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Preliminary Multivariate Analysis of the Factors of Socio-Economic Development of Nigeria – A Case Study of Delta State of Nigeria *(Pp. 187-204)*

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Abstract
The paper examined the socio-economic factors of development in the Delta state of Nigeria. The major source of data is secondary and the statistical technique is the step-wise multiple regression. The household income was used as an index of development while the socio-economic variables included population, education, and employment, capital water projects, housing unit, health centres, industries and police station. Four key socio-economic variables of population, health centres, employment and capital water projects were identified as being responsible for 80% of the variation in the development of Delta state of Nigeria among other variables. Solutions to identified problems were proffered.

Keywords: Socio Economic, Development Delta,

Introduction
There is no single agreed definition of economic development. Economic development refers to the structural transformation of human society from subsistence economy to urban – industrialization, to the sustained raise in

productivity and income that result. The transformation is seen in the structure of production, consumption, investment and trade, in occupation, rural-urban residence. Economic development is therefore used to imply the capacity of a national economy whose initial economic condition has been more or less static for a long time, to generate and sustain an annual increase for its gross national production at rates of perhaps 5 and 7 percent or more (Onokerhoraye and Omuta 2005). However, according to Todaro (1992), development should be perceived as a multidimension process involving the reorganization and reorientation of entire economic and social systems. In addition, to improvements in incomes and output, it typically involves radical changes in institutional social and administrative structures as well as in popular attitudes and in many cases even customs and belief (Todaro 1992).

Income in the literature is regarded as an index of economic development. According to Weeks (2002), economic development represents a growth in average income usually defined as per capita (per person) income. Thus, a more meaningful definition of economic development refers to a rise in real income – an increase in the amount of goods and services that an individual can buy. This implies the resulting rise in the ability of people to consume (either buy or have available to them the thing) they need to improve their level of living. These include higher income, stable employment, more education, better health, consumption of more and healthier food, better housing and increased provision of public services, such as water, sewage, power, transportation, entertainment and police and fire protection. Thus, the need to ascertain the strength of the relationship between these variables of socio-economic development and income cannot be overemphasized. This forms the focus of this paper and the gap in knowledge it intends to fill. These issues are also examined in the literature review below:

Review of Related Literature
According to Todaro and Smith (2006) development is conceptualized as the sustained elevation of an entire society and social system towards a "better" or "more humane" life. In this regard three basic components or core values serve as conceptual basis and practical guidelines for understanding the inner meaning of development. These core values include – sustenance, self-esteem and freedom – representing common goals sought by all individual and societies. The life-sustaining basic needs include food, shelter, health and protection. When any of these is absent or in critically short supply a condition of "absolute underdevelopment" exists. Economic development

therefore is a necessary condition for the improvement in the quality of life that is development.

It has been observed that development in all societies must have at least the following objectives: to increase the availability and widen the distribution of basic life, sustaining goods such as foods, shelter, health and protection, including an addition to higher incomes, the provision of more jobs, better education and greater individual and national self esteem, to expand the range of economic and social choices available to individuals and nations by freeing them from the forces of ignorance and human misery. Thus, development must therefore be conceived as a multidimensional process involving major changes in social structure, popular attitudes and national institutions, as well as the acceleration of economic growth, the reduction of inequality and eradication of poverty (Todaro and Smith 2006).

Furthermore, the challenge to development … is to improve the quality of life. Especially in the world's poor countries, a better quality of life generally, calls for higher incomes, but it involves much more. It encompasses as ends in themselves better education, higher standards of health and nutrition, less poverty, a cleaner environment, more opportunity, greater individual freedom and a richer cultural life (World Bank 1991).

Common economic features of developing countries include: low levels of living characterized by low incomes, inequality, poor health and inadequate education. In developing nations, Nigeria inclusive, general levels of living tend to be very low for the vast majority of people. These low levels of living are manifested quantitatively and qualitatively in the form of low incomes (poverty) inadequate housing, poor health, limited education, high infant mortality, low life and work expectancies, and in many cases a general sense of malaise and hopelessness.

The Gross national income (GNI) per capita, the most commonly used measure of the overall level of economic activity, is often used as a summary index of the relative economic well being of people in different nations. The Gross Domestic Production (GDP) measures total value for final use of output produced by the economy by both residents and non residents.

In addition, to struggling on low income, many people in developing nations fight a constant battle against malnutrition, disease and ill-health. Although there have been significant improvement since the 1960s, in the least developed countries of the world, life expectancy in 2002 still averaged only

50 years compared to 64 years among all developing countries and 78 years in developed nations. Infant mortality rates (the number of children who die before first birthday out of every 1,000 live births) average about 96 in the least developed countries compared with approximately 64 in other less developed countries (World Population Data Sheet, 2003).

Furthermore, the importance of access to clear drinking water, which is one of the most important measures of sanitation, cannot be over-emphasized. Fever, cholera and a wide array of serious or fatal diarrhea ill-nesses are responsible for more than 35% of the death of young children in Africa and Latin-America. Most of these diseases and resulting deaths would be quickly eliminated with safe water supplies (Todaro and Smith 2006).

Medical care is an extremely scarce social service in many parts of the developing world. In 1955, the number of doctors per 100,000 people averaged 4.4 in the least developed countries compared with 217 in the developed countries. The ratio of hospital beds to population is similarly, divergent between these two sets of nations. Moreover, most of the medial facilities in the developing nations are concentrated in the urban areas where only 25% of the population resides. For example in India, 80% of the doctors practice in urban areas whereas only 20% of the population resides there. In Bolivia only one-third of the population lives in cities, but 90% of the health facilities are found in there. In Kenya the population to – physician ratio is 672 to 1 for the capital city of Nairobi and 20,000 to 1 in the rural country side where 87% of the Kenyan population lives. In terms of health expenditure, more than 75% of the LDC government outlays are devoted to urban hospitals that provide expensive, western style curative care to a minority of the population (United Nations Children Fund 1990).

Furthermore, the attempt to provide primary school educational opportunities has probably been the most significant of all less developed countries development efforts. In most countries, education takes the largest share of some impressive quantitative advances in school enrolments. Literacy levels remain low compared with developed nations. For example among the least developed countries literacy rates average only 45% of the population. Currently, it is estimated that 325 million children have dropped out of school and of the estimated 854 million illiterate adults; well over 60% are women (United Nations Development Program 2001).

In many developing countries, Nigeria inclusive, the supply of workers far exceed the demand, the result being extremely high rates of unemployment

and underemployment in urban areas. Unfortunately, reliable information on unemployment in Africa and in some of the most populated Asia cities (e.g Calcutta, Karachi, and Shangai) where rates are likely to be high is unavailable (World Employment Report 1996 – 97).

Industrial enterprises or firms also prefer to be located where they can learn from other firms doing similar work. These have been called "industrial cities" or "clusters" Porter (1990).

A growing body of evidence shows that industrial clusters are now common in developing, countries at stages of industrial development ranging from cottage industry to advanced manufacturing techniques and appear to be significant factors in emerging industrial competitiveness (Schitz and Nadvi 1999).

Deriving from the above, the most ambitious attempt to analyse the comparative status of socio-economic development in both developing and developed nations systematically and comprehensively has been undertaken by the United Nations Development Programme (UNDP) in its annual series of Human Development Index (HDI) attempt to rank all countries in a scale of 0 (Lowest Human Development) to 1 (Highest human development) based on three goals or end products of development. Longevity as measured by life expectancy at birth. "Knowledge" as measured by a weighted average of adult literacy schooling (one-third) and standard of living as measured by real per capita income adjusted for the differing purchasing power parity for each country's currency to reflect cost of living and for the assumption of diminishing marginal utility of income. The HDI ranks all human development into three groups: low human development (0.0 to 0.499), medium human development (0.50 to 0.799) and high human development (0.8 to 1.0) (Todaro and Smith, 2006).

The Study Area
Delta state is located in the southern part of Nigeria. The southern part of the state is essentially riverine with numerous rivers, creeks, marshy terrain and mangrove swamps. The topography barely lies above the sea level, resulting in incidences of flood in the rainy season of the year. The northern part of the state is a tropical rain forest belt. The state lies roughly between longitude 5^000^1 and 6^045^1 east and latitude 5^000^1 and 6^030^1 North (see figure I below). Figure I (map of Delta state showing Local Government Areas).

Delta state was created in August 27, 1991. It was carved out of the former Bendel state. It has 25 local government areas. The state has its capital at Asaba. Delta state has a population of 4,098,401. Population census (2006).

Methodology

The data used for this research was derived mainly from secondary sources such as the Delta state household survey 2006, National population census 2006, Delta state Ministries of Water Resources, Educational, Health, Delta state Industrial Directory 2006, textbooks, journals.

The Delta state Household and Housing survey (2006) analysed a total population of 24,239 broken down into 12,507 males and 11,732.

The survey covered all the twenty – five local government areas of the state. A total of six thousand and twenty questionnaires representing 20% of the sampled population were covered. Furthermore, 80% of the sample population lives in Cement/Block/Brick houses, while 5.3% and 2.3% of Deltan live in Wood/Bamboo and Metal/Zinc houses respectively.

In addition 71% of the sample households have accesses to portable conversely, 29% do not have access to good and portable drinking water. The labour force was composed of about 34.0% employed persons aged 15-64 years. However females had a higher unemployment level (34.80%) than males (31.35%) in the state.

The index of economic development used for the study is the household income which is the dependent variable. The independent socio-economic variables include population size, education as measured by school (attendance, number of housing units), number of health centres, number of health centres, number of industries and number of police stations. However, the geographical units of analyses are the 25 local government areas (LGAs) in the state.

The statistical technique used to measure the strength of the relationship between the dependent variable household income (Y) and the independent socio-economic variables (x_1 to x_8) is the step-wise multiple regression statistical technique which has the formula.

$$Y = a + b_1 + x_1 + b_2 + x_2 = b_n \, x_n^e$$

Where:

Y = dependent variable (Household Income) and

x's = Independent variables

x_1 = Population

x_2= Education (school attendance)

x_3 = Number of employed persons

x_4 = Number of capital water projects

x_5 = Number of housing units

x_6 = Number of health centres

x_7 = Number of industries

x_8 = Number of police stations

Discussion

The most important variables in the research are summarized in the model table (1) below. Four Key socio-economic variables were identified by the step-wise multiple-regression out of the original eight variables entered for the analysis. They include population, health centres, number of employed and capital water projects. However, the dependent variable is the household income.

It will be observed that the r-value .895 (89.5%) for the study is high and positive. Thus indicating a strong positive correlation between the dependent variable of household income and the independent the socio-economic variables of population, education, employed persons, capital water projects, housing units, health centres, industries and police stations. However, the R^2 – value of .800 (80%) is positive and equally high. This implies that 80% of the variation in the dependent variable is accounted for by the four key variables earlier mentioned.

Household Income

The household income for the 25 local government areas in Delta state is presented in table 2. It also shows the wage earned by residents in various local government areas in 2006, amounted to a total of N122, 426,419.19. However, when household income is examined at the salary/wage employee level, there was a reduction in the total to N41, 899,573 represented by 34.2%. The casual wage employee accounted for N9, 149,305.00 (7.5%), while own work with paid employee was N32, 050 414.00 (26.2%) others had N39, 327,127.00 (32%).

It would be observed that the highest income paying local government area is Warri south with a total household income N16, 027,977 (13.1%). This is closely followed by Oshimili south with N10, 647,000.00 (8.7%). However, it should be noted that Warri south-west had the lowest aggregate income of N853, 700.00 (0.7%). Finally, in terms of income generated from owned work with paid employees, it was highest in Oshimili south with N6, 325,000.00 (19.7%) while the lowest of insignificant is Ukwani local government area (N5, 000) (see table 2 for the distribution of household income of employee by local government areas of Delta state).

The World Bank (2004) assessment showed that Nigeria had the 33rd highest per capital income in the world during the 1970s but by 1997, it had dropped to the 13th poorest nation and up to 2002 has not shown much improvement (Onokerhoraye and Omuta 2005).

Deriving from the above, poverty levels have risen in Nigeria in recent times. According to a World Bank report on the nation which states that "Nigeria represents a paradox. The country is rich but the people are poor. Per capital income today is around the same level as in 1970. It is a complex story with a message: Nigeria is rich in land, people, oil and natural gas resources. If more of this wealth had been channeled to the development of its people and to the productive use of its land and other resources – then Nigeria could have been poised for a promising future (World Bank, 1996). Thus, the cause of poverty are multidimensional as they range from lack of income and assets to attain basic necessities such as food, shelter, clothing and acceptable level of health and education.

Population
The population of Delta state in 2006 was 4,098,401. The male/female distribution of the population of the 25 local government areas of Delta state is shown in table (3) below.

Deriving from table 3, it will be observed that there are more males than females in Delta state represented by 2,074,316 and 2,024,085 persons respectively. However, in terms of population density Uvwie local government areas is most densely settled with 886 persons per sqkm. This is followed by Okpe and Udu local government areas with 605 and 585 persons respectively.

The moderately populated local government areas in Delta state include Isoko south 471 persons; Sapele 444; Ika North-East 424 and Ughelli-North 404 persons.

The least populated local government areas in Delta state are Ndokwa East and Warri North with 68 and 69 persons per sq km respectively. However, the average population density for Delta state is 245 persons per sq km.

Generally, the main focus of development programmes in all parts of the world is upon the people living in the different communities within the development area. The population of any region is both a beneficiary and an agent of development (Onokerhoraye and Omuta 2005). Thus, there is the need to know the Demographic features are dynamics of the people of Delta state as well as their current socio-economic activities. These include income, education, employment, water resources, housing, health, industries and police station which form the focus of this paper. Thus, the people are contributors to the process of development in Delta state in particular and Nigeria in general.

Employment

The labour force plays a central role in the growth of the economy of Delta state directly as the most important input into production. For development to be meaningful it must enable all individuals irrespective of sex, ethnicity, nationality, political and social affiliations participate fully in the process of income generation and remunerative employment.

Again, the labour force simple put is a set of people or citizens of the country who are willing and able to make available at any given point in time, their efforts for gainful employment population size primarily determines the labour force.

Deriving from the above, the labour force in this paper is based on the population structure decomposed into major categories, the dependants (0-14years) plus those who are (65 years and above) and the economically active population (15 – 64 years). Thus, employment in the various Local Government Areas of Delta state is examined in table (4).

It was observed that male employment in Delta state accounted for 19.8%, while their female counterpart was 14.1%. However, the unemployed males and females in Delta state account for 3.1% and 3.0% respectively. The Local

Government Area with the lowest number of employed men and women in Warri – South West with 21 men and 8 women respectively.

Water Projects
The capital water projects awarded in the various Local Government Areas of Delta state in 2006 are shown in table 5.

The Local Government Area with the highest number of awarded water projects in Delta state was Oshimili South Local Government Area with 83. This was followed by Ethiope West 34, Ethiope East 33, others are Ughelli South and North represented by 19 and 15 water projects.

Health Centres
The health of the population is a very important factor in determining the volume of output of goods and services which every country achieves from the productive population at its disposal. However, the capacity for productive work is adversely affected when the population suffers from debilitating diseases and malnutrition. Thus, the elimination of such preventable diseases through better nutrition and health care services cannot be overemphasized. In addition, apart from the glaring shortage in medical personnel and institutions, the very distributions of these essentials between the urban and the rural communities shows abnormal lopsidedness in favour of the urban population which incidentally accounts for about 20 percent of the Nigerian population. The bulk of the population numbering about 80 percent who live in rural areas can hardly boast of health care in Nigeria. This neglect has further been aggravated by lack of essential social and economic infrastructure.

Deriving from the above, the government owned Health centre in Delta state in 2006 were examined in table 6. These include hospitals, health clinics, maternity centres, etc. It is important to note here that only government owned Health centres were included since data on non-governmental hospitals and health are difficult to come by.

Conclusion
The paper examined the socio-economic factors of development in Delta state of Nigeria based on secondary sources of data. These include the Delta state 2006 Household survey and 2006 population census data to mention but a few.

The step-wise multiple regression statistical technique was used to analyse the data. Four key socio-economic variables of population, Health centres,

Number of employed, and capital water projects were identified as explaining 80% of the variation in the development of Delta state Nigeria among other variables such as education, housing units, industries and police station in 2006.

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Table 1: Model Summary

	R	R-Square	Adjusted R.Square	Std Error of Estimate	
1	.698[a]	.487	1.465	26057	88.493
2	.817[b]	.668	.638	19355	94.706
3	.816[c]	.742	.705	17443	72.639
4	.855[d]	.800	.760		

Sources: Computer Data Analysis 2008.

Table 2: Distribution of Household Income of Employee by Local Government Areas of Delta State

L.G.A.	SALARY/DISTRIBUTION BY LGA AND INCOME EMPLOYEE				
	WAGE EMPLOYEE	CASUAL WAGE EMPLOYEE	OWN WORK WITH PAID EMPLOYEE	OTHERS (₦)	TOTAL (₦)
Aniocha North	531,500.00	131,350.00	781,000.00	467,300.00	1,928,250.00
Aniocha South	1,030,050.00	361,595.00	93,820.00	397,800.00	1,883,265.00
Bomadi	240,600.00	7000.00	2,226,500.00	1,030,650.00	3,504,750.00
Burutu	938,515.00	315,800.00	1,816,600.00	1,303,330.00	4,374,245.00
Ethiope East	3,129,500.00	211,900.00	33,000.00	1,133,000.00	4,507,400.00
Ethiope West	693,075.00	417,000.00	496,200.00	3,133,870.00	4,740,145.00
Ika North East	691,645.00	61,200.00	1,406,980.00	1,875,520.00	4,035,345.00
Ika South	1,672,130.00	2,567,100.00	207,100.00	2,210,500.00	6,656,830.00
Isoko North	536,400.00	24,000.00	331,000.00	3,104,297.00	3,995,697.00
Isoko South	1,115.000.00	191,350.00	722,800.00	4,301.950.00	6,331,000.00
Ndokwa East	102,000.00	10,000.00	44,000.00	28,000.00	184,000.00
Okpe	1,213,300.00	378,000.00	77,000.00	400,500.00	2,077,800.00
Oshimili North	3,485,941.00	189,500.00	583,000.00	176,000.00	4,434,441.00
Oshimili South	2,450,500.00	96,500.00	6,325,000.00	1,775,000.00	10,647,000.00
Patani	403,700.00	12,000.00	127,600.00	1,640,450.00	7,760,240.00

Sapele	2,475,800.00	1,221,500.00	1,100,500.00	2,962,440.00	7,760,240.00
Udu	1,790,100.00	10,000.00	1,549,330.00	371,800.00	3,721,230.00
Ughelli North	1,796,350.00	1,012,710.00	2,929,060.00	1,962,800.00	7,760,240.00
Ughelli South	716,746.19	138,500.00	3,957,224.00	1,772,400.00	6,584,870.00
Ukwani	426,531.00	13,000.00	5000.00	2,313,200.00	2,757,731.00
Uvwie	7,003,069.00	621,500.00	2,487,900.00	302,000.00	10,414,469.00
Warri North	556,400.00	147,000.00	19,000.00	1,488,900.00	2,211,300.00
Warri South	8,242,077.00	538,000.00	4,239,000.00	3,008,900.00	16,027,971.00
Warri South West	412,000.00	5000.00	265,200.00	171,500.00	853,700.00
Total	41,899,573.19	9,149.305.00	32,050,414.00	39,327,127.00	122,426,419.19
Percentage	34.2	7.5	26.2	32.1	100

Source: Delta State Household Survey 2006.

Table 3: Population

L.G.A.	MALE	FEMALE	TOTAL	AREA KM2	D./Sq km
Aniocha North	52,634	52,077	104,711	408	257
Aniocha South	69,632	70,972	140,604	873	161
Bomadi	43,083	43,561	86,644	356	243
Burutu	110,416	99,250	209,666	1293	162
Ethiope East	100,257	100,535	200,792	360	558
Ethiope West	102,445	101,147	203,592	556	366
Ika North East	91, 414	92, 243	183, 657	433	424
Ika South	79,628	82,966	162,594	420	387
Isoko North	71,820	72,335	144,155	420	343
Isoko South	114,391	113,321	227,712	483	471
Ndokwa East	52,350	50,821	103,171	1510	68
Ndokwa West	79,018	70,307	149,325	1228	122
Okpe	67,995	62,034	130,029	215	605
Oshimili North	56,405	58,911	115,316	390	296
Oshimili South	80,274	69,329	149,603	390	384

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Patani	34,046	33,661	67,707	600	113
Sapele	85,305	86,583	171,888	387	444
Udu	71,242	72,119	143,361	245	585
Ughelli North	159,192	161,836	321,028	794	404
Ughelli South	109,379	104,197	213,576	746	286
Ukwani	59,162	61,228	120,390	387	311
Uvwie	95,061	96,421	191,482	216	886
Warri North	69,754	67,546	137,300	2001	69
Warri South	156,098	147,319	303,417	1036	293
Warri South West	63,315	53,366	116,681	1002	116
Total	2,074,316	2,024,085	4,098,401	16749	245

Source: Delta State Household Survey 2006.

Table 4: Employment for Persons aged 15-64 years by Local Government Area.

L.G.A	EMPLOYED (Working Now)			UNEMPLOYED (Worked Before)		
	M	**F**	**MF**	**M**	**F**	**MF**
Aniocha North	55	34	89	3	14	17
Aniocha South	128	71	199	7	1	8
Bomadi	95	59	154	1	3	4
Burutu	272	132	404	67	33	100
Ethiope East	141	205	346	2	-	2
Ethiope West	142	101	243	16	5	21
Ika North East	148	125	273	34	15	49
Ika South	128	144	272	25	27	52
Isoko North	80	105	185	22	33	55
Isoko South	152	160	312	7	24	31
Ndokwa East	60	58	118	30	37	67
Ndokwa West	62	36	98	4	7	11
Okpe	55	25	80	8	8	16

Oshimili North	68	27	95	6	7	13
Oshimili South	77	57	134	13	6	19
Patani	74	63	137	11	29	40
Sapele	210	157	367	11	29	40
Udu	142	118	360	54	54	108
Ughelli North	38	16	54	5	7	12
Ughelli South	241	118	502	79	89	168
Ukwani	25	10	35	21	19	40
Uvwie	275	135	410	41	27	68
Warri North	72	30	102	19	4	23
Warri South	414	228	642	19	26	45
Warri South West	21	8	29	3	-	8
Total	3175	2265	544	502	476	798
Percentage	19.8	14.1	33.8	3.1	3.0	6.1

Source: Delta State Household Survey 2006.

Table 5: Capital Water Projects Awarded in Delta State in 2006 by Local Government Areas

Local Government Areas	Number of Water Projects
Aniocha North	10
Aniocha South	1
Bomadi	1
Burutu	9
Ethiope East	33
Ethiope West	34
Ika North East	9
Ika South	11
Isoko North	2
Isoko South	6
Ndokwa East	10

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Ndokwa West	3
Okpe	11
Oshimili North	3
Oshimili South	83
Patani	7
Sapele	5
Udu	3
Ughelli North	15
Ughelli South	19
Ukwani	5
Uvwie	3
Warri North	5
Warri South	2
Warri South West	5
Total	295

Source: Ministry of Works, Delta State.

Table 6: Spatial Distribution of Health Centres by Local   Government Areas in Delta State in 2006.

Local Government Areas	**Number of Health Centres**
Aniocha North	16
Aniocha South	16
Bomadi	8
Burutu	19
Ethiope East	14
Ethiope West	16
Ika North East	20
Ika South	17
Isoko North	13
Isoko South	19

Ndokwa East	18
Ndokwa West	16
Okpe	14
Oshimili North	9
Oshimili South	9
Patani	9
Sapele	8
Udu	10
Ughelli North	16
Ughelli South	21
Ukwani	15
Uvwie	12
Warri North	8
Warri South	9
Warri South West	12
Total	335

Source: Ministry of Health, Delta State (2006).