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Research Article

MACRO-LEVEL DETERMINANTS OF POVERTY AND INEQUALITY IN AFRICAN NATIONS

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Abstract

The study was aimed to determine the determinants and features of the poverty and inequalities in Africa. The multiple regression models was use to analysed the data from 31 African countries. The macro factors are used to examine the influences of macro factors on poverty and inequalities. The study finds that, the key determinants of the poverty and inequalities are GNI per capita, government effectiveness, ICT use, gender inequalities, FDI Net flows, political stability, ease to pay taxes and easiness to get credit in a country. The study recommends the reduction of poverty should be weighted on increases the use of ICT, increases the effectiveness of implementation of MDG3, and the restructuring of the microcredit policy and outreaching the services to the rural and poor people, and government effectiveness.

Keywords: Millennium Development Goals, Micro-Credit Policy, Determinants, poverty, inequality

1.0 Introduction and research background

One of challenges of African countries is how to eradicate the poverty and inequality as set by Millennium Development Goals. There is evidence of poor monitoring of MDGs in most of the developing countries (MDGR, 2015). Prevalence of *dynamic and situation* definition of the poverty and inequality is another active challenge. The proper definition of African poverty should be extracted from its empirical determinants of the African context. The understanding the key determinants and features of the poverty and inequality is a substantial step toward to have a proper African definition of poverty and middle way to overcome the problems. Knowing the key determinants and features of the poverty and inequality is advanced stage of getting the right definition of poverty and inequality and a right way of escaping the poverty and inequality in Africa. Why we need African definition of poverty and inequality? The poverty and inequality are subjectively to culture and environment (Lewis, 1961)

1.1 Poverty

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Poverty is a 'relative' term that can be termed into two main concepts, namely *absolute and relative* poverty. Absolute poverty involves people and their children having extreme difficulty in merely surviving (Haughton and Khandker, 2009). But in richer societies where the poor are a minority, their relative poverty generally involves the inability to obtain social necessities available to the majority - and is often intensified by social exclusion (Lewis, 1961, and Haughton and Khandker, 2009). Lewis (1961) developed the theory of the culture of poverty and states that being in poverty tends to creates a way of living that becomes a culture of its own. Lewis believing that culture is learned, shared, and socially transmitted as behaviour of a social group. The people living in culture as a separate part of society that is the poor segregate themselves from mainstream society (Lewis, 1961). Lewis from this theory means that when the poverty is established the culture of poverty tends to perpetuate itself from generation to generation because of its effects on children. A CYCLE of Poverty is produced from which each generation finds difficult to escape. Besides the learned cultural norms what other barriers are there to prevent poor children from improving their future lifestyle? What are the *escaping strategies* from the cycle of poverty? It is the key question in addressing the poverty and inequality in Africa. It is should noticed that poverty is narrow than social exclusion and are not exactly the same, but associating. The Social exclusion is the theory that is much broader concept than poverty. It refers to being"shut out" or excluded from mainstream society. Like Oscar Lewis' theory of social segregation, social exclusion describes divisions in society. Unlike Lewis, this theory claims that social exclusion PREVENTS people from participating in society. Furthermore, the theory of Situational Constraints states that the poor are trapped into poverty because of their situation (environments and policies not cultures). It rejects that it is the culture of poverty that constrains them, once poverty is removed then the poor will have no difficulty in seizing opportunities in society. It states that the poor share the values of society as a whole they do not have separate cultural values that are at odds with society. The poverty can be viewed as due to the welfare dependency (Murray, 1938). According to Murray (1938), the undeserving poor remain in poverty because the welfare state encourages them to depend on state provision. This is done mostly in developing countries like Tanzania, and others. State provision is too generous according to Murray and creates "welfare dependency" (Murray, 1938). This in turn does not provide any incentive for the "feckless poor" to provide for themselves. In a broad view the Unemployment can be seen as a central issue in understanding the causes of poverty. An economic recession means a decrease in employment rates and an increase in poverty. Unemployment is imposed upon people rather than it being a lifestyle choice, benefits can be seen as too low. By increasing benefits poverty may be reduced. According to Nurkse (1953) explains the concept of vicious circle of poverty: "Implies a circular constellation of forces tending to act and react in such a way as to keep a country in the state of poverty". In such state of affairs the process of capital formation remains obstructed and restricted.

We start with low real income which results in a meagre savings which in turn will check investment. Low level of investment would create deficiency of capital which in second round leads to low productivity. This again results in low income. Here, the circle perpetuates the low level of development (Nurkse, 1953). From the supply side, there is low income, low savings, low investment, capital deficiency and low productivity. On the demand side, low income, low demand for goods, limited home market and low investment (Nurkse, 1953). This situation conclude the generalized concept that you are poor because poor.

1.2 Inequalities

Inequality is a broader concept than poverty that it is defined over the entire population, not just for the portion of the population below a certain poverty line. Inequality can be either relative or absolutely. Relative inequality is about ratios; absolute inequality is about differences. Example country X: two incomes $1,000 and $10,000 per year and country Y: these rises to $2,000 and $20,000. Ratio is unchanged but the absolute gain to the rich is twice as large in country B. Most inequality measures do not depend on the mean of the distribution; this property of mean independence is considered to be a desirable feature of an inequality measure. Of course, inequality measures are often calculated for distributions other than expenditure—for instance, for income, land, assets, tax payments, and many other continuous and cardinal variables (Haughton and Khandken, 2009). Poverty is related to, but distinct from, inequality and vulnerability. Inequality focuses on the distribution of attributes, such as income or consumption, across the whole population. In the context of poverty analysis, inequality requires examination if one believes that the welfare of individuals depends on their economic position relative to others in society (Haughton and Khandken, 2009). The theories of poverty and inequalities claims the poverty can be a culture, born by environment, and/or poor management of resources and welfare dependency. To address this cycle of notion on poverty and inequalities in Africa we need to study empirically the country or macro features and determinants the poverty. The key issues are to examine what is the poverty culture of the Africa continents? What are key features and determinants that define the African poverty? What are the African cultural practices that hinder the poverty and inequality eradication in Africa as required by MDGs? The paper addressed these questions in comprehensive empirical evidence.

1.2 Research problems

The decision and policy makers face difficulties on how set the poverty and inequality eradicative policies and strategies in their respectively regimes. Their policies and strategies are misaligned to the Millennium Development Goals (MDGs). The MDGs report (2015) evidences that there is a persistence of the gender inequity in developing countries, big gaps exist between the poorest and the richest households, and between rural and urban areas. Millions of poor people still live in poverty and hunger, without access to basic services. Conflict

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remain the biggest threats to human development, climate change and environmental degradation undermine progress achieved, and poor people suffers the most, and the report evidences that, there is a larger disparity remains in primary school enrolment and the poorest and most disadvantaged children bear the heaviest burden. The policy and decision makers lack the *appropriate and effectively monitoring strategies* of the MDGs. They lack empirical determinants and features and proper definition of African poverty that will be a guideline or paving and directing tool to achievement of MDGs. This paper comes to establish the empirical features and dominants of both Poverty and inequality in reflecting the African definition of poverty.

1.3 Research objective

The general objective of the paper is examined the empirical determinants and features of the poverty and inequality in Africa.

1.4 Specific objective

The paper was guided by the following specific objectives:-

1. To examine what are determinants and features of poverty in African countries.

2. To examine what are the determinants and features of inequality in African countries.

1.5 Research conceptual framework

In the creating the empirical evidences of the poverty determinants of the African countries the studies was aimed to test the theoretical conceptual framework in scientific approach. Let, poverty measured in human poverty index (ϕ), Poverty Headcount Rate (H), and poverty Gap Index (Z), and inequality measured in GINI coefficient (ϑ), Female participation Rate (ρ), and gender Inequality Index (η), be a function of political stability index (α), Government effectiveness Index (β),Regulatory Quality Index (χ), Rule of Laws Index (A), Ease to Start Business Index (μ), Ease to Pay Taxes Index (ν), FDI Net Flows (κ), Domestic Credit to Private (ψ), and the Ease to Get Credit index (ω). Therefore,

Poverty $(\phi, \mathrm{H}, \mathrm{Z}) = f(\alpha, \beta, \chi, \mathrm{A}, \mu, \nu, \kappa, \psi, \omega)$ and, ……..…….(i) Inequality $(\vartheta, \rho, \eta) = f(\alpha, \beta, \chi, \mathrm{A}, \mu, \nu, \kappa, \psi, \omega)$, ……..……(ii)

This does not means that poverty is equal to inequalities, but some features are common. Taking the partial derivative of equation (i) and (ii), we get Factor-poverty gearing ratio (FPGR) and Factor- Inequalities Gearing Ratio (FIGR) respectively.

That is,

$$\frac{\delta(\phi,\mathrm{H},\mathrm{Z})}{\delta(\alpha,\beta,\chi,\mathrm{A},\mu,\nu,\kappa,\psi,\omega)} = K_1 \text{, and } \frac{\delta(\vartheta,\rho,\eta)}{\delta(\alpha,\beta,\chi,\mathrm{A},\mu,\nu,\kappa,\psi,\omega)} = K_2 \quad \text{…….……..……..……..……..…….. (iii)}$$

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The Factor-poverty gearing ratio (K_1) is the intensity of the poverty macro-variables to gear/increase the poverty level in the country. It just simply the ratios of the either poverty Index, poverty headcount index or poverty gap Index to their explanatory variables. And the Factor-Inequalities Ratio (K_2) is the intensity of the inequality macro factors/variables to gear/increase the inequality in the country. It is just simply the ratios of GINI coefficients, Female participation ratio or gender Inequality index to each of the macro factors weighted to them.

From this, facts the linear relationship of the equation (i) and (ii) is expected, therefore,

Poverty (ϕ, H, Z) = $c + b_1\alpha + b_2\,\beta + b_3\chi + b_4$A $+ b_5\,\mu + b_6\,\nu + b_7\kappa + b_8\,\psi + b_9\omega$… (iv) And,

Inequality (ϑ, ρ, η) = $c + b_1\alpha + b_2\,\beta + b_3\chi + b_4$A $+ b_5\,\mu + b_6\,\nu + b_7\kappa + b_8\,\psi + b_9\omega$. (v)Whereby,

c = constant values, whereby all the explanatory variable at zero or equal to zero b's = are intensity level of the explanatory variables, that either poverty

ϕ =Multidimensional Poverty Index

H =Poverty Headcount Index

Z =Povert Gap Index

ϑ =GINI Coefficient

ρ =Female Participation Rate

η =Gender Inequality Index

α = Political stability index

β= Government effectiveness

χ =Regulatory Quality Index

A =Rule of Laws index

μ =Ease to Start Business index

ν =Ease to Pay Taxes Index

κ =FDI Net Flows

ψ =Domestic Credit to Private

ω =Ease to Get Credit Index

1.6 Research hypotheses

The research guided the following pair set of the hypotheses:-

H0$_1$: There is no significance relationship between poverty and inequality with political stability index

H1$_1$: There is a significance relationship between poverty and inequality with political stability index

H0$_2$: There is no significance relationship between poverty and inequality with Governance effectiveness index

$H1_2$: There is a significance relationship between poverty and inequality with Governance effectiveness index
$H0_3$: There is no significance relationship between poverty and inequality with regulatory quality index
$H1_3$: There is a significance relationship between poverty and inequality with regulatory quality index
$H0_4$: There is no significance relationship between poverty and inequality with Rule of Laws index
$H1_4$: There is a significance relationship between poverty and inequality with Rule of Laws index
$H0_5$: There is no significance relationship between poverty and inequality Ease to start Business index
$H1_5$: There is a significance relationship between poverty and inequality with Ease to start Business Index
$H0_6$: There is no significance relationship between poverty and inequality with FDI Net Flows
$H1_6$: There is a significance relationship between poverty and inequality with FDI Net Flows
$H0_7$: There is no significance relationship between poverty and inequality with Domestic Credit to Private sector
$H1_7$: There is a significance relationship between poverty and inequality with Domestic Credit to private sector
$H0_8$: There is no significance relationship between poverty and inequality with Ease to Get Credit Index
$H1_8$: There is a significance relationship between poverty and inequality with Ease to Get Credit Index
$H0_9$: There is no significance relationship between poverty and inequality with GNI per Capita
$H1_9$: There is a significance relationship between poverty and inequality with GNI per capita
$H0_{10}$: There is no significance relationship between poverty and inequality with ICT Use Index **$H1_{10}$:** There is a significance relationship between poverty and inequality with ICT Use Index

2.0 Related studies

The examination of the determinants and features of both poverty and inequality in African is overwhelming in the world. Most of the decision and policy makers in Africa are brain stormed on how to eradicate the poverty and Inequality in Africa. Most researcher confirms the existence of the chronic poverty and persistence of inequalities in Africa (Kerr and Teal, 2014; Marrero and Rodriguez, 2012 and Acemoglu and Robinson, 2010). Adeyemi, Ijaiya and Raheem (2009) examining the determinants of the poverty in Africa, using the set of 48 countries , with the multiple regression model finds that population rate, inflation and external serving , low economic activities and gender discrimination are the key determinants of the poverty in Africa. Anyanwu (2013) examining the causes effect of the poverty and economic growth in Africa confirms the findings of the Adeyemi, Ijaiya and Raheem (2009). Trade openness, higher real capita GDP, income inequalities and low education expenditure are found to be determinants of poverty in Africa (Adeyemi, Ijaiya and Raheem, 2009). Sekhampu(2013), Anyanwu(2005) ,and Aker and Mbiti (2010) evidenced that the key determinants of the poverty in Africa are the households head education, households size, employment age and low education in African countries. Apata, Apata, Igbalajobi and Awoniyi (2010) investigating the determinants of the poverty

and inequality in Nigeria confirms that limited access micro-credit, education and gender discrimination causing the poverty in Africa. Their study supported Bogale, Hagedorn and Korf (2005), Iradian (2005), Geda, de Jong, Kimenyi and Mwabu (2005), Hoogeveen and Ozler (2005), and Woolard and Klasen(20040,who found that the poverty determined by household size, credit market imperfection, low level of education and increase of income and social inequalities. Odedokun and Round (2004) examining the determinants of inequality in Africa, collecting data from 35 African countries, found that inequality is determined by political stability and fertility rate. It evidenced that, there is no direct evidence on private saving and taxation practices to influence the poverty level in Africa (Odedokun and Round, 2004). This finding supported by Elbers, Lanjouw and Lanjouw (2003), Rupasingha and Goetz (2007), Christiaensen, Demery and Paternostro (2007) and Naschold (2002). Naschold (2002) examining the inequality found that poverty can be reduced by eliminating the inequality, since it is not possible to separate poverty and inequality. Go, Nikitin, Wang and Zou (2007) examining the determinants of the poverty and inequality in Sub-Sahara Africa, found that unfavourable investment /risks and FDI flows causes of the poverty in Africa. The unfavourable investment contributes the African counties to lacks sustainable productivity, lacking of profitable investment and low FDI net flows. This causes the unemployment and lacking of management competence skills and technology that are created or accelerated by more FDI and Investment. The political stability and good governance will be likely to overcome the poverty in Africa (Go, Nikitin, Wang and Zou, 2007). Lopez and Perry (2013) examining the determinants of inequality in Latin America confirms that the higher inequality constitutes a barrier to poverty reduction. Furthermore, they found that inequality is a major determinant of crime and violence in Africa. This finding confirms Hoogeveen and Ozler (2005) and Ncube, Brixiova and Bicaba (2014). Geda (2006) examining the poverty and inequality in Africa, found that the transparency and openness of the government and the use of ICT is the determinants of the poverty and inequalities in Africa. The ICT use increases likelihood of the innovation and creativity so as to increases the productivity and entrepreneurial skills. Armstrong, Lekezwa and Siebrits (2008) examining the poverty and inequalities in South Africa found that the population growth, gender, house household structure and the age of the household are the determinants of the poverty and inequality of Africa. World Bank Group (2013) examining the poverty in Tanzania confirms that poverty is negatively correlated with higher education of the household head, internal migration is related to the level of economic growth. Ncube, Anyanwu and Hausken (2013) examining the inequality, economic growth and poverty in Middle east and North Africa (MENA), confirms that government expenditure, population growth and flow of FDI increase the poverty , and the domestic investment, trade openness and GNI per capita and income inequalities increases the poverty in Africa. The increases of the government expenditures increase the consumption to saving, and this causes the hindrance of the poverty

reduction. The increase of the population growth will retard the poverty reduction since will increase the government expenditure over saving. Domestic investment will be encouraged or preferred to the FDI as evidenced by Ncube, Anyanwu and Hausken (2013) and Ali, Mwabu and Gesami (2002).

The better access of the rural credit and capacity building of the community base organisation in rural will reduced the poverty in rural areas in Africa (Binam . *at el*.(2011). The access of the micro credit in African societies, particularly in the rural areas will reduce the poverty. It is claimed the poverty in rural is more acute than in urban. Cultural and gender inequalities, large household size, low education and political instability are found to be the causes of the poverty (Abebe and Quaicoe, 2014; Ikejiaku, 2009; Philip and rayhan, 2004; Andersoon, Engvall and Kokko, 2006; Edoumiekumo, Karimo and Tombofa, 2013: Khalid, Shahnaz and Bibi, 2005; Oluoko-Odingo, 2009).

The technological and policy dependency is suggested to cause the poverty and inequality in Africa. As it evidence the slow use of ICT in Africa, the innovation and creativity are noticed to be low, and creating the high dependency of the technological and policy from the American and European countries. Andriopoutou and Tskloglou (2011) and Albert and Collado (2004) suggested the high political and technological dependency of the African countries are some of the causes of the poverty. They lacking innovation and creativity and they forced to use the hired technology and having the opportunities for developing the technology they acquired.

Growth of GDP also found to have a positive impact on reducing the poverty. The decreasing of the GDP likely to causes the poverty and inequalities (Vijayakumar and Olga, 2012; Edoumiekumo, Karimo and Tombofa, 2013). Malik (1996) examining the determinants of rural poverty in Pakistan found that participation rate, education attainment and femalemale ratio and market and capital access are the determinants of poverty in Pakistan. This findings supported by Herrera, Razafindrakoto and Roubaud (2006) in Madagascar and Peru, and Ennin., *at el.(*2011) in Ghana, Bahta and Haile(2014) in Eritrea.

The study done in Nigeria (Asongwa, Okwocha and Umeh, 2012) on investigation the determinants of the poverty among rural farmers and in Eretria (Bahta and Haile, 2014), Runsinarith (2011) in Cambodia, Ataguba, Fonta, and Ichoku (2013) in Nigeria confirm that the less expenditure on education (primary education and secondary) and limit or less access of the micro credit accelerate the increase of the poverty in Eretria, Cambodia and Nigeria respectively. Yahie (2000) examining the poverty reduction strategy in African countries, found the positive role of the private sector in fostering the development in Africa. The private sector has a positive role in contribution to reduce the poverty by providing employment and reducing the gaps of the income inequalities. Addae-Koronkye (2014) found that the poor land ownership and other capital resources of the households, poor governance and conflicts –political stability hindering the poverty reduction in Africa.

Kennedy (2012) and Mwabu,Kimenyi, Kimalu and Nafula (2002) evidenced that the poverty root in Africa is the colonial legacy and corruptions. In general the literature explains more on micro factors (individual level) of the country that are household analysis. The macro factors such as economic growth, social, political and economic inequalities are left behind by many researchers, particularly in Africa. This paper is addresses the determinants and features of the poverty and inequality by examining the empirical social, economic and political experiences in 31 African countries.

3.0 Methodology

The study uses the descriptive research design and quantitative approach in order to extract the fact from the reality from the practical in 31 African Countries. The data is extracted from the OECD Fact book, the world Banks and others, the stepwise multivariate regression model is used to analyse the data.

3.1 Non –Technical Definition of variables

3.1.1 Dependent Variables

(i) Poverty dependent variables

(a) Multidimensional poverty index: is an international measure of acute poverty covering over 100 developing countries. It complements traditional income-based poverty measures by capturing the severe deprivations that each person faces at the same time with respect to education, health and living standards (UNDP, 2010)

(b) Poverty headcounts Rate: Poverty headcount ratio at $1.25 a day (PPP) (% of population) is Population below $1.25 a day is the percentage of the population living on less than $1.25 a day at 2005 international prices. As a result of revisions in PPP exchange rates, poverty rates for individual countries cannot be compared with poverty rates reported in earlier editions (World Bank, 2010).

(c) Poverty Gap Index: Poverty gap at $1.25 a day (PPP) (%) is the mean shortfall from the poverty line (counting the nonpoor as having zero shortfall), expressed as a percentage of the poverty line. This measure reflects the depth of poverty as well as its incidence(World Bank, 2010)

(ii) Inequality dependent variables

(a) GINI Coefficient: GINI index measures the extent to which the distribution of income or consumption expenditure among individuals or households within an economy deviates from a perfectly equal distribution (World Bank, 2010).

(b) Female Participation Ratio: The participation rate is the ratio of the labour force (female) to the working age population. The labour force is defined as the sum of employed and unemployed people (OECD, 2013).

(c) Gender Inequality Index: measures gender inequalities in three important aspects of human development—reproductive health measured by maternal mortality ratio and adolescent birth rates; empowerment, measured by proportion of parliamentary seats occupied by females and proportion of adult females and males aged 25 years and older with at least some secondary education; and economic status expressed as labour market participation and measured by labour force participation rate of female and male populations aged 15 years and older (UNDP,2010)

3.1.2 Independent variables

(a) Political Stability Index: Capturing perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically ‐motivated violence and terrorism (Kaufmann, Kraay and Mastruzzi, 2010 and World Bank, 2010).

(b) Government effectiveness Index: capturing perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies (Kaufmann, Kraay and Mastruzzi, 2010 and World Bank, 2010).

(c) Regulatory Quality Index: is the scaled ration on capturing perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development (Kaufmann, Kraay and Mastruzzi, 2010; World Bank, 2010).

(d) Rule of Laws Index: is ratio that capturing perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence(Kaufmann, Kraay and Mastruzzi, 2010 and World Bank, 2010).

(e) Ease to Start Business Index: World Bank’s Ease of Doing Business (Index) measures the business regulations of countries, worldwide, and examines the key factors that directly affect each country’s businesses, for example; business formation, operation, laws, challenges (World Bank, 2010).

(f) Ease to Pay Taxes Index: The ranking of economies on the ease of paying taxes is determined by sorting their distance to frontier scores for paying taxes. These scores are the simple average of the distance to frontier scores for each of the component indicators, with a threshold and a nonlinear transformation applied to one of the component indicators, the total tax rate. The threshold is set as the frontier for the total tax rate indicator. It is defined as the total tax rate at the 15th percentile of the overall distribution of total tax rate indicator for all years included in the analysis (Djankov. *at el*., 2010).

(g) FDI Net Flows: The World Bank defines foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 per cent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors. Data are in current U.S. Dollars.

(h) Domestic Credit to Private Sectors: According to World Bank, Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries these claims include credit to public enterprises. The financial corporations include monetary authorities and deposit money banks, as well as other financial corporations where data are available (including corporations that do not accept transferable deposits but do incur such liabilities as time and savings deposits). Examples of other financial corporations are finance and leasing companies, money lenders, insurance corporations, pension funds, and foreign exchange companies.

(i) Ease to Get Credit Index: The ranking of economies on the ease of getting credit is determined by sorting their distance to frontier scores for getting credit. These scores are the distance to frontier score for the sum of the strength of legal rights index and the depth of credit information index**.**

(j) GNI per Capita: GNI per capita (formerly GNP per capita) is the gross national income, converted to U.S. dollars using the World Bank Atlas method, divided by the midyear population. GNI is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. GNI, calculated in national currency, is usually converted to U.S. dollars at official exchange rates for comparisons across economies, although an alternative rate is used when the official exchange rate is judged to diverge by an exceptionally large margin from the rate actually applied in international transactions**.**

(k) ICT Use Index: The ICT Use Index (IUI) is an index published by the United Nations International Telecommunication Union based on internationally agreed information and communication technologies (ICT) indicators. This makes it a valuable tool for benchmarking the most important indicators for measuring the information society. The IUI is a standard tool that governments, operators, development agencies, researchers and others can use to measure the digital divide and compare ICT performance within and across countries. The ICT Use Index is based on 11 ICT indicators, grouped in three clusters: access, use and skills

4.0 Findings and Presentation

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The study aimed to examine the determinant and features of the poverty and inequality in Africa. The data from 31 African countries are collected and analysed in the multivariate regression model with the aid of the Minitab 17 software. The analysed data were analysed in the descriptive statistics and profile the general profile of the macro characteristics of the sample African countries as the determinants of the poverty and inequality in Africa (Table 4.1).

Table 4.1 Descriptive Statistics of the country specific characteristics

Variable	Total Count	N*	Mean	SE Mean	StDev	CoefVar
Political Stability Index	31	0	-0.420	0.154	0.855	-203.48
Government Effectiveness	31	0	-0.5735	0.0892	0.4964	-86.55
Regulatory Quality Index	31	0	-0.4955	0.0939	0.5227	-105.49
Rule of Law Index	31	0	-0.5455	0.0929	0.5175	-94.87
Ease to Start Business Index	30	0	0.3930	0.0417	0.2285	58.15
Ease to Pay Taxes	31	0	0.4190	0.0525	0.2922	69.74
FDI Net Flows	31	0	0.0310	0.00660	0.03675	118.77
Domestic Credit to Private	31	0	0.2647	0.0456	0.2537	95.85
Ease to Get Credit Index	31	0	0.4519	0.0517	0.2877	63.66
ICT Use Index	31	1	0.4320	0.0696	0.3812	88.24
Multidimensional Poverty Index	31	4	0.2895	0.0307	0.1597	55.18
Gender Inequality Index	31	2	0.5473	0.0168	0.0903	16.51
Female Participation Rate	31	0	60.71	3.74	20.84	34.33
Poverty Headcount Rate	31	2	39.40	4.10	22.09	56.06
GINI Coefficient	31	1	44.54	1.69	9.28	20.83

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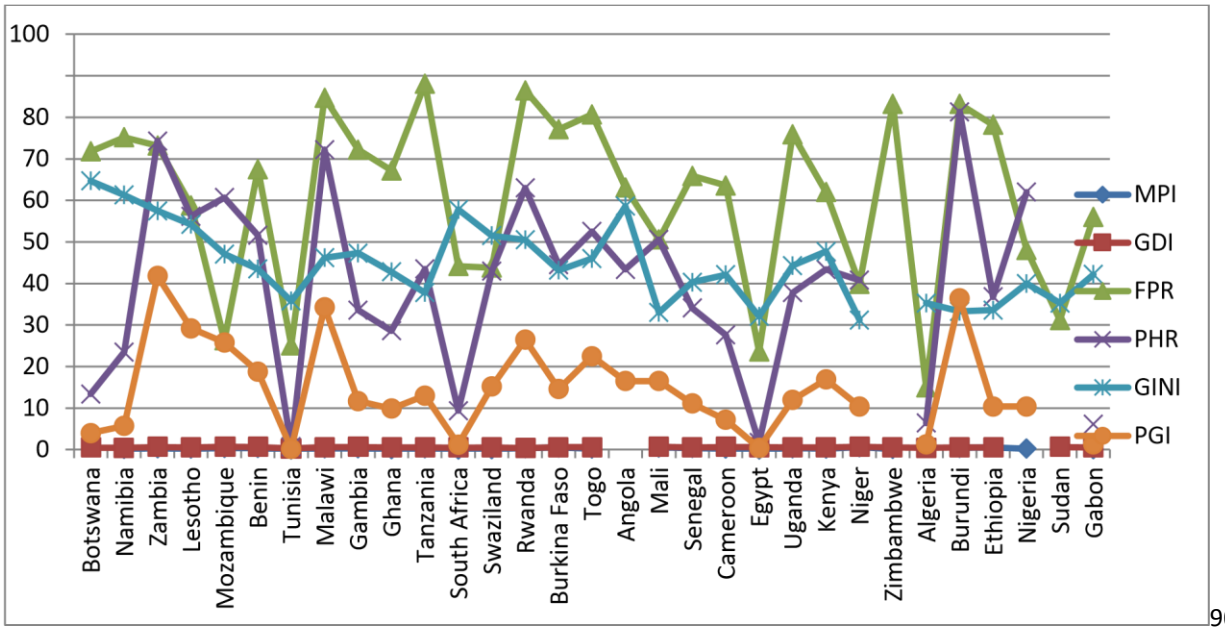
Poverty Gap Index	31	2	14.66	2.07	11.13	75.92

Source: Field Data *(2015)*

Table 4.1 shows the descriptive statistics of the country macro characteristics of the 31african countries sampled. The table profile that averages mean of the poverty in Africa is 39.40 percentage of the population living on less than $1.25 a day at 2005 international prices; Multidimensional Poverty Index is averaged at 0.2895 for African countries, and Poverty Gap Index is averaged at 14.66 for African countries. The poverty gap index gives the ratio of the cost of eliminating poverty using perfectly targeted transfers compared with using completely untargeted transfers. Thus, the smaller is the poverty gap index, the greater the potential economies for poverty alleviation budget from identifying the characteristics of the poor so as to target benefits and programs.

The poverty and inequality measures are graphed in graph 1(a) to show the graphical patterns in each sample country in Africa. The trend shows that the countries of Tunisia, Egypt, Mozambique, Algeria and Sudan are less female participation ratio; this is due to cultural beliefs. The Botswana, Namibia, Tunisia, South Africa, Egypt, Algeria, and Gabon indicated to have minimal poverty gap index, contrary to Zambia, Malawi, Rwanda, Kenya and Burundi who indicated by high poverty gap index(Graph 1.a).

Graph 1a: The graphical presentation of the poverty and inequality measures in Africa



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Source: World Bank (2010)

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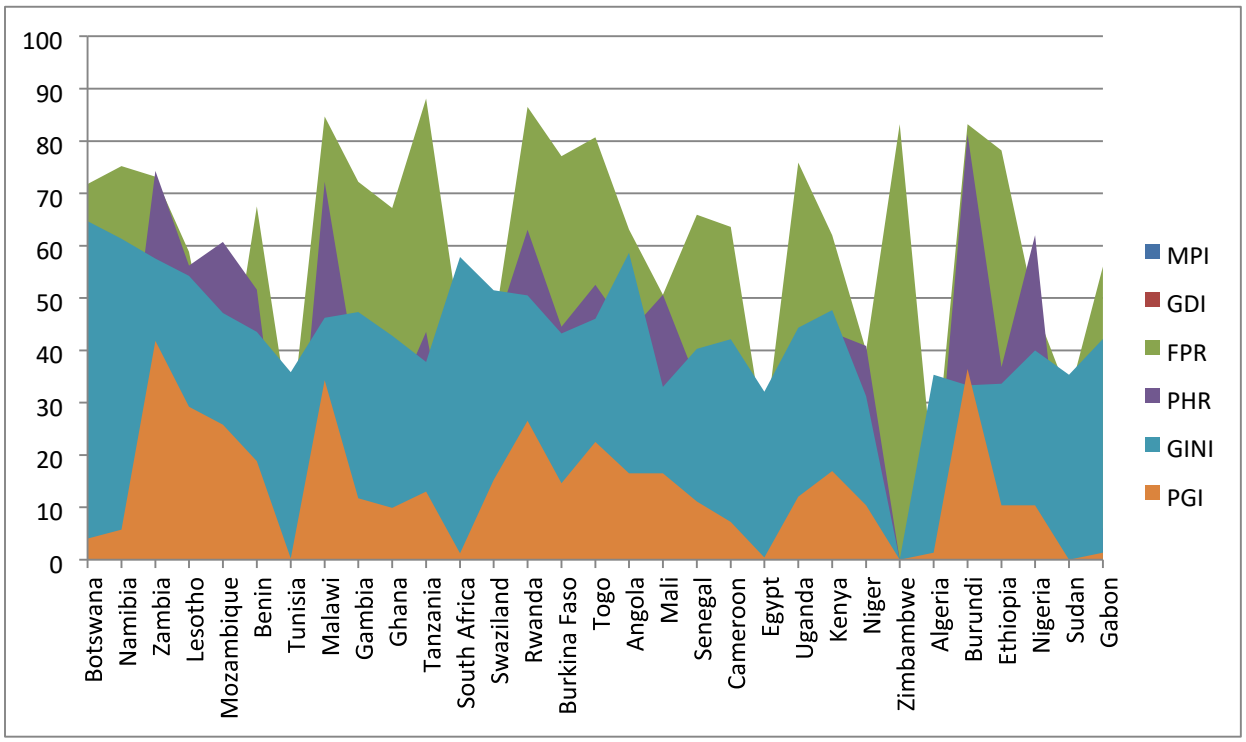
His graph 1(a) shows the graphical presentation of the poverty and inequality in 31 African countries involved in the study. The graph shows the countries sample their respective indices of poverty and inequality.

For more clarification, the area presentation of the poverty and inequalities measures used in the study is presented in the graph 1(b). The graphs shows the area covered-kurtosis of the respectively indicator of both poverty and inequality (Graph 1.b)

Graph 1(b). The area presentation of the poverty and inequality measures in Africa



Source: World Bank (2010)

The graph 1(b) shows the area graphical presentation of some of the poverty and inequality measures to examine the simple kurtosis of the data sampled. The graphs shows that most the variable shared by a group of country, for example, Zambia, Lesotho, Mozambique ;Kenya and Uganda; Burkina Faso, Mali, Senegal, Cameroon, having the same range of poverty and inequality. Does it share the same cultures of poverty? Example Burkina Faso, Mali, Senegal. Cameroon does represent or reflect the Western African culture of Poverty? And, Kenya and

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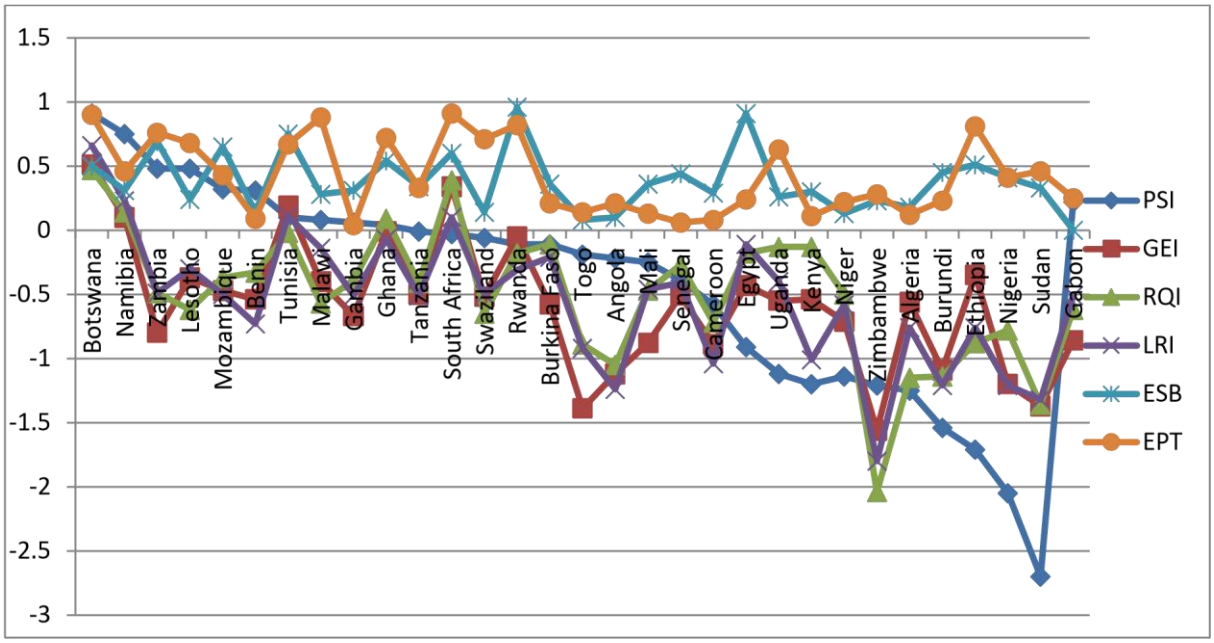
Uganda reflect the eastern African poverty? In some extent the geographical position and cultures have an impact on both poverty and inequality.

In graphical presentation of some of the macro factors of the countries sample, the political stability index are very low in Sudan, Nigeria, Niger, Ethiopia, Burundi, Algeria and Zimbabwe. These countries having minimal government effectiveness but having high indices of the ease of paying taxes (Graph 2.a). Botswana is the country that doing better in government effectiveness, political stability, rules of law, ease of paying taxes and regulatory quality.

Graph 2.a: The graphical presentation of the poverty and inequality macro factors in Africa



Source: World Bank (2010)

The graph 2(a) shows the graphical presentation of some of the macro factors that influences the poverty and inequality in Africa. The graph profiles the presence of acute political stability drop in Sudan, Nigeria, Ethiopia and Burundi and highest in Botswana and Namibia. The regional presentation of the countries sampled is done on the graph 2(b) for examination of the kurtosis of the clustered macro factors, to reveal the cultural similarity of poverty in Africa.

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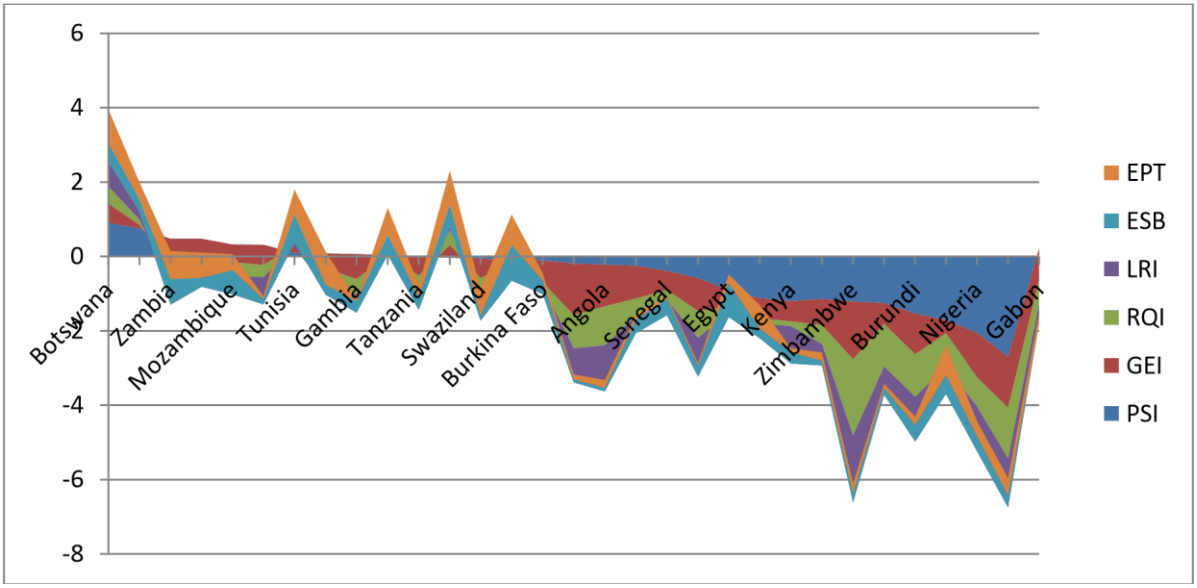
Graph 2(b). The area presentation of the poverty and inequality macro-factors in Africa



Source: World Bank (2010).

The graph 2.b shows the areas graphical presentation to explore the cultures of the African countries. The graph shows the Sudan, Nigeria, Ethiopia, Burundi and Algeria share same culture of the political instability, low of rule of laws, government effectiveness, ease of starting business, and ease of paying taxes. Botswana, Zambia, Tunisia, South Africa and Rwanda share the same culture of the ease of paying taxes, and ease starting of business.

4.1 Determinants and feature of the poverty in Africa

The study examines the factor affecting the poverty and inequality in Africa. The macro factors are empirically examined. The poverty was measured in multidimensional poverty index, poverty headcount and poverty gap index as the function of the macro country factors. The inequalities are measured in GINI Coefficient, Gender Inequality index and Female Participation ratio as the function of the macro factors or country specific factors, sampled from 31 African countries.

4.1.1 Multidimensional Poverty Index as the measures of the Poverty and its determinants and features

The poverty in Africa in was measured in multidimensional poverty index to reflect the percentage of the population that is multidimensionally poor adjusted by the intensity of the deprivations. The multidimensional poverty index was regressed to the macro factors of the specific 31 African countries to determine the determinants of the poverty in Africa. The stepwise regression model was run (Table 4.2). The regression model

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was run at 0.05 or 5 per cent of level of statistical significance, and finds that the GNI per capita, gender inequality, domestic credit to private sectors, ease to get credit and ICT Use in the country are the main determinants of the acute poverty in African countries. These macro factors have negative influences on the poverty, that is, the higher ICT Use in a country and higher GNI per capita reduced the acute poverty in Africa.

The key feature of acute poverty in a country is having less use of technology-ICT use, domestic credit to private sector, ease to get credit and having GNI per capita, and having high inequality in a country (Table 4.2).

Table 4.2: Stepwise Regression model on poverty and its determinants in Africa

Alpha-to-Enter: 0.05, Alpha-to-Remove: 0.05

Response is Multidimensional Poverty Index on 13 predictors, with N = 25 N (cases with missing observations) = 6 N (all cases) = 31

The regression equation is

$\phi = 0.605 - 0.0950\alpha - 0.015\beta + 0.086\chi + 0.093\,\mathbf{A} + 0.140\,\mu - 0.159\,\nu + 0.379 + 0.111\,\psi - 0.077\,\omega - 0.298\,\pi - 0.166\,\eta + 0.00038\,\rho - 0.000019$ GNI …… (vi)

Step	1	2
Constant	0.4059	0.4324
GNI Per Capita	-0.00003	-0.00002
T-Value	-5.54	-3.74 P-Value
0.000 0.001		
ICT Use Index	-0.143	
T-Value	-2.32	
P-Value	0.030	
S	0.109	0.0998
R-Sq	57.20	65.60
R-Sq(adj)	55.34	62.47
Mallows Cp	10.1	6.0
PRESS	0.335484	0.256277

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R-Sq(pred)	47.36	59.78

Best alternatives:

Variable	ICT Use Index	Gender Inequality Index
T-Value	-4.23	2.01
P-Value	0.000	0.057
Variable	Gender Inequality Index	Ease to Get Credit
T-Value	3.73	-1.80
P-Value	0.001	0.085
Variable	Domestic Credit to Private	Rule of Law Index
T-Value	-2.72	1.02
P-Value	0.012	0.320
Variable	Ease to Get Credit	FDI Net Flows
T-Value	-2.57	0.96
P-Value	0.017	0.347
Variable	Female Participation Rate	Domestic Credit to Private
T-Value	1.69	-0.95
P-Value	0.105	0.351
Variable	Government Effectiveness Index	Regulatory Quality Index
T-Value	-1.29	0.92
P-Value	0.208	0.370
Variable	Political Stability Index	Ease to Pay Taxes
T-Value	-1.22	-0.81
P-Value	0.236	0.425
Variable	Ease to Start Business Index	Political Stability Index
T-Value	-1.19	-0.33
P-Value	0.245	0.742
Variable	Ease to Pay Taxes	Government Effectiveness Index
T-Value	-1.14	0.20
P-Value	0.264	0.845
Variable	FDI Net Flows	Ease to Start Business Index

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T-Value	1.11	-0.18
P-Value	0.279	0.861

Source: Field data (2015)

The table 4.2 shows the stepwise regression model of the macro factors in 31 African countries. The regression was run at 0.05 levels of significance. The model is determined at the $R^2 = 57.20$

4.1.2 Poverty gap index as the measures of poverty and determinants and features The examination on poverty gap index was done by regression the index with the macro factors of the 31 African countries and finds that the determinants of poverty gap is GNI per capita and political stability in a country. The key feature of the poverty measures is high political stability in a country accelerates the increases poverty gap and the less GNI per capita increase the poverty gap in a country (Table 4.3).

Table 4.3: The regression model of the poverty gap and macro factors in African countries

The regression equation is

$Z = -8.6 + 9.02\,\alpha - 4.65\,\beta - 10.9\,\chi - 1.17\,A + 3.24 + 13.9\,\nu - 20.2\,\kappa - 5.88\,\psi + 10.2\,\omega + 4.48\,\pi + 26.4\,\eta - 0.023\,\rho - 0.00132\,GNI$ …….(vii)

Predictor	Coef	SE Coef	T	P
Constant	-8.57	23.50	-0.36	0.722
Political Stability Index	9.018	2.681	3.36	0.006
Government Effectiveness Index	-4.648	8.244	-0.56	0.583
Regulatory Quality Index	-10.94	10.24	-1.07	0.307
Rule of Law Index	-1.172	9.612	-0.12	0.905
Ease to Start Business Index	3.243	7.639	0.42	0.679
Ease to Pay Taxes	13.889	9.976	1.39	0.189
FDI Net Flows	-20.16	49.13	-0.41	0.689
Domestic Credit to Private	-5.879	7.737	-0.76	0.462
Ease to Get Credit	10.209	8.677	1.18	0.262
ICT Use Index	4.482	8.494	0.53	0.607
Gender Inequality Index	26.38	28.54	0.92	0.373

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Female Participation Rate	-0.0232	0.1147	-0.20	0.843
GNI per Capita		-0.0013170	0.0004388	-3.00	0.011

S = 6.32906 R-Sq = 83.8% R-Sq(adj) = 66.2%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	13	2480.74	190.83	4.76	0.005
Residual Error	12	480.68	40.06		
Total	25	2961.42			

Source: Field data (2015)

The table 4.3 shows the regression model of the poverty gap index and the macro factors in the 31 African countries. The model is determined at 83.8 per cent, and the model is accepted at 99 per cent of level of confidence, the p-value is 0.005 less than 0.01 significant levels. The model determines the factors of the poverty gap and its features.

4.1.2 Poverty Headcount Rate as the measure of the poverty and its determinants and features.

The poverty was examined in the poverty headcount rate. The poverty headcount rates were regressed with macro factors of the 31 African countries, and find that poverty determinants are political stability and GNI per capita. The poverty feature is less GNI per capita and increase of political stability increases the poverty (Table 4.4).

Table 4.4: Regression model of the poverty and macro factors of the African countries

The regression equation is

$$\mathbf{H = 27.5 + 11.9\,\alpha - 4.2\,\beta - 11.6\,\chi - 0.5\,A + 0.5 + 14.5\,\nu - 58.3\,\kappa - 6.8\,\psi + 20.6\,\omega - 6.9\,\pi + 30.9\,\pi - 0.080\,\rho - 0.00312\,GNI \quad \text{(viii)}}$$

Predictor	Coef	SE Coef	T	P
Constant	27.55	37.77	0.73	0.480
Political Stability Index	11.939	4.308	2.77	0.017
Government Effectiveness Index	-4.25	13.25	-0.32	0.754

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Regulatory Quality Index	-11.60	16.46	-0.70	0.495
Rule of Law Index	-0.51	15.45	-0.03	0.974
Ease to Start Business Index	0.54	12.28	0.04	0.966
Ease to Pay Taxes	14.52	16.03	0.91	0.383
FDI Net Flows	-58.33	78.97	-0.74	0.474
Domestic Credit to Private	-6.80	12.44	-0.55	0.594
Ease to Get Credit	20.59	13.95	1.48	0.166
ICT Use Index	-6.93	13.65	-0.51	0.621
Gender Inequality Index	30.85	45.87	0.67	0.514
Female Participation Rate	-0.0802	0.1844	-0.43	0.671
GNI Per Capita	-0.0031206	0.0007052	-4.42	0.001

S = 10.1723 R-Sq = 88.9% R-Sq(adj) = 76.9%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	13	9957.3	765.9	7.40	0.001
Residual Error	12	1241.7	103.5		
Total	25	11199.0			

Source: Field data (2015)

The table 4.4 shows the regression model of the poverty headcount rate and the macro factors of sampled from 31 African countries. The regression model was run at 0.05 levels of significance and it is determined at 88.9 per cent at p-value of 0.001, less than 0.01.

4.2 Determinants **and feature of the inequality in Africa**

The study aimed the inequality in Africa by considering three aspects, income inequality – (GINI coefficient), social and political inequality (gender inequality index) and the socioeconomic aspects (female participation rate). The regression techniques were used to determine the determinants and features of the inequality in Africa.

4.2.1 GINI Coefficient as the measure of the Inequality and it's the determinants and features

The income inequality in African countries was measured by using GINI coefficients, in order to determine their determinants and features. The regression model used to determine the features and determinants (Table 4.5).

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Table 4.5: the Regression Analysis of GINI Coefficient and macro factors of a country

The regression equation is

$$\vartheta = 30.8 + 5.98\alpha + 0.08\,\beta + 0.97\,\chi - 5.16\,A - 5.94\,\mu + 5.24\,\nu - 6.2\,\kappa + 5.29\,\psi + 15.1\omega - 5.40\,\pi + 5.9\,\eta + 0.046\,\rho + 0.000376\,GNI \quad \text{.....(ix)}$$

Predictor	Coef	SE Coef	T	P
Constant	30.80	22.77	1.35	0.199
Political Stability Index	5.978	2.471	2.42	0.031
Government Effectiveness Index	0.082	7.781	0.01	0.992
Regulatory Quality Index	0.974	9.960	0.10	0.924
Rule of Law Index	-5.161	9.337	-0.55	0.590
Ease to Start Business Index	-5.942	7.493	-0.79	0.442
Ease to Pay Taxes	5.240	9.095	0.58	0.574
FDI Net Flows	-6.19	47.81	-0.13	0.899
Domestic Credit to Private	5.292	7.592	0.70	0.498
Ease to Get Credit	15.142	8.271	1.83	0.090
ICT Use Index	-5.403	8.293	-0.65	0.526
Gender Inequality Index	5.87	27.98	0.21	0.837
Female Participation Rate	0.0456	0.1125	0.41	0.692
GNI Per Capita	0.0003763	0.0004165	0.90	0.383

S = 6.20978 R-Sq = 76.7% R-Sq(adj) = 53.4%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	13	1649.53	126.89	3.29	0.020
Residual Error	13	501.30	38.56		
Total	26	2150.83			

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Source: Field data (2015)

The table 4.5 shows the regression analysis of the income inequality - GINI coefficients and its determinants and features. The table profile that the only one factor-political stability index, have a significant positive influence on the income inequality in African countries. The features of the income inequality in Africa are the increase of the political stability in a country increase the GINI coefficient.

4.2.2 Gender inequality index as the measure of the social and political inequality and its determinants and features in Africa

The inequality in social and political aspect was measures in gender inequality index, and the regression analysis was done in order to determine the determinants and feature. The find confirms that only the use of technology (ICT use) and government effectiveness are key determinants for the social and political inequality in African countries (Table 4.6). The key features of the social and political inequalities in African countries are less or poor government effectiveness and less use of technology in a country-the use of ICT.

Table 4.6: Regression Analysis of Gender Inequality and macro factor of the African countries

The regression equation is

$$\eta = 0.566 - 0.0254\,\alpha - 0.139\,\beta + 0.112\,\chi + 0.0105\,A + 0.0545\,\mu - 0.0590\,\nu + 0.578\,\kappa + 0.0592\,\psi - 0.159\,\pi - 0.000002\,GNI \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (x)$$

Predictor	Coef	SE Coef	T	P
Constant	0.56646	0.05766	9.82	0.000
Political Stability Index	-0.02542	0.02186	-1.16	0.262
Government Effectiveness Index	-0.13865	0.06119	-2.27	0.038
Regulatory Quality Index	0.11152	0.07139	1.56	0.138
Rule of Law Index	0.01048	0.08783	0.12	0.907
Ease to Start Business Index	0.05446	0.06679	0.82	0.427
Ease to Pay Taxes	-0.05904	0.08267	-0.71	0.485
FDI Net Flows	0.5785	0.3498	1.65	0.118
Domestic Credit to Private	0.05918	0.06256	0.95	0.358
Ease to Get Credit	-0.00384	0.07252	-0.05	0.958
ICT Use Index	-0.15872	0.05892	-2.69	0.016

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GNI per Capita	-0.00000163	0.00000336	-0.49	0.633

S = 0.0588760 R-Sq = 75.5% R-Sq(adj) = 58.6%

Analysis of Variance

Source	DF	SS	MS	F	P		
Regression	11	0.170877	0.015534	4.48	0.004		
Residual Error	16	0.055462	0.003466	Total		27	0.226339

Source: Filed data (2015).

The table 4.6 shows the regression analysis of the social and political inequality in African countries. The regression model was determined at 75.5 per cent, at p-value 0.004 less than 0.05 levels of significance. The regression analysis was done at 0.05 0r 5 per cent. The use of ICT and the government effectiveness influences the social and political inequality.

4.2.3 Female participation rate as the measures of socio-economic inequality and its determinants and features.

The social economic inequality was examined to determine the determinants and features of the inequalities in African countries. The regression analysis was done on female participation rate and macro factor of the sampled countries. The study finds that GNI per capita and FDI Net flows are the key determinants of the socio-economic inequality in African countries. The key features of the socio-economic inequality are the less GNI per capita and less FDI Net flows in a country (Table 4.7).

Table 4.7: Regression Analysis of female Participation and macro factor factors of the African countries.

The regression equation is

$$\rho = 81.4 + 4.59\,\alpha - 6.1\,\beta + 0.4\,\chi + 9.7\,A - 15.8\,\mu + 3.8\,\nu - 248 - 9.0\,\psi + 31.9\,\omega - 17.1 - 0.00201\,GNI \quad \text{.....(xi)}$$

Predictor	**Coef**	**SE Coef**	**T**	**P**
Constant	81.38	15.39	5.29	0.000
Political Stability Index	4.588	5.850	0.78	0.443

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Government Effectiveness Index			-6.11	16.48	-0.37	0.715	
Regulatory Quality Index			0.43	18.21	0.02	0.982	
Rule of Law Index			9.74	22.83	0.43	0.675	
Ease to Start Business Index			-15.75	18.45	-0.85	0.404	
Ease to Pay Taxes			3.83	20.61	0.19	0.855	
FDI Net Flows			-248.03	97.57	-2.54	0.020	
Domestic Credit to Private			-9.03	17.00	-0.53	0.602	
Ease to Get Credit			31.93	19.62	1.63	0.121	ICT Use Index
-17.11	15.13	-1.13	0.273				
GNI per Capita			-0.0020128	0.0009266	-2.17	0.043	

S = 16.8006 R-Sq = 59.4% R-Sq(adj) = 34.5%

Analysis of Variance

Source	DF	SS	MS	F	P		
Regression	11	7423.8	674.9	2.39	0.049		
Residual Error	18	5080.7	282.3	Total		29	12504.5

Source: Field data (2015)

The table 4.7 shows the regression model of the female participation rate and the country macro factors. The model is determined at 59.4 per cent, with p-value of 0.049 that is less than 0.05 levels of significant.

4.3 Test of the hypotheses

The ten sets of paired hypotheses were tested statistically at 5 per cent and 10 per cent levels of significant. The political stability index has a positive coefficient value of 9.018, *t-value* of 3.36 and the *p-values* of 0.006 in the poverty regression model, positive coefficient value of 5.978, *t-value* of 2.42 and *p-value* of 0.031 in the inequality regression models, found to be statistically significant at 1 per cent level in poverty regression model. The *p-value* is less than 0.01 or 1 per cent, this implies that there is a strong statistical evidence to reject the null hypothesis at this level of significant in the first pair of hypotheses; therefore the null hypothesis of the first pair of the hypotheses is rejected. That is, there is significant relationship between poverty and political stability index

at 99 per cent of confident level. And the hypothesis found to be statistically significant at 0.05 or 5 per cent in the inequality regression model, since the p-value in inequality model is 0.031 is less than 0.05, therefore, the null hypothesis of the first set of the hypotheses is rejected and the alternative hypothesis is accepted, that is there is statistical evidence that there is a relationships between inequality and political stability in African countries.

The government effectiveness index has a negative coefficient value of -0.13865, *t-value* of 2.27, and *p-value* of 0.038 in the inequality regression model, found to be statistically significant at 5 per cent level. The *p-value* is less than 0.05 or 5 per cent, this implies that there is a strong statistical evidence to reject the null hypothesis in the second pair of hypotheses, that is, the alternative hypothesis is accepted at 95 per cent level of confidence. Therefore, there is a significant relationship between inequality and government effectiveness in Africa. The p-value of the poverty are out greater than 0.05 levels of significance, therefore, there is no strong evidence to reject the null hypothesis in poverty relations. That is, there is no relationship between poverty and government effectiveness in Africa. The regulatory quality index in the poverty regression model has a positive coefficient value of 0.11152, *t-value* 1.56, and *p-value* of 0.38 found to be statistically insignificant at 5 per cent level. The p-value is greater than 10 per cent, this implies that there is no strong statistical evidence to reject the null hypothesis in the third pair of the hypotheses, that is, the null hypothesis is accepted. Therefore, there is a significant relationship between poverty and regulatory quality index. The regulatory quality index in the inequality model has a negative coefficient value -10.94, *t-value* of -1.07 and p-*value* of 0.307, found to be statistical insignificant at 0.10 since the pvalue is greater than 0.10. Therefore, the null hypothesis in the third part of the hypotheses pair is accepted, that is, there is no significant relationship between inequality and regulatory quality in a country. The rule of laws index in poverty regression model has a positive coefficient value of 0.093, t-value of 1.02, p-value of 0.320 found to be statistically insignificant at 10 per cent level. The p-value is greater than 10 per cent; therefore, there is no strong evidence to reject the null hypotheses of the fourth pair of hypotheses. That is, there is no significant relationship between rule of laws and poverty in Africa.

The rule of laws index in inequality regression model has a negative coefficient value of 5.161, t-value of -0.55 and p-value 0.590, found to be statistically insignificant at 10 per cent of level of significance, it found that there is no strong statistical evidence to reject the null hypotheses in the fourth pair of hypothesis, therefore, null hypothesis is accepted. That is, there are no significant relationships between inequality and rule of law in Africa.

The Ease of starting business index in the inequality regression model has a negative coefficient value of -5.942, *t-value* of -0.79, and *p-value* of 0.442 found to be statistically insignificant at 10 per cent level. The *p-value* is greater than 0.1 or 10 per cent, this implies that there is no strong statistical evidence to reject the null hypothesis in the second pair of hypotheses, therefore, the null hypothesis in the fifth set of hypotheses is accepted, and that

is there is no significant relationship between easiness of starting business in a country and the inequality in Africa. The ease of starting business index in poverty regression model has a positive coefficient value of 0.140, *t-value* -1.19, and *p-value* 0.245 found to statistically insignificantly at 10 per cent level of significance, since p-value greater than 10 per cent, this evidences that there is no strong statistical evidence to reject the null hypothesis in the fifth pair of hypotheses. That is, there is no significant relationship between poverty and easiness of starting business in African countries. The ease to pay taxes index in the poverty regression model has a positive coefficient value of 13.889, *t-value* 1.39, and *p-value* of 0.189 found to be statistically insignificant at 10 per cent level. The p-value is greater than 10 per cent, this implies that there is no strong statistical evidence to reject the null hypothesis in the sixth pair of the hypotheses, that is, the null hypothesis is accepted. Therefore, there is a significant relationship between poverty and easiness of paying taxes in a country. The ease of paying taxes in the inequality model has a negative coefficient value – 0.05904, *tvalue* of -0.71 and p-*value* of 0.485, found to be statistical insignificant at 0.10 since the pvalue is greater than 0.10. Therefore, the null hypothesis in the sixth part of the hypotheses pair is accepted, that is, there is no significant relationship between inequality and easiness of paying taxes in a country. The FDI Net flows in the poverty regression model has a positive coefficient value of 0.379 , *t-value* 0.96 , and *p-value* of 0.347 found to be statistically insignificant at 10 per cent level. The p-value is greater than 10 per cent, this implies that there is no strong statistical evidence to reject the null hypothesis in the third pair of the hypotheses, that is, the null hypothesis is accepted. Therefore, there is a significant relationship between poverty and FDI Net Flows in African. The FDI Net Flows in the inequality model has a negative coefficient value -248.03, *t-value* of -2.54 and p-*value* of 0.020, found to be statistical significant at 0.05 since the p-value is less than 0.05. Therefore, the null hypothesis in the sixth pair of the hypotheses is accepted, that is, there is a significant relationship between inequality and FDI Net flows in Africa. The domestic credit to private sectors index in the poverty regression model has a positive coefficient value of 0.111, *t-value* -2.72, and *p-value* of 0.010 found to be statistically significant at 10 per cent level. The p-value is equal to 10 per cent, this implies that there is a strong statistical evidence to reject the null hypothesis in the seventh pair of the hypotheses, that is, the null hypothesis is rejected. Therefore, there is a significant relationship between poverty and domestic credit to private sectors in Africa. The domestic credit to private sectors index in the inequality model has a positive coefficient value 0.05918, *t-value* of 0.95 and p-*value* of 0.358, found to be statistical insignificant at 0.10 since the p-value is greater than 0.10. Therefore, the null hypothesis in the third part of the hypotheses pair is accepted, that is, there is no significant relationship between inequality and domestic credit to private sectors in a country. The ease to get credit index in poverty regression model has a negative coefficient value of -

0.077, t-value of -2.57, p-value of 0.017 found to be statistically significant at 5 per cent level. The p-value is less than 5 per cent; therefore, there is a strong evidence to reject the null hypotheses of the eighth pair of hypotheses. That is, there is a significant relationship between easiness of getting credit and poverty in Africa.

The ease to get credit index in inequality regression model has a positive coefficient value of 31.93, t-value of 1.63 and p-value 0.121, found to be statistically insignificant at 10 per cent of level of significance, it found that there is no strong statistical evidence to reject the null hypotheses in the eighth pair of hypothesis, therefore, null hypothesis is accepted. That is, there are no significant relationships between inequality and easiness of getting credit in Africa. The GNI per capita in poverty regression model has a negative coefficient value of 0.000019, t-value of -5.54, p-value of 0.0000 found to be statistically significant at 1 per cent level. The p-value is less than 1 per cent; therefore, there is a strong evidence to reject the null hypotheses and accept the alternative hypothesis of the ninth pair of hypotheses. That is, there is a significant relationship between GNI per capita and poverty in Africa. The GNI per capita in inequality regression model has a negative coefficient value of 0.0020128, *t-value* of –2.17 and *p-value* 0.043, found to be statistically significant at 5 per cent of level of significance, since the *p-value* is less than 5 per cent of significance level, it found that there is no strong statistical evidence to accept the null hypotheses in the ninth pair of hypotheses, therefore, null hypothesis is rejected. That is, there is a significant relationship between inequality and GNI per capita in Africa.

The ICT Use index in poverty regression model has a negative coefficient value of -0.298, *tvalue of -2.32*, *p-value of 0.030* found to be statistically significant at 5 per cent level. The pvalue is greater than 5 per cent; therefore, there is a strong evidence to reject the null hypotheses of the tenth pair of hypotheses. That is, there is a significant relationship between ICT Use and poverty in Africa. The ICT Use index in inequality regression model has a negative coefficient value of 0.15872, t-value of -2.69 and p-value 0.016, found to be statistically significant at 5 per cent of level of significance, since p-value is less than 5 per cent of level of significance, and it found that there is no strong statistical evidence to accept the null hypotheses in the tenth pair of hypothesis, therefore, alternative hypothesis is accepted. That is, there is a significant relationship between inequality and ICT Use in Africa.

4.4 Results and discussion

The study was aimed to examine the empirical determinants and features of the poverty and inequality in Africa. The study examined more on macro factors, collected from 31 African countries. The study finding that political stability in a country has a negative influence on both poverty and inequality. The political stability is negatively related to poverty and inequality. This implies that a country with a stable political stability is more likely to have low level of poverty and inequality. This study confirm the studies done by odedokun and Round (2004),

Rupasingha and Goetz (2007), Go, Nikitin, Wang and Zou (2007), Ikejiaku (2009), Oluoko-Odingo (2009), and Addae-koronkye (20140 who found the political stability disfavour the poverty and inequalities. The political stability is associated with the good working and investment conditions that attracting the economic activities and flows of the FDI in a country. The government effectiveness has a negative influence on inequalities and poverty but insignificantly with poverty. The inequalities and poverty will be reduced by improving or increasing the government effectiveness in a country. The government effectiveness indicates the operational and administrative of policies in a country. This study confirms with the studies done by Adeyemi, Ijaiya and Raheem (2009), Anyannwu(2013), Go, Nikitin, Wang and Zou (2007),Geda (2006), Ncube, Anyanwu and Hausken (2013), Vijayakumar and Olga(2012), and Addae-Koronkye (2014) who found that the good governance practices and administration is negatively related by both inequality and poverty. Regulatory quality, rule of law and ease to start business are positively related to poverty and negatively related to inequalities and are found statistically insignificantly. The increase of these factors causes the poverty to increase and reduces the inequality. The higher regulator quality will increases the poverty, but reduces the inequality in a country. The poverty eradication will not be accelerated by high quality of regulatory. In other side the high regulatory quality, rule of law and ease to start business will reduce the social and political inequalities. The literature do not explains on this factor.

Easiness of paying taxes in insignificantly negative related by poverty and inequality indicates that the poverty and inequality are accelerated by the low easiness of paying taxes. The countries that are likely to pay more taxes are less poor and inequity. The FDI net flow is significantly negatively related to inequality and insignificantly positive with poverty, that is, the higher FDI Net Flow in a country accelerates the poverty but reduces the inequality. This finding confirms the Ncube, Anyanwu and Hausken (2013) who found that FDI flow accelerates poverty in a country. The increasing domestic credit to private sectors will increase the poverty and the inequality in a country. The provision of the domestic credit to the private sector will encourage the poverty and inequality. This can be investigating more, why this encourages the poverty and inequality? In reasonable facts, the provision of the credit to the private sector will be encouraged poverty and inequality. This needs more empirical investigation on this statistical conclusion. The easiness to get credit in a country has negative relations with poverty and inequality but insignificantly with inequality. That is, the country that has good legal and environmental opportunities to offer more and easier credit (micro credits) to their citizen is more likely to reduce the poverty and inequalities. The provision and establishment of the micro credit financing in the rural and urban is an appropriate strategy that reduces the poverty and inequality. This find confirms the study done by Apata, Apata, Igbalajobi and Awoniyi(2010), Iradian(2005), Binam.,*at el*.(2011), Bahta and Haile(2014), Asogwa, Okwocha, and Umeh (2012), and Runsinarith (2011) who found that favourable and conducible environment for

accessing the credit, sometimes micro credit fosters the poverty and inequality reduction in country. The micro credit financing will be improved and regulated to allow the people to accumulate the seed capital and start the business, or investments in education or other long term investment, that will increases the household asset in a country. This micro credit financing will reduce the income inequalities.The use of technology- ICT Use found to have a negative influence on both poverty and inequality, which is the higher the use of ICT in a country, accelerated the less poverty and inequality. This finding confirms that the application of ICT in a country reduces the poverty and inequality. This is true that the innovation and creativity in a country fosters the development and reduces the poverty and inequality. The application of ICT in a country gearing the workforce and reduces costs of production and increases the comparative advantage. This study supported by Geda (2006) who confirms that the application of the ICT will reduce the poverty and inequality in Africa. The GNI per capita is negatively related to poverty and inequality that is the higher the GNI per capita reduces the poverty and inequality. The increase of the GNI per capita will increase the income of the individuals and increasing saving and investment for short and long term projects/investments. The income inequalities will be reduced by increases of the GNI per capita in a country. This study confirmed Anyanwu (2013), Go, Nikitin, Wang and Zou (2007), World Bank Group (2013), Ncube, Anyanwu and Hausken (2013), Albert and Collado (2004), and Edoumiekumo, Karimo and Tombofa (2013), Vijayakumar and Olga (2012) who found the negative effect of the GNI per capita and poverty and inequalities. The gender inequality is found positively related to the poverty and social economic inequality. The higher gender inequality increases the poverty and inequality in a country. The Millennium development Goals 3 aims to promote gender equity and women empowerment is an appropriate goal to eradicate poverty and inequality in Africa. The promotion of gender equity and women empowerment will increases the women participation in the economy and reduce the gender inequality. This study finds confirms Adeyemi, Ijaiya, and Raheem(2009), Apata, Apata, Igbalajobi and Awoniyi (2010),Naschold (2002),Armstrong, Lekezwa, and Siebrits (2008),Hoogeveen and Ozler (2005), Abebe and Quaicoe(2014), Malik(1996), Oluoko-Odingo (2009), Marrero and Rodriguez(2012) who found the gender discrimination decelerated the poverty reduction in African countries.

4.5 Conclusion and recommendation

The research aimed to examine the determinants and features poverty and inequality in Africa. The general findings of the study evidences the GNI per capita to influences the poverty and inequality in negative ways, that is the growth of the economy in a country accelerate the reduction of the poverty and inequality in a country. The political stability contributes to eradicate the poverty and inequality in Africa. The country with stable political stability is of high opportunities to eradicate the poverty and inequality. The study also confirms the ICT use and

gender inequality have a negative influence on poverty and inequality. This means that, the use of ICT and effectively implementation of the MDGs will reduce the poverty and inequality in a country. The study also confirms that the easiness of the getting credit in a country, government effectiveness reduce the poverty and inequality. Furthermore, it is evidenced that the higher inequality in country hinders the reduction of poverty since the inequality is the mediate determinants of the poverty. The study recommends the restructuring of the micro credit policy to allow more rural people to have access of the micro-loans, the national policy to be aligned to the MDGs, increases the GNI per capital, maintaining the political stability, improve the taxations structure and administration to increase the easiness of paying taxes –reduce of tax aversion and taxes avoidance, monitoring effectively the implementation of the MDG -3 of promoting gender equity and women empowerment in order to achieve the MDG-1. The effective monitoring of the MDGs will foster the poverty and inequality eradication in Africa and other developing countries.The African countries should investment more ICT use and application and reducing the technological dependency and increases the creativity and innovation. The female participation in some African countries is low; this should be recovered by increasing the female participation rate in political, social and economic issues. The African countries should be defined the poverty is three level, namely, individual level, society level, regional level or country level. In individual level, the study found that, lacking of primary and secondary education, primary health care, and big size of households are due to poverty or is the poverty. In this level, the poverty can be defined that is the inability of individuals or households in accessing or generation financial assets in long term of period; that causes the individuals or households to lacking their basic or necessary need at the time of need, such as health, educations, foods (nutritional) and shelters. This definition reflects the characteristics and features of the African societies as evidenced by this study and other studies. By taking into consideration of the definition, the inability of the individual or households in accessing or generation financial assets can be cause by either micro level factor or macro level factors. The micro level factors can be includes the education of the family member or heads of households, age of the head of households, heritage status-cultural practices and safe water and sanitation, and limited land ownership both in rural and urban. The macro level factors includes micro credit policy, population, gender disparity, employment status, real per capita GDP, inflation, investment policy, technology , government effectiveness, market and capital access, political stability, fiscal policy, and other.

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