THE STATUS OF FACULTY DEVELOPMENT ACTIVITIES IN ENGINEERING INSTITUTIONS <i>S. MURALI</i>	153
30.	WIRELESS MONITORING AND RECORDING OF ENVIRONMENTAL PARAMETERS BASED ON XBEE AND PIC <i>ARAVIND.S</i>	158
	REQUEST FOR FEEDBACK & DISCLAIMER	163

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ENVIRONMENTAL CORRELATES OF SCIENCE, TECHNICAL, VOCATIONAL AND BUSINESS EDUCATION FOR ECONOMIC TRANSFORMATION IN NIGERIA

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ABUJA

ABSTRACT

This paper evaluates critical issues surrounding the environmental correlates of science, technical, vocational and business education that are germane for economic revitalization and transformation in Nigeria in the current dispensation of world economic turbulence. The specific objective of the study is to determine what environmental correlates impact positively or negatively on science, technical, vocational and business education in Nigeria and what remedial measures are available in order to ensure total economic transformation. The study adopted the use of descriptive survey method through the administration of structured questionnaire to elicit data from 20 respondents selected from amongst the staff and students of the Government Technical and Vocational College Wukari, Taraba State. T- Test statistical tool was used to test our research hypothesis. And the result revealed that there is a statistically significant relationship between environmental correlates such as government policies, culture, social norms and economic transformation through science, technical, vocational and business education. Similarly, there exist an orthogonal relationship between the perceptions of the Nigerian Publics and Government policy thrust on issues of science, technical, vocational and business education generally that contradict the concept of economic development. The study therefore recommends the formulation of policy instrument that would serve as catalyst for encouraging and gingering both parents and students towards learning of science and skill acquisition through vocational, technical and business education.

KEYWORDS

Correlates, Skill Acquisition, Myths Of Learning, Science Education, Environment & Development.

INTRODUCTION

Reponderance of evidences pointed to the fact that, economic transformation in any nation has never taken place outside the development of the nation's human resources through technical, vocational and science education – achievement of which demands deliberate efforts from both the government and private sector partnership. And as the global shift towards using the information communication technology as major service delivery-enabler becomes more like having enough blood in human body, so also is the need for science, technical, vocational and business education becomes the orthogonal demand-drivers to put technology into working in daily human existence. This implies that the country either have it to exist or, does not have it – leading to its extinction from human race. As had been captured by the Federal Ministry of Education (FME, 2010) on National Policy on Information and Communication Technologies (ICT) in education:

Attainment of qualitative education requires improving on teaching, learning and educational administration. This in turn requires introducing ICT into the educational system, for it is common knowledge, globally, that the latter plays a vital role in promoting such an improvement. Similarly, advances in Information and Communication Technologies (ICT) have made the world a global village and are transforming the world economy presenting challenges that were hitherto unthought-of. Nigeria aspires to attain sustainable development and enhance global competitiveness, a status that requires innovations especially in the development of human capital. There is no gainsaying the fact is that, ICT has become sine qua non in bringing these about.

From the foregoing perception, of the policy thrust document of the FME (2010), it is crystal clear that the major driver of the global economic transformation is the ICT and vocational, technical, science and business education which serve as key channels through which this can be achieved.

Our present study is revealing that, most technical staff engaged and piloting the operations in most of the computer business centers and numerous cyber cafes are those trained from technical, vocational and business education from polytechnics, monotechnics and other related private training institutions around. This implies that there is need for government legislation to strengthen the certificates obtained from these institutions – which is what this paper seeks to examine.

STATEMENT OF THE PROBLEM

Major problem confronting this study is the existence of an orthogonal relationship between the perceptions of the Nigerian Publics and Government policy thrust on issues of science, technical, vocational and business education generally that contradict the concept of economic development. Whereas, government advocates for improvement on technical, vocational and business education as a main thrust for economic revitalization, the same government will issue policy documents that strongly discourage or prohibit the general public from sending their children/wards to polytechnics, vocational and technical education where this technical skills can be better effectively acquired. This amounts to a defeatist position leading to self-defeat occasioned by vote of no confidence against self by government itself.

This situation has been characterized by the general public refusing to enroll their wards for technical education either at the secondary school level or, entrance into the Polytechnic and colleges of education through the Unified Tertiary Matriculations Examination UTME. The outcry is that everyone now wants the university education or no school due to government policy pronouncements and contradictions on people with technical and vocational education certificates.

STUDY OBJECTIVES

The broad objective of the study is to examine the “environmental correlates of science, technical, vocational and business education for economic transformation in Nigeria”. The specific objectives therefore include:

1. To determine if environmental correlates such as government policies, social norms and beliefs, have significant relationship with economic transformation through science, technical, vocational and business education in Nigeria.

THEORETICAL AND EMPIRICAL REVIEW**GLOBALIZING AND MODERNIZING THE NIGERIA ECONOMY THROUGH EDUCATION**

Both formal and informal educations are important correlates for globalization and economic modernization. The orthogonal variables that ensure this include, science, technical, vocational and business education. Science does not exist in isolation of other technical, vocational and business learning processes. Therefore correlating all the factors to ensure economic transformation is a cardinal point in our current study debate.

Education is the key that unlocks the door to modernization and globalization. It is an investment in human capital from childhood stage to adulthood. To open the door of modernization, and globalization, the National Policy on Education was formulated and developed and this made Nigeria a purpose driven economy with its own philosophy that is geared towards making the Nigerian child relevant to national and global development (Odiba, 2005).

Odiba went further to state that, No nation can develop and be relevant in global events above her education. Education is the basic index for social, economic, cultural, political and technological system world over." To achieve technological breakthrough, science, technical, vocational and business education play important role in this regard. Just like any other nations of the world, how realistic has the Nigerian government been pursuing the attainment of breakthrough in technology using the aforementioned correlates?

According to Khor (2001), "Globalization consists of natural policies of liberalization emanating from technological development. Odiba (2001) adds that, the trinity of trade, finance and production activities depends very much on globalization and adequate training. He further states that, globalization stands to be beneficial to the participating nations. While Pryor (2004) posits that, seven benefits could be derived from globalization by the participating nation. These include:

1. Transfer of technology and sharing of best practices;
2. Local capacity building
3. Promotion of diversity and global work force
4. Corporate responsibility by stimulating sound safe and environmental friendly operations
5. Partnership for sustainable development in host communities
6. Qualitative training and development of employees for higher responsibilities in technologically challenging fields
7. Good governance and transparency.

From the above derivable benefits, one can assert that the first and second beneficial elements can be achieved by sincere application of technical, vocational and business education.

CONCEPT OF TECHNICAL EDUCATION

Technical education is one of the key channels of practical learning deliverables in education in Nigeria. On our daily business activities, ranging from home repairs through small business apparatus to large industrial equipment; technicians provide most profound solutions to mechanical problems than the so called trained Engineers. The young *Igbo* boys in Nnewi, Anambra State that are breaking grounds in technical and engineering are all products of technical education. Evidences abounds that the cluster of their vehicle spare parts saturated every Nigerian auto markets. Some are even more reliable than the made in Taiwan, China, Korea and even Japan auto spare parts products.

But the crux of our present investigation hinged on the fact that the Nigerian government has done nothing to boost neither their production capacities nor even helping them acquired and develop their innate inborn technical skills. Technical education has been defined to mean: The instruction in a skill or procedure, usually of a mechanical type, and at a level between that of the professional scientist or engineer and that of a skilled craftsman.

Technicians support scientists and engineers by designing, developing, producing, and maintaining machines and materials. The work of a technician is more limited in scope than that of a scientist or engineer and is commonly considered practical rather than theoretical in its orientation. In industry, jobs for technicians range from those that are narrow in scope and require relatively limited technical understanding, such as the routine inspection of parts, to those that require a considerable level of mathematical, scientific, and applied technological ability, such as engineering aide, instrumentation technician, draftsman and tool designer. The growing field of computer technology is providing many new employment opportunities for technicians (Encarta, 2009).

A technical education is acquired in a number of ways. Many persons learn on the job and supplement their practical experience with correspondence courses and evening school. The armed forces train a large number of technicians, particularly in electronics. Increasing numbers of technicians receive their education in trade schools, technical high schools, vocational-technical schools, community or junior colleges, or technical institutes. The trend is toward education beyond high school, with more skilled technicians and technologists completing either two or four years of college.

LEARNING THROUGH VOCATIONAL AND BUSINESS EDUCATION

In so many part of the Eastern states such as Enugu, Anambra, Ebonyi and Imo states, learning through vocational and Business education is a very common system over the years that have led to the production of so many technical staff from these states. Same is true of Benue, Kogi and Plateau states. As Olukotun and Ukpata (2007) put it, "vocational and business education is a household identity of the Eastern Nigeria and the middle belt region of Nigeria."

Many different courses and programs are available. Some schools offer technical training in only a single field, others in a variety of fields. Some schools combine agricultural and industrial training within the same school; other schools train skilled craftspeople as well as technicians. Junior or community colleges offering courses primarily for craftspeople and technicians include courses in the liberal arts, or the technical courses may be offered in a separate division of a liberal arts-oriented junior college. Some senior colleges offer a 4-year baccalaureate program in engineering technology. This has placed the Eastern state citizens on a national competitive advantage in terms of creativity, innovation, skill and competency in technical and craftsmanship all over the Nigerian labour market.

Business Education is clearly a field of training in business practices and in specific skills such as accounting, information processing, keyboarding/typewriting, recordkeeping, and shorthand. For instance, business education in the United States is conducted on two distinct levels: education for administrative support personnel in business and industry and collegiate education for business administration and for business teacher preparation.

Business education for administrative support personnel is included in the programs of almost every high school and community college, as well as in independent business colleges. Included in such curricula are courses in secretarial skills; bookkeeping and accounting; data processing; business communication, mathematics, and law; computer programming; and business management. These courses are important to the U.S. economy because they provide a steady flow of office workers who are in great demand. (Encarta, 2009).

MODERN TRENDS IN SCIENCE AND TECHNOLOGY

The development of the computer has effected many changes in business education. At the vocational level it has led to the establishment of training programs for computer operators and programmers. At the collegiate level the emphasis has been on utilization of more efficient management information systems to provide data for making business decisions. It is as a result of these new tide of development in science and technology that the Federal Ministry of Education (FME, 2010) articulated a national policy on information and communication technologies (ICT) in education with its vision: "ICT-furthered Education – engaging, enriching, empowering and enabling." And the enabling mission is: "To meet the human resource requirements of the nation for attaining and enhancing sustainable socio-economic development, global competitiveness as well as the individual's ability to survive in a contemporary environment." The FME (2010) articulated the following specific objectives for ICT Education in Nigeria:

1. To facilitate the teaching and learning processes.
2. To promote problem-solving, critical thinking and innovative skills.
3. To promote life-long learning.
4. To enhance the various teaching/learning strategies required to meet the needs of the population.
5. To foster research and development.

6. To support effective and efficient education administration.

7. To enhance universal access to information.

8. To widen access to education and the range of instructional options and opportunities for any-where, any-time, any-place and any-path learning.

In line with these noble objectives, of the FME, Okoroma (2005) supports the view that, "education is an instrument par excellence for effecting national development" (NPE, 2002). It follows that the constitution of the Federal Republic of Nigeria equally provides that, Government shall direct its policy towards ensuring that there are equal and adequate educational opportunities at all levels" (FRN., 1999 Constitution). Supporting this framework, Ukeje (1966) notes that, "education is for life and for living. It is an investment in people which pays untold dividends to the society. When that investment is not made or is made inadequately the society suffers a loss". Similarly, Okoli (1980) posits that, Education is a vital instrument for the improvement of the quality of man in his search for personal freedom and confidence". The question now is, how well have the nexus of Nigerian policies on education been achieved? Have the quality of life of Nigerians been actually improved upon? Are there not policy gaps palpable in the administration and management of educational system in Nigeria?. A cursory look at the policy thrust is paramount in this direction.

CORRELATES OF THE NIGERIAN POLICY THRUST ON ICT EDUCATION

If science and technology is anything to drive the development of education and transformation of the overall economy, then we examined below the policy document on Information and communication Technologies in Nigeria, to see if the country is making steady progress to achieve its ICT training objectives.

Policy thrust (2010) the document states inter alias, Government shall:

1. Build and encourage the development and sustenance of the ICT manpower required to achieve an ICT-furthered education;
2. Establish and sustain a common ICT infrastructure platform for education and encourage the development of a National Education and Research Infrastructure (NERI);
3. Ensure and encourage ICT Research and Development (R&D);
4. Engage in and encourage regular stakeholder consultations, sensitization of the learning community, public awareness and inter-governmental relations to achieve a broad-based consensus on ICT in education;
5. Provide appropriate legal, regulatory and security framework to ensure that ICT in education and the conduct of related activities are focused on achieving ICT-furthered Education; and,
6. Adopt creative financing models for ICT in Education.

With the arrays of these policy correlates in mind, the FME has the following areas of focus on the policy document:

- ❖ Human Capital
- ❖ Infrastructure
- ❖ Research and Development
- ❖ Awareness and Communication
- ❖ Governance; and,
- ❖ Financing

Whilst, Educators and Policy-makers all have come into compromise that: ICT is of Paramount importance to the future of education and that successful contributions to meeting the Millennium Development Goals (MDGs) and Education for All (EFA) goals are most likely to be made by ICT in Education initiatives...(FME, 2009). Our current study has however revealed a disaggregated policy shift and direction to drive the vision and missions of FME as outlined. Results are clearly shown in our field interview conducted for this study.

STUDY METHODOLOGY

This study was conducted in Wukari Town of Taraba State. The town is bordered by Benue, Nasarawa, and Cross-River states. The choice of the town is occasioned by the poor state of science, vocational, technical and business education generally noticed in the Wukari local government. And we adopted the use of descriptive survey method through the administration of structured questionnaire to elicit data from 20 respondents selected from amongst the staff and students of the Government Technical and Vocational College Wukari, Taraba State. T- test statistical tool was used to test our research hypothesis:

One "Null" hypothesis was drawn for the study which is stated below:

Hypothesis: (Null) - environmental correlates such as government policies, social norms and beliefs, have no significant relationship with economic transformation through science, technical, vocational and business education in Nigeria.

The researchers adopted the use of T-test statistical tool to test the above research hypothesis. The correlation coefficient employed is the t test, which is based on testing the hypothesis that no significant relationship exist between attributes. This means that, it will be assumed no significant relationship between any two attributes considered in pairs as hypothesized, to be able to make the test comprehensive, the researchers did the following: (1) the correlation results for r will be used in the t test. (2) the t test is for sample correlation coefficient r. (3) an alpha value i.e., significance level of 5% was considered at n-1 degree of freedom. This is for one tail test. Therefore, in summary, the following hold:

1. The decision region to accept or reject hypothesis within the range of sample correlation coefficient

(r): $-1 \leq r \leq 1$ is:

- (i) Null hypothesis, $H_0: r = 0$
- (ii) Alternative hypothesis $H_1: r \neq 0$.

If $r = 0$, then null hypothesis will be accepted else rejected. Which means the alternative hypothesis will be accepted if $r \neq 0$.

2. The t for t test based on r will be tested at 5% level of significance and n-1 degree of freedom. The decision region to accept or reject hypothesis for t test is:

$t_{\text{calculated}} = t_{\text{tabulated}}$. That is:

- (i) Null hypothesis, $H_0: t_{\text{calculated}} = t_{\text{tabulated}}$.
- (ii) Alternative hypothesis, $H_1: t_{\text{calculated}} \neq t_{\text{tabulated}}$

If $t_{\text{calculated}} = t_{\text{tabulated}}$; then the null hypothesis will be accepted, else rejected. Which means the alternative hypotheses will be accepted, if $t_{\text{calculated}} \neq t_{\text{tabulated}}$.

These analyses explain our mathematical formulas presented above.

Hypothesis Testing

Hypothesis re-statement

Hypothesis: (Null) - environmental correlates such as government policies, social norms and beliefs, have no significant relationship with economic transformation through science, technical, vocational and business education in Nigeria.

TABLE 1: CONTINGENCY TABLE FOR T – TEST CALCULATED

Response	X	(X – \bar{X})
Agree	16	12
Strongly Agree	4	-
Disagree	-	-
Strongly Disagree	-	-
Undecided	-	-
Total	$\Sigma X = 20$	$\Sigma (X - \bar{X}) = 12$

Source: Field Survey, (2012) (Extracted from table 2, Appendix II)

Using our formula: $t = \frac{\bar{X} - U}{S/\sqrt{n}}$

S/\sqrt{n}

Where:

\bar{X} = Mean of the sample

U = Mean of the population

S = Standard deviation of the sample, $\frac{\sqrt{\sum(X-\bar{X})^2}}{n-1}$

n = Population

σ = Standard deviation of the population

V = n - 1 is degree of freedom

$$= \frac{4 - 20}{3/\sqrt{20}}$$

$$= \frac{-16}{3/4.47}$$

$$= \frac{-16}{0.67}$$

$$= -23.9$$

The degree of freedom V = n - 1

$$V = 20 - 1$$

$$= 19$$

t at 0.05 = 1.7291

Decision: Since the calculated value of the t – distribution is far less than the critical value; we reject the “Null” hypothesis (H_0) and accept the “Alternative” (H_1). This means that, the environmental correlates such as government policies, social norms and beliefs, have significant relationship with economic transformation through science, technical, vocational and business education in Nigeria.

DISCUSSION OF FINDINGS

From the results obtained from the field as indicated in table 1, appendix II, respondents’ reactions to our field questionnaire clearly confirm that, government actions are completely in the opposite direction of the policy thrust on science, technical, vocational and business education spelt out. Most respondents who were all both teachers and students of the technical school expressed bitterness over the way and manner in which government treat them differently as second-fiddle compare to other formal secondary schools.

Similarly, teachers in the school studied confirmed that most of the students who graduated from the technical schools are being discriminated against during admission into universities and as such parents are no longer willing to send their wards to them for technical education. This has ultimately affected total enrollment negatively over the past five years. These conditions depict an orthogonal relationship between both government and public attitudes in Nigeria towards issues of technical, vocational and business education – which seem to suggest that the government itself passed a vote of no confidence against itself by consistently discriminating against graduates with certificate from this non-formal training which it seems to encourage in its policy thrust. Parents being wary over times also, are now not willing to allow their wards to pass through this trauma of discrimination by government and private sector institutions.

CONCLUSION

In conclusion, it is pertinent to state that education is capable of transforming the entire Nigerian national economy and it is the only trajectory through which any nation of the world can liberate its citizens from poverty and ignorance. As important as Information and communication technologies are to transforming our economy, it is an indubitable fact that, there can be no short-cut to it; you only get right ICT through direct romance with education and training in it. You either have it or you don’t have it. Bill Gates, in his book, “Business at the Speed of Thought: Using a Digital Nervous System”, observed that the most meaningful way to differentiate your company from your competitors, the best way to put distance between you and the crowd is to do an outstanding job with information. How you “gather, manage and use information will determine whether you win or lose.” Therefore, science, technical, vocational and business education will enable us migrate faster to the zenith of economic advancement.

RECOMMENDATIONS

From the empirical analysis of our field investigation, the study recommends the followings:

1. Government to formulate policy such as compulsory skill acquisition at the primary and secondary school levels.
2. It is recommended that federal and state governments put in place, policies that would compel primary school pupils at grade six to only learn skills, trade and craft and work for 3 months before proceeding to secondary school. This will build in any Nigerian child, the consciousness of acquiring technical education for self reliance.
3. More attention should be given to technical and vocational training centers by government in form of grants and support for infrastructure and provisions of workshops including scholarship.
4. Nigeria should stop hiring Artisans from Japan, South Korea; China USA etc to manage major construction and civil engineering projects rather, the government should help the local-based artisans who have acquired similar skills for such jobs. Most times better than the whites.
5. The Nnewi technological stronghold should be encouraged all over the states of the federation by sending those boys out to train others and pay them high enough just as they are paying footballers that do not contribute to technological breakthrough.

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TABLES

TABLE 1: FIELD QUESTIONNAIRE

VARIABLE	OPTIONS				
	A	SA	D	SD	U
1. Government lacks the will to implement policy on education in Nigeria					
2. Government policies discriminate against graduates of technical, vocational and business education in job market					
3. Most parents are unwilling sending their wards to vocational education because of certificate discrimination					
4. Social and political recognition given to people with vocational, technical and business education is less compare to formal education					
5. Government has not sensitized the public much on informal education and training					
6. Most of government programmes on ICT are urban centered					
7. Government financing of technical, vocational , and business education is poor					
8. teaching staff in the non-formal education sector are poorly trained					

Source: Field Survey, (2012)

TABLE 2: RESPONDENTS' REACTIONS TO QUESTIONNAIRE OPTIONS

Reaction	No of Respondents	Percentage (%)
Agree	16	80
Strongly Agree	4	20
Disagree	0	0
Strongly Disagree	0	0
Undecided	0	0
Total	20	100

Source: Field Survey, (2012)

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