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Economic Model for Evaluating the Causes and Impacts of Pipeline Transport Disasters in Niger Delta, Nigeria: A Quantitative Analysis

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ABSTRACT

In order to assess the causes and effects of pipeline transport mishaps in Niger-Delta, Nigeria, an economic model is being established in this article. In light of the increasing frequency and occurrences of pipeline vandalism in Nigeria's Niger Delta, a quantitative investigation was conducted. An ex post facto research design was used in the study. Finding a cause-and-effect link between an independent variable and a dependent variable is the goal of ex post facto analysis. The NSCDC database provided the secondary data for the study, which included information on food shortages/hunger, insecurity, literacy, unemployment, vandalism, and corruption. The single regression's results demonstrate that there is a substantial and positive correlation between poverty, literacy, hunger and food shortages, and corruption—albeit a weak one. However, in the Nigerian Niger-Delta region, multiple regression analysis showed that poverty was the primary predictor of pipeline transport accidents. Our findings, in contrast to those of other studies, do not indicate a substantial correlation between vandalism, food scarcity/hunger, corruption, unemployment, or literacy. In order to increase job prospects, the report suggests that institutional change be implemented through economic diversification and the development of business-friendly environments. Improvement in education and infrastructural, competent governance and zero tolerance to corruption.

Keywords: Vandalization, Oil-pipeline, Poverty, Niger-Delta, Ex-factor Analysis

Introduction

The Niger Delta is the largest wetland in Africa and one of Nigeria's richest oil-producing regions. It is estimated that the region possesses 168 trillion cubic feet of gas deposits and 37 billion barrels (bb) of oil reserves (Omotola, 2009). Over 90% of Nigeria's foreign exchange profits come from the oil industry, with the Niger Delta producing the majority of this income.

Nonetheless, because of inadequately managed oil activities, the region is regarded as one of the most oil-impacted regions globally (Omotola, 2009; Raji & Abejide, 2013; UNEP, 2011). Oil spills, industrial pollution, and gas flaring are among the many elements that have allegedly contributed to the region's environmental degradation throughout time (Raji & Abejide, 2013).

Even though the government has been working hard to support development in the region for a long time—establishing the Niger Delta Development Commission (NDDC), the Oil Mineral Producing Areas Development Commission (OMPADEC), the Federal Ministry of Niger Delta Affairs (FMNDF), and the Amnesty program for militants as well as increasing the revenue derivation for the region's oil producing states from 1 to 13% over time no significant development has been achieved, in part because of corruption and inconsistent program implementation.

Global attention has been brought to Nigeria due to the frequency of disastrous pipeline occurrences (Johnson, Robinson & Thaicharoen, 2004). What has attracted attention on a global scale is this detrimental effect on people and the environment, which includes ongoing deaths of humans and animals, contamination of the air and water, contamination of the soil, disruption of the ecosystem (flora and fauna), destruction of property and infrastructure, and loss of crude oil and refined products. Kishawy and Gabbar (2010) compared the vital function of pipelines to a human vein, stating that they "serve like veins helping to provide life-necessities like natural gas or water and to remove life wastes like sewage." They are also regarded as the best option for moving substantial volumes of gas or liquid. Nigeria's enormous oil production and potential have led to a number of issues, including environmental damage, oil transportation-related spills, militancy, and oil vandalism (Okoli & Orinya, 2013). If sufficient action is not done to mitigate the dangers linked with the oil crisis, there is a higher likelihood that a tragedy will transpire. This might lead to serious issues, particularly in the regions where oil is produced. The resource districts became more vulnerable to a series of military strikes and regional pressure as the importance of petroleum resources as a significant source of economic advantages became more apparent (Omeje, 2005; Onuoha, 2009). Since the majority of Nigeria's significant deposits are located in the Niger Delta, problems relating to oil are particularly prevalent there (Collins & Jürgen, 2012).

In numerous developing nations, the extraction, processing, and transportation of petroleum have caused environmental damage, ecological disruption, and fatalities (Wunder, 2005; Asumi, 2009; Incardona, Collier & Scholz, 2010). The government's incapacity to regulate the practices surrounding petroleum management contributed to the escalation of oil-related issues, including explosions, pipeline vandalism, illegal refining of crude oil, spills, and theft (Rajan, 2002; Anifowose, Damian & Van der Horst, 2011). Because they jeopardize both human life and the environment, these issues are seen as the main ones related to oil production almost everywhere in the globe. A disaster is an unforeseen event or natural calamity that seriously hinders a society or civilization's ability to function and has an impact on both economic and human activity. When it occurs, people's lives, their belongings, and their economic and cultural well-being can all be completely destroyed by this phenomenon, which causes a great deal of loss and tragedy. Catastrophes can be caused by human activity as well, such as pipeline explosions or pipeline vandalism, in addition to catastrophic natural events like earthquakes, wildfires, floods, windstorms, and tsunamis.

Theoretical and Empirical Literature

According to Christensen, Johnson, and Brookes (1992), vandalism is described as intentional hostile action directed at environmental items with the intention of causing property damage. Zinganel (2005), however, approached vandalism from a Marxian viewpoint, viewing it as a constructive force that opposed the capitalist system's exploitation. Tactical vandalism, such as sabotage at work; vindictive behavior, such as acts of retaliation; play vandalism, such as smashing window panels; and malicious vandalism, such as acts of vandalism motivated by boredom, annoyance, anger, and frustration are examples of vandalism (Winter, 1992).

The two main concerns of theoretical approaches to vandalism are the vandals' agents and their objectives (Christensen et al., 1992). In the former, the actors' psychological states are evaluated in an attempt to determine the social factors that lead to vandalism. On the field of environmental psychology, the latter is founded. It begs the question of why some things sustain harm while others do not. By comprehending the psychology of vandalism, we may establish a connection between the vandal and the object, as well as the benefits associated with it. Furthermore, it enables us to link the context of an environmental object's destruction or deterioration to the aim and benefit of vandalism as well as the social cost of the harm done to society (Christensen et al., 1992).

Perceived marginalization, defined as a state of denial, deprivation, and exclusion from society resources, as well as socioeconomic backwardness that leaves a person or group of people with little to no influence over their lives and resources, can give rise to vandalism (Kagan et al., 2002). As a result, the resentful individuals may start to create groups, which could cause stress and emotional outbursts (Tajfel, 1982). As a result, those on the margins who believe they have been denied their true place in society will be inspired to inflict harm to either public or private property. Marginalized societies also believe that social laws and practices tend to benefit them less in terms of housing, income, health care, education, leisure, and work prospects. According to Fathi, Aram, and Karimian (2012), marginalization can lead to a breakdown in social norms and values or even the complete lack of them in society, and it has a substantial correlation with vandalism. After comparing marginalized and non-marginalized neighborhoods, they came to the conclusion that youth vandalism is more prevalent in marginalized areas. Sayaf Zadeh and Behnam Ghaderzadeh (2016) discovered that marginalized individuals experience more social problems; so, the government should give careful consideration to their predicament before inciting social unrest.

Tajfel's Categorization-Identity-Comparison (CIC) theory is illuminated by the Relative Deprivation (RD) hypothesis. Three categories are used to explain the relationship: social comparison, which takes into account members' emotional and value adaption, social categorization (which involves identifying with one group and being excluded from others), and social identification (which involves identifying with a certain group) (Tajfel, 1982). Therefore, deprived societies perceived discrepancy between individual's subjective "value expectations and value capabilities". While value expectations represent the expected good conditions of life an individual believe is his right and entitle for, and value capabilities are the goods and better conditions of life they are capable of attaining in life. In-ability to achieve above may result in stress which leads to emotional outburst that takes the form of violence against the society (Crosby, 1976). Although Gurr and Crosby's (1976) theories were criticized for failing to distinguish between fraternalistic and egoistic individual and group emotions, they have made a substantial contribution to the area of psychology. In addition, RD has made adequate contributions to our knowledge of Tajfel theory and the social psychology of intergroup relations. Cook (1986) examined criminal opportunity theories and found that, "Criminals tend to be somewhat selective of crime target and are most attracted to targets that appear to offer a high payoff with little effort or risk of legal consequences." Cook further argued that potential victims typically take self-protective precautions in response to the threat of crime, the severity of which tends to aggravate with the likelihood of victimization, also see (Cohen & Felson, 1979).

Therefore, it may be contended that there is strong evidence from research that individuals vandalize for political or economic gain, as exemplified by the Niger Delta region. The Niger Delta region benefited from the following programs as a result of the reasons for marginalization and pipeline vandalism: NDDC 1961, OMPADEC 1992, MND 2009, and the 2009 Amnesty Program for the Niger Delta Militants. Furthermore, the region has benefited from a revenue derivation formula that surpasses that of all other regions in the nation. From 1% in 1978 to 1.5 in 1979 to 3% in 1987 to 13% in 1999, they have enjoyed a steady stream of money. In spite of this, the region still needs between 25, 50, and 75%, respectively, to reach true competitiveness and self-reliance (Okpo & Eze, 2012). Negotiations with the government and oil firms are another way that militant operations are exploited (Eragha & Irugbe, 2009; Okolo & Etekpe, 2010).

According to the United Nations Development Report (UNDP), 2006, blowing up pipelines causes shortages of petroleum products for both domestic and foreign markets and sends signals for a sharp rise in the price of crude oil. According to empirical research, market price shocks and geopolitical instability in oil-producing regions are positively correlated (Khalifa, Alsarhan, & Bertuccelli, 2017). Misund and Oglend (2016) and Chen and Xiao (2015) argued that there will be effects on the perspective of chain supply disruption due to instability in oil producing regions. They noted that firms

attempt to find ways to better manage supply disruptions by adopting strategies to avert disruptions in supply and demand uncertainty. Liu, Liu, Zhu, Wang, and Liang (2016) are also cited.

However, as noted by Misund and Oglend (2016), instability in oil-producing regions can also impact the dynamic link between supply shocks, aggregate demand, and volatility in oil prices. They added that a scarcity of a certain good could lead to competition amongst the good's suppliers, further complicating matters. While Chen and Xiao (2015) and Iwayemi, Adenikinju, and Babatunde (2010) examined it from the perspectives of income and price elasticity, which in turn influences the demand for petroleum products, particularly in light of the fact that Nigeria, despite being the continent's largest oil producer, imports refined petroleum products. It demonstrates the long-term correlation between Nigeria's demand for petroleum product imports and income. Many empirical investigations have found a weak or negative association between unemployment and crime, despite theories suggesting a positive correlation. According to Altindag's (2012) research, there is a substantial economic impact from the positive correlation between property crime and unemployment, particularly for those with lower educational attainment.

However, Phillips and Land (2012) discovered a mixed finding that suggests a statistically insignificant and weak correlation between unemployment and criminality. Nonetheless, there is a strong and positive correlation between property crime (such as auto theft and burglaries) and unemployment, indicating the need for more research. Additionally, Blomquist and Westerlund (2014) discovered that there is either no cointegration or a non-stationary link between unemployment and crime. They also questioned earlier findings, suggesting that the substantial correlation between unemployment and crime may not exist. Although data from several regions of the world showed a strong correlation between unemployment and crime, Kapuscinski, Braithwaite, and Chapman (1998) noted that cross-sectional data also showed this correlation, but a time series did not corroborate the positive relationship. They came to the conclusion that in order for their perspective to be accepted by science, good results from time series and cross-sectional data were required. Additionally, until both male and female unemployed were taken into account, their study was unable to substantiate that. Numerous studies have demonstrated that unemployment leads to a rise in auto theft, homicide, and burglary. It is not related to vandalism, despite Edmark (2005), Kapuscinski et al. (1998), and Altindag (2012) making this claim.

Among the most likely elements thought to encourage vandalism in the Niger Delta region are institutional issues. According to empirical findings, there is a strong correlation between vandalism and bad governance. Numerous African and Latin American nations confront significant socioeconomic obstacles, such as heavy government spending with little to no positive return, high rates of inflation, and shoddy legal frameworks, that may or may not be related to the macroeconomic instability.

According to Acemoglu, Johnson, Robinson, and Thaicharoen (2003), weak institutions fostered macroeconomic instability, which results in weak property rights and unequal educational opportunities, both of which can cause states to fail. Because of this, many African nations suffer from weak legal systems, corruption, a lack of accountability, and restricted information freedom, all of which contribute to bad governance and political violence (Bräutigam & Knack, 2004). In Nigeria, there is ample evidence of institutional shortcomings that might give rise to violent conduct. UNDP (2006) highlighted that despite enormous financial commitments to NDDC, OMPADEC, derivation fund, less is achieved in terms of development of the region due mainly to corruption, mismanagement, lack of proper justice and human right abuses. Because of inadequate governance, there are low hopes for attaining significant growth through the provision of infrastructure and environmental protection. In keeping with the aforementioned argument, d'Agostino, Dunne, and Pieroni (2016) noted that although African countries have an abundance of resources at their disposal that could have helped them, these resources actually act as a curse, mostly fueling conflict because of bad governance. It is believed that the legal, social, and political systems inside a nation have little influence over its economic performance (Ambituuni, Amezaga, & Emeseh, 2014; Kherallah & Kirsten, 2002). Similarly, Akpomera (2015) made the point that inadequate government institutions can lead to a failure to enforce environmental regulations, which in turn causes environmental deterioration. Additionally, it creates space for prominent locals and leaders to encourage young people to deface crude oil pipelines in an effort to free the area from official neglect. In the end, this provides many young people in the Niger Delta region with a means of subsistence, as do certain community leaders.

Numerous empirical studies asserted that marginalization, corruption, institutional weakness, and injustices compel individuals to strive for justice in an unfavorable manner (Al-Kasim, Søreide & Williams, 2013; Dzhumashev, 2014). Conversely, Agostino et al. (2016) attributed the promotion of corruption to more government spending and slower growth in Africa. This causes resentment, irritation, and a lack of faith in the government, which in turn inspires young people to respond by committing graffiti. This is demonstrated by the several government-established programs, such the NDDC, OMPADEC, and MND, which, as a result of corruption, were unable to fulfill the government's developmental goals and, as a result, encouraged pipeline vandalism in the area. According to Akpomera (2015), a lack of political will can also encourage and institutionalize elite and government official corruption, undermining the legitimacy of the legal system and administration. See Ulman and Bujancă (2014) as well. Barker and Bridgeman (1994) contended that although there is a connection between the legal system and vandalism, the legal system's ability to curb vandalism is restricted due to the lack of proof of the perpetrators. While using force to quell militancy in the Niger Delta, there were unknown legal ramifications for the military action, which led to civilian casualties (Lutz, 2013). Although the oil industry is subject to rules, Katsouris and Sayne (2013) noted that oil theft in Nigeria receives little legal attention, which makes it easier for even their business partners to engage in illegal oil activities. Similarly, Meng, Zeng, Shi, Qi, and Zhang (2014) linked selective or low environmental damage reporting by businesses to a positive correlation between lax law enforcement and minimal penalties.

Aim and Objectives of the Study

The aim of this study is to investigate economic model for evaluating the causes and impacts of pipeline transport disasters in Nigeria. A quantitative analysis.

The following objectives will guide the study; to

1. investigate the extent to which poverty economic model cause and impacts on pipeline transport disaster in Nigeria

2. examine the extent to which unemployment economic model cause and impacts on pipeline transport disaster in Nigeria

3. ascertain the extent to which Literacy Ratio economic model cause and impacts on pipeline transport disaster in Nigeria

4. find out the extent to which Corruption economic model cause and impacts on pipeline transport disaster in Nigeria

5. find out the extent to which Food Shortage/Hunger economic model cause and impacts on pipeline transport disaster in Nigeria

6. find out the extent to which Insecurity economic model cause and impacts on pipeline transport disaster in Nigeria

7. determine the extent to which economic model at 0.05 significant level causes and impact on of pipeline transport disasters in Nigeria.

Hypotheses

1. poverty economic model does not significantly cause and impacts on pipeline transport disaster in Niger delta, Nigeria

2. unemployment economic model does not significantly cause and impacts on pipeline transport disaster in Niger delta, Nigeria

3. Literacy Ratio economic model does not significantly cause and impacts on pipeline transport disaster in Niger delta, Nigeria

4. Corruption economic model does not significantly cause and impacts on pipeline transport disaster in Niger delta, Nigeria

5. Food Shortage/Hunger economic model does not significantly cause and impacts on pipeline transport disaster in Niger delta, Nigeria

6. Insecurity economic model does not significantly cause and impacts on pipeline transport disaster in Niger delta, Nigeria

7. economic model at 0.05 significant level does not causes and impact on of pipeline transport disasters in Niger delta, Nigeria.

Methodology

An ex-post facto research design was used in the study. The analysis in the paper made use of the Structural Equation Model (SEM) and secondary data (NSCDC, 2024). Secondary data on the following were collected (2011–2023): poverty ratio, unemployment, literacy, corruption, food shortage/hunger, and incidents of oil pipeline transport vandalism in the Niger Delta. Regression analysis, both simple and multiple, was used to examine the data for this investigation. With the use of SPSS Version 23.0, the Statistical Package for Social Sciences, the hypotheses were evaluated at the 0.05 level of significance. The following hypothesis served as the foundation for the study's mathematical model specification:

$Y = \alpha_i + \beta_1 PV + \beta_2 LR + \beta_3 UE + \beta_4 CR + \beta_5 FS + \beta_6 IS + \beta_0$

where, Y = Vandalization; PV = Poverty; UE = Unemployment; LR = Literacy Ratio, CR = Corruption; FS = Food Shortage/Hunger, IS = Insecurity and Ui is the error term, β_0 = Constant; $\beta_1, \ldots, \beta_6$ are coefficients of regression for economic model α, β_0 are the error term and constants of regression respectively.

Economic Model for Poverty $(V_{pv}) = \alpha + \beta_1 PV + \beta_0$

Economic Model for Unemployment $(V_{UE}) = \alpha + \beta_2 UE + \beta_0$

Economic Model for Unemployment $(V_{LR}) = \alpha + \beta_3 LR + \beta_0$

Economic Model for Corruption $(V_{CR}) = \alpha + \beta_4 CR + \beta_0$

Economic Model for Food Shortage/Hunger $(V_{FS}) = \alpha + \beta_5 FS + \beta_0$

Economic Model for Insecurity and α_i is the error term $(V_{IS}) = \alpha + \beta_6 IS + \beta_0$

Economic Model $(Y_{PVLRFS}) = \alpha_i + \beta_1 PV + \beta_2 LR + \beta_3 UE + \beta_4 CR + \beta_5 FS + \beta_6 IS + \beta_0$

Table 1: Incidences of Oil Pipeline Transport Vandalization in Niger Delta, Nigeria

Y Vandalization	X_1 PV	X_2 UE	X_3 LR	X_4 CR	X_5 FS	X_6 IS
7	55.5	5.1	68.11	24	11	9.00
33	58.6	6.0	68.98	27	12.3	8.90
34	64.9	10.6	69.84	25	13.6	8.80

57	55.9	10.0	70.71	27	15.1	8.70
497	46.3	7.8	71.57	26	17.3	9.00
2787	43.5	9.0	72.44	28	19.8	8.90
3231	42.5	13.4	73.30	27	21.3	9.20
2832	37.2	17.5	74.16	27	23.5	9.70
2560	40.8	22.6	75.03	26	24.2	9.60
1120	38.0	30.4	75.89	25	28.3	9.50
2048	41.9	33.3	76.76	29	32.5	9.40
3143	42.7	41.2	77.62	36	37.9	8.90

Source: Nigeria Security and Civil Defense Corps, 2023

Results and Findings

The specific objectives are addressed using the coefficient of regression and its corresponding t-statistics were used to test the hypothesis of the study at 0.05 level of significance. The result is as shown on the equation below:

Table 2: Economic Model for Poverty (PV) and Pipeline Transport Disaster in Niger Delta, Nigeria

Model Summary[b]

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
					R Square Change	F Change	df1	df2	Sig. F Change
1	.789[a]	.623	.585	875.28217	.623	16.501	1	10	.002

a. Predictors: (Constant), Poverty

b. Dependent Variable: Vandalization

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12641920.209	1	12641920.209	16.501	.002[b]
	Residual	7661188.707	10	766118.871		
	Total	20303108.917	11			

a. Dependent Variable: Vandalization

b. Predictors: (Constant), Poverty

According to the result displayed in table 2, a simple regression coefficient R of 0.789 was obtained with a coefficient of determination (R^2) of 0 .623 and an adjusted coefficient (AdjR^2) of 0.585 gotten when Economic Model for Poverty (PV) causes and impacts on pipeline transport disaster. From the result of the adjusted coefficient, it therefore implies that 58.5% variation of pipeline transport disaster can be attributed to Poverty. The testing of the corresponding null hypothesis, it was indicated that an F-value of 16.501 was gotten at 1 and 11 degrees of freedom, equivalent to a p-value of 0.002. Since the p-value was less than 0.05, we reject the hull hypothesis and accept the alternate. Therefore, Economic Model for Poverty (PV) causes and impacts on pipeline transport disaster in Niger Delta, Nigeria is significant at 0.05.

Table 3: Economic Model for Unemployment (UE) and Pipeline Transport Disaster in Niger Delta, Nigeria

Model Summary[b]

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
					R Square Change	F Change	df1	df2	Sig. F Change

1	.538a	.289	.218	1201.25703	.289	4.070	1	10	.071

a. Predictors: (Constant), Unemployment

b. Dependent Variable: Vandalization

ANOVAᵃ

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5872924.504	1	5872924.504	4.070	.071ᵇ
	Residual	14430184.413	10	1443018.441		
	Total	20303108.917	11			

a. Dependent Variable: Vandalization

b. Predictors: (Constant), Unemployment

According to the result displayed in tables 3, a simple regression coefficient R of 0.538 was obtained with a coefficient of determination (R^2) of 0 .289 and an adjusted coefficient ($AdjR^2$) of 0.218 gotten when Economic Model for Unemployment (UE) causes and impacts on pipeline transport disaster in Niger Delta, Nigeria. From the result of the adjusted coefficient, it therefore implies that 21.8% variation of pipeline transport disaster can be attributed to Poverty. The testing of the corresponding null hypothesis, it was indicated that an F-value of 4.070 was gotten at 1 and 11 degrees of freedom, equivalent to a p-value of 0.071. Since the p-value was greater than 0.05, we accept the null hypothesis which states that unemployment economic model does not significantly cause and impacts on pipeline transport disaster in Niger Delta Nigeria. Hence, the model is not significant at 0.05.

Table 4: Economic Model for Literacy Ratio (LR) and Pipeline Transport Disaster in Nigeria

Model Summaryᵇ

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.744ᵃ	.554	.509	951.65351	.554	12.418	1	10	.006

a. Predictors: (Constant), Literacy Ratio

b. Dependent Variable: Vandalization

ANOVAᵃ

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11246664.791	1	11246664.791	12.418	.006ᵇ
	Residual	9056444.126	10	905644.413		
	Total	20303108.917	11			

a. Dependent Variable: Vandalization

b. Predictors: (Constant), Literacy Ratio

According to the result displayed in tables 4, a simple regression coefficient R of 0.744 was obtained with a coefficient of determination (R^2) of 0 .554 and an adjusted coefficient ($AdjR^2$) of 0.509 for Economic Model for Literacy Ratio (LR) causes and impacts on pipeline transport disaster in Niger Delta, Nigeria. From the result of the adjusted coefficient, it therefore implies that 50.9% variation of pipeline transport disaster in Niger Delta, Nigeria can be attributed to literacy ratio. The testing of the corresponding null hypothesis, it was indicated that an F-value of 12.418 was gotten at 1 and 11 degrees of freedom, equivalent to a p-value of 0.006. Since the p-value was less than 0.05, we reject the hull hypothesis and accept the alternate. Economic Model for literacy ratio (LR) cause and impact on pipeline transport disaster in Niger Delta, Nigeria is significant at 0.05.

Table 5: Economic Model for Corruption (CR) and Pipeline Transport Disaster in Niger Delta, Nigeria

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.548[a]	.300	.230	1192.18997	.300	4.285	1	10	.065

a. Predictors: (Constant), Corruption

b. Dependent Variable: Vandalization

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6089939.670	1	6089939.670	4.285	.065[b]
	Residual	14213169.247	10	1421316.925		
	Total	20303108.917	11			

a. Dependent Variable: Vandalization

b. Predictors: (Constant), Corruption

According to the result displayed in tables 5. a simple regression coefficient R of 0.548 was obtained with a coefficient of determination (R^2) of 0 .300 and an adjusted coefficient ($AdjR^2$) of 0.230 gotten when Economic Model for Corruption (CR) causes and impacts on pipeline transport disaster. From the result of the adjusted coefficient, it therefore implies that 23.0% variation of pipeline transport disaster in Niger Delta, Nigeria can be attributed to Corruption. The testing of the corresponding null hypothesis, it was indicated that an F-value of 4.285 was gotten at 1 and 11 degrees of freedom, equivalent to a p-value of 0.006. Since the p-value was less than 0.65, this result therefore indicates that Economic Model for Corruption (CR) slightly the causes and impacts on pipeline transport disaster in Niger Delta, Nigeria**.** Hence, the model is slightly insignificant at 0.05.

Table 6: Economic Model for Food Shortage/Hunger (FS) and Pipeline Transport Disaster in Niger Delta, Nigeria

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.702[a]	.493	.443	1014.08191	.493	9.743	1	10	.011

a. Predictors: (Constant), Food Shortage/Hunger

b. Dependent Variable: Vandalization

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10019487.663	1	10019487.663	9.743	.011[b]
	Residual	10283621.253	10	1028362.125		
	Total	20303108.917	11			

a. Dependent Variable: Vandalization

b. Predictors: (Constant), Food Shortage/Hunger

According to the result displayed in tables 6, a simple regression coefficient R of 0.702 was obtained with a coefficient of determination (R^2) of 0 .493 and an adjusted coefficient ($AdjR^2$) of 0.443 gotten when Economic Model for Food Shortage/Hunger (FS) causes and impacts on pipeline transport disaster in Niger delta, Nigeria. From the result of the adjusted coefficient, it therefore implies that 44.3% variation of pipeline transport disaster can be

attributed to Food Shortage/Hunger. The testing of the corresponding null hypothesis, it was indicated that an F-value of 9.743 was gotten at 1 and 11 degrees of freedom, equivalent to a p-value of 0.011. Since the p-value was less than 0.05, we reject the hull hypothesis which states that food shortage/hunger economic model does not significantly cause and impacts on pipeline transport disaster in Niger delta, Nigeria. We accept the alternate hence, the model is significant at 0.05.

Table 7: Economic Model for Insecurity (IS) and Pipeline Transport Disaster in Nigeria

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.492[a]	.242	.167	1240.21356	.242	3.200	1	10	.104

a. Predictors: (Constant), Insecurity

b. Dependent Variable: Vandalization

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4921812.250	1	4921812.250	3.200	.104[b]
	Residual	15381296.667	10	1538129.667		
	Total	20303108.917	11			

a. Dependent Variable: Vandalization

b. Predictors: (Constant), Insecurity

According to the result displayed in tables 7, a simple regression coefficient R of 0.7492 was obtained with a coefficient of determination (R^2) of 0 .242 and an adjusted coefficient ($AdjR^2$) of 0.167 gotten when Economic Model for Insecurity (IS) causes and impacts on pipeline transport disaster in Niger delta, Nigeria. From the result of the adjusted coefficient, it therefore implies that 16.7% variation of pipeline transport disaster can be attributed to insecurity. The testing of the corresponding null hypothesis, it was indicated that an F-value of 3.200 was gotten at 1 and 11 degrees of freedom, equivalent to a p-value of 0.104. Since the p-value was greater than 0.05, this result therefore indicates that economic model for insecurity (IS) does not cause and impact on pipeline transport disaster**.** Hence, the model is not significant at 0.05.

Table 8: Economic Model Jointly and Pipeline Transport Disaster in Niger Delta, Nigeria

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.789[a]	.623	.585	875.28217	.623	16.501	1	10	.002

a. Predictors: (Constant), Poverty

b. Dependent Variable: Vandalization

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12641920.209	1	12641920.209	16.501	.002[b]
	Residual	7661188.707	10	766118.871		
	Total	20303108.917	11			

b. Predictors: (Constant), Poverty

Excluded Variables[a]

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics Tolerance
1 Unemployment	.110[b]	.437	.673	.144	.651
Literacy Ratio	.303[b]	.897	.393	.286	.338
Corruption	.346[b]	1.917	.087	.538	.914
Food Shortage/Hunger	.268[b]	.932	.376	.297	.462
Insecurity	-.232[b]	-.771	.460	-.249	.435

a. Dependent Variable: Vandalization

b. Predictors in the Model: (Constant), Poverty

Result displayed in tables 8, depicts multiple regression coefficient R of 0.789 was obtained with a coefficient of determination (R^2) of 0 .623 and an adjusted coefficient (AdjR^2) of 0.585 gotten when economic model of jointly causes and impacts on pipeline transport disaster in Niger delta, Nigeria. From the result of the adjusted coefficient, it therefore implies that 58.5% variation of pipeline transport disaster in Niger delta, Nigeria can be majorly attributed to poverty in the Niger delta, Nigeria.

The testing of the corresponding null hypothesis, it was indicated that an F-value of 16.501 was gotten at 1 and 11 degrees of freedom, equivalent to a p-value of 0.002. Since the p-value was less than 0.05, this result therefore indicates that only Economic Model for Poverty (PV) causes and impacts on pipeline transport disaster in Niger delta, Nigeria**.** Hence, the model is significant at 0.05 for poverty, as such there is need for poverty eradicate in Nigeria to curl the menace of pipeline disaster and vandalization in Nigeria. However, other economic model such as food shortage, literacy ratio, corruption, unemployment and insecurity does not cause and impact on pipeline transport disaster in Niger delta, Nigeria when considered jointly. Hence, these models can not fit into the regression equation as stated above.

With 140 million people living there according to the 2006 National Population Census and 163 million according to projections from the National Population Commission, Nigeria is the most populated country in Africa and the world's largest black nation. From 15.9 million in 1911 to 140 million in 2006, Nigeria's population has been growing (National Bureau of Statistics, 2018). The nation is the leading producer and exporter of crude oil in Africa, ranking eighth globally and 12th globally. (2019's #1 export globally). According to Foster, Greer, and Thorbecke (1984), although Nigeria is rich in land, oil, and other natural resources, a sizable section of its people lives in extreme poverty as a result of the country's inability to properly manage its resources. The World Poverty Clock (2019) estimates that as of June 5, 2019, 91.8 million Nigerians were living in extreme poverty. By 2030, 120 million more Nigerians are predicted to fall into extreme poverty, making Nigeria the country with the highest rate of poverty worldwide. According to Orokpo, Ogwu, Adamu, and Mutong (2018), poverty has been widespread, overwhelming, and engulfs a significant portion of Nigerian society. This has led to low life expectancy, hunger, ignorance, malnutrition, sickness, unemployment, and a generalized sense of hopelessness among people. Briggs (2019) also notes that, in comparison to other countries that have undergone comparable colonial experiences, Nigeria's accomplishments as an independent sovereign state are minuscule. Nigeria has enormous natural and human resources, but it hasn't been able to develop into an affluent and egalitarian nation. According to Aluko (1975), poverty is a condition of social deprivation in which a person experiences a state of penury that makes him susceptible to socioeconomic and political disadvantages. Poverty is now a serious threat to the government and the general well-being of the populace in Nigeria. A person who is unable to meet his immediate requirements and lacks fundamental necessities is said to be in absolute poverty. According to Gordon, Irving, Nandy, and Townsend (2016), absolute poverty is defined as "a condition characterised by severe deprivation of basic human needs including, food, safe drinking water, sanitation facilities, health, shelter, education and information" in their final report to the DFID Townsend Centre for International Poverty Research, University of Bristol. Conversely, relative poverty, as defined by PARPA II in Massingue (2013), is defined as not having enough money to meet one's basic needs, including nutritional and non-nutritional, based on the average national income. Absolute and relative poverty differ in that the former is determined by an individual's basic necessities, while the latter is determined by the nation's average income. It's important to highlight that both class of poverty has played prominent role in the vandalization of pipeline transport routes in Niger Delta Nigeria.

Recommendations

1. In order to generate employment possibilities, Nigeria must rise to the occasion and ensure that the country has diversified its economy and established an atmosphere that encourages corporate growth.

2. The Nigerian educational system needs to be reorganized, and as PLO Lumumba once stated, we must reevaluate our curriculum.

3. One of the main causes of poverty in Nigeria is corruption, and in order to combat it, Nigerians must learn to despise corruption. The majority of Nigerians view corruption as a routine occurrence and actively seek out opportunities to engage in it. Therefore, it is necessary to shift Nigerians' mindset so that they see corruption as a crime against humanity. This can be accomplished by launching campaigns led by human rights organizations, interest groups, and representatives of our many religions. Second, the institutions that combat corruption need to be strengthened so that they can function free from outside influence and the government.

References

Anifowose B, Damian M, Van der Horst D (2011) Attacks on oil transport pipelines in Nigeria: aquantitative exploration and possible explanation of observed patterns. *Appl Geogr* 32: 636–351.https://doi.org/10.1016/j.apgeog.2011.07.012

Asumi J (2009) *Blood oil in the Niger Delta,* United States Institute of Peace.

Collins N, and Jürgen E (2012) Negative impacts of oil exploration on biodiversity management inthe Niger De area of Nigeria. *Impact Assessment and Project Appraisal* 26: 139–147.

Incardona JP, Collier TK, Scholz NK (2010) Oil spills and fish health: exposing the heart of thematter. *J. Expo Sci Environ Epidemiol* 21: 3–4. https://doi.org/10.1038/jes.2010.51

Johnson S, Robinson J, Thaicharoen Y (2004) Institutional causes, macroeconomic symptoms: Volatility, crises and growth. *Journal of Monetary Economics 50*: 49–123.https//doi.org//10.1016/S0304-3932(02)00208-8

Kishawy H, Gabbar H (2010) Review of Pipeline Integrity Management Practices. International*Journal of Pressure Vessel and Process Piping 87*: 378–380.https://doi.org/10.1016/j.ijpvp.2010.04.003

Okoli A, and Orinya S (2013) Oil Pipeline Vandalism and Nigeria's National Security. *Global Journal of Human Social Science 13*: 68–75.

Omeje K (2005) Oil conflict in Nigeria: contending issues and perspectives of the local NigerDelta people. *New Political Economy* 10: 321–334.https://doi.org/10.1080/13563460500204183

Onuoha F (2009) Why the poor pay with their lives: Oil pipeline vandalization, fires and humanSecurity in Nigeria. *Disaster* 33: 369–389. https://doi.org/10.1111/j.1467-7717.2008.01079.x

Oteh Chukwuemeka and Okpo, Eze R. C. (2012). Vandalizationof Oil Pipelines in the Niger Delta Region of Nigeria andPoverty: An Overview. Studies in Sociology of Science,3 (2), 13-21. Available from URL: http://www.cscanada.net/index.php/sss/article /view/j.sss.1923018420120302.2950DOI:http://dx.doi.org/10.3968/j.sss.1923018420120302.2950

Rajan SR (2002) Disaster, development and governance: reflections on the "Lessons of Bhopal".*Environ Values* 2002: 369–394. https://doi.org/10.3197/096327102129341136

Wunder S (2005) *Oil wealth and the fate of the forest: a comparative study of eight tropical countries,* Taylor and Francis e-Library, London, United Kingdom, 432.