



UNIVERSITI PUTRA MALAYSIA

***SOCIOECONOMIC IMPACT OF THE OIL SPILL ON COMMUNITY
PARTICIPATION IN THE CLEAN-UP OPERATIONS AND RESILIENCE
IN IMO STATE, NIGERIA***

ISIDIHO ALPHONSUS OKPECHI

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By

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**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in
Fulfillment of the Requirements for the Degree of Doctor of Philosophy**

February 2021

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DEDICATION

This thesis is dedicated to God Almighty, lovers of education and knowledge, and my family for all the pains they endured missing me and financing this Doctoral study in Universiti Putra Malaysia Far East Asia.



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in Fulfillment of the requirement for the degree of Doctor of Philosophy

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By

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February 2021

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This study of causes and socioeconomic impact of the oil spill on community participation in the clean-up operations and resilience in Ohaji/Egbema and Oguta regions of Imo State, Nigeria is necessary considering the adverse impact of oil spill on these communities. These two local government areas share similar demographic and environmental characteristics, where crude oil is drilled, and disastrous oil spill occurs most often by human-made actions. The stakeholder's theory, crisis management theory and participatory theory are three theories employed in this study to reflect the participation of local people, the oil companies, and government as stakeholders, and their management of crisis that emanated from the oil spill. Mixed method approach was employed in this study. The research design was a case study where the qualitative part applied purposive in-depth interviews on 13 informants, in which the ensuing data analysis used transcription, coding, thematizing and writing out the report. Meanwhile, the quantitative part employed the survey data collection technique where a total of 376 questionnaires were administered on adult respondents aged 18-69 before the data being analyzed to support the qualitative findings.

Interview results supported by survey data showed that the main causes of oil spills included corrosion of ageing facilities having the highest frequency (32.5%), followed by equipment malfunctions (15.2%), natural causes (10.6%) and operation or maintenance errors (10.3%). The in-depth interview demonstrated that the community faced sadness and hardship due to loss of income resulting from the oil spill on farmlands and water. This study found that communities actively participated in oil spill responses through identification of the spills, clean-up operations, monitoring and evaluation of the works, and law implementation. Regrettably, the legislations did not help in reducing the impacts of oil spill because of the poor law enforcement, high corruption, and lack of political will. Health hazards caused by the polluted environment as highlighted by the informants has caused sicknesses such as general weaknesses, cough, headache, vomiting, blisters, stomachache, and fever among those who participated in the spilled-

oil clean up and those living closer to the spill locations. The little or non-compensation for the affected families further increased their levels of poverty, sickness, and psychological stress. As resilience to cope with difficulties, many of the fish farmers constructed fishponds in their compounds or closer to their homes, while other community members changed their occupations from fishing and crop farming to other activities such as trading, welding, and motorcycle taxi service. Decline in moral standards displayed by disunity, confrontation, and lack of trust amongst the community members also led to decline in human and social capitals, forcing people to engage in illegal and immoral making money activities for survival.

Empirically, the negative impacts of oil-spill were found highest for psychological stress and environmental damage, followed by cultural impact, while the children's education impact and level of benefit sharing (compensation) were low. The analysis of Spearman's correlation showed that cultural change was positively associated with children's education and environmental impacts, while high psychological stress was associated with low benefit sharing (compensation) and more cultural change. In conclusion, the oil spill in Imo State caused adverse impacts such as environmental pollution and loss of income, which triggered psychological stress, severe health hazards, cultural changes and moral upheaval, and occupational displacement on the local communities. Despite communities' active participation in the clean-up operations and their resilience in facing challenges, the government is urged to consider the implementation of oil spill laws more seriously to ensure that oil companies are held accountable for the crisis and pay adequate compensation to the affected communities.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Doktor Falsafah

**KESAN SOSIOEKONOMI TUMPAHAN MINYAK KE ATAS PENGLIBATAN
KOMUNITI DALAM OPERASI PEMBERSIHAN DAN KETAHANAN DI
NEGERI IMO, NIGERIA**

Oleh

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Kajian mengenai faktor dan kesan sosioekonomi tumpahan minyak ke atas penglibatan komuniti dalam operasi pembersihan dan ketahanan di wilayah Ohaji/Egbema dan Oguta, di Negeri Imo, Nigeria adalah perlu memandangkan kesan negatif tumpahan minyak ke atas komuniti tersebut. Kedua-dua kawasan kerajaan tempatan tersebut berkongsi ciri demografik dan persekitaran yang serupa, iaitu minyak mentah digerudi dan tumpahan minyak yang teruk paling kerap terjadi akibat tindakan manusia. Teori pemegang taruh, teori pengurusan krisis dan teori penglibatan merupakan tiga teori yang digunakan dalam kajian ini bagi menggambarkan penglibatan orang tempatan, syarikat minyak dan kerajaan sebagai pemegang taruh, dan pengurusan krisis mereka yang wujud akibat tumpahan minyak. Pendekatan kaedah campuran telah digunakan dalam kajian ini. Reka bentuk penyelidikan ialah kajian kes, iaitu bagi bahagian kualitatif mengaplikasikan temu bual mendalam purposif ke atas 13 informan, di mana analisis data berikutnya menggunakan transkripsi, koding, pentemuan dan penulisan laporan. Manakala bahagian kuantitatif yang mencakup teknik pengumpulan data tinjauan ke atas sejumlah 376 soal selidik telah dilaksanakan ke atas responden dewasa berusia 18-69 sebelum data dianalisis bagi menyokong dapatan kualitatif.

Dapatan temu bual yang disokong oleh data tinjauan menunjukkan bahawa faktor utama tumpahan minyak termasuk kakisan kemudahan menua mempunyai frekuensi tertinggi (32.5%), diikuti oleh peralatan tak berfungsi (15.2%), faktor semula jadi (10.6%) dan operasi atau kesilapan penyelenggaraan (10.3%). Temu bual mendalam memperlihatkan bahawa komuniti menghadapi kesedihan dan kesukaran disebabkan kehilangan pendapatan akibat tumpahan minyak ke atas tanah pertanian dan perairan. Kajian ini juga mendapati bahawa komuniti secara aktif terlibat dalam respon tumpahan minyak melalui pengenalpastian tumpahan, operasi pembersihan, pengawalan dan penilaian kerja pembersihan, dan pelaksanaan undang-undang. Malangnya, perundangan tidak membantu mengurangi kesan tumpahan minyak kerana penguatkuasaan undang-undang yang lemah, rasuah yang tinggi, dan kurangnya kehendak politik. Bahaya kesihatan

akibat pencemaran persekitaran seperti yang ditekankan oleh informan telah mengakibatkan penyakit seperti kesakitan umum, batuk, sakit kepala, muntah, melepuh, sakit perut, dan demam dalam kalangan mereka yang terlibat dalam pembersihan tumpahan minyak dan mereka yang tinggal berhampiran dengan lokasi tumpahan. Kekurangan atau ketiadaan pampasan untuk keluarga yang terlibat meningkatkan tahap kemiskinan, penyakit, dan tekanan psikologi mereka. Dari segi ketahanan menghadapi kesukaran, ramai penternak ikan membina kolam ikan dalam kawasan kediaman atau berdekatan, manakala ramai ahli komuniti menukar pekerjaan mereka daripada perikanan dan pertanian kepada aktiviti lain seperti perniagaan, kimpalan, dan perkhidmatan teksi motosikal. Keruntuhan moral seperti perpecahan, konfrontasi, dan kekurangan kepercayaan dalam kalangan ahli komuniti telah menyebabkan kemerosotan dalam modal insan dan sosial, dan memaksa rakyat untuk terlibat dalam jenayah dan aktiviti tidak bermoral untuk mendapatkan wang bagi kelangsungan hidup.

Secara empirikal, kesan negatif tumpahan minyak didapati tertinggi bagi stres psikologikal dan kerosakan persekitaran, diikuti oleh kesan budaya, manakala kesan pendidikan kanak-kanak dan tahap perkongsian faedah (pampasan) adalah rendah. Analisis korelasi Spearman menunjukkan bahawa perubahan budaya secara positif berkait dengan pendidikan kanak-kanak dan kesan persekitaran, manakala stres psikologikal yang tinggi berkait dengan perkongsian faedah (pampasan) yang rendah dan perubahan budaya yang tinggi. Kesimpulannya, tumpahan minyak di Negeri Imo menyebabkan kesan negatif seperti pencemaran persekitaran dan kehilangan pendapatan yang mencetuskan stres psikologikal, bahaya kesihatan yang teruk, perubahan budaya, keruntuhan moral, dan perpindahan pekerjaan ke atas komuniti tempatan. Meskipun penglibatan aktif komuniti dalam operasi pembersihan dan ketahanan mereka dalam menghadapi cabaran, kerajaan digesa supaya mempertimbangkan pengimplementasian undang-undang tumpahan minyak secara lebih serius bagi memastikan syarikat minyak bertanggungjawab terhadap krisis dan membayar pampasan yang cukup kepada komuniti yang terkesan.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as a fulfilment of the requirements for the Degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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LIST OF ABBREVIATIONS

AK	47 Assault rifles
BGEPNL	British Gas Exploration and Production Nigeria Limited
BOSCEM	Basic Oil Spill Cost Estimation Model
BP	British Petroleum
CNOOC	China National Offshore Oil Corporation
D V	Dependent variable
DHOS	Deepwater Horizon oil spill
DPR	Department of Petroleum Resources
DV	Dependent Variable
DWH	Deep-Water Horizon
EIA	Energy Information Administration
GDP	Gross Domestic Product
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine
GNP	Gross National Product
GoM	Gulf of Mexico
GoMRI	Gulf of Mexico Research Initiative
GPS	Pollution. Global Positioning System
HIV/AIDS	Human Immunodeficiency Viruses / Acquired Immune Deficiency Syndrome
I V	Independent variable
IMO	International Maritime Organization
IOPC	International Oil Pollution Compensation
IPIECA	International Petroleum Industry Environmental Conservation Association

IТОPF	International Tanker Owners Pollution Federation Limited
KNOC	Korea National Oil Corporation
MARPOL	Marine Pollution
NDDC	Niger Delta Development Commission
NGOs	Non-Governmental organizations
NOAA	National Oceanic and Atmospheric Administration
NOSDRA	National Oil Spill Detection and Response Agency Nigeria
OECD	Organisation for Economic Co-operation and Development
OGJ	Oil & Gas Journal
PAHs	Polycyclic Aromatic Hydrocarbons
PTSD	Posttraumatic Stress Disorder
RDS	Royal Dutch Shell
SPDC	Shell Petroleum Development Company
SPSS	Statistical Package for the Social Sciences
STD	Sexually Transmitted Disease
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
VOCs	Volatile organic compounds
WHO	World Health Organization



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CHAPTER 1

INTRODUCTION

This Chapter covers the background of study, the statement of problem, the research objective and the research questions. It also explains the significance of the study, scope of study, organization of study, conceptual and operational definitions of terms and a brief conclusion. The main focus of this research was on the socioeconomic impacts of oil spill, communities' participation in the clean-up operations and resilience in Ohaji/Egbema and Oguta regions of Imo State, Nigeria which this study investigated and analyzed. The study also looked at the oil spill laws more especially the local laws and compensation to the affected communities. There have been numerous oil spills in various locations in Nigeria, but the researcher decided to use Imo state for the study since the state is among the nine states that make up the Niger Delta Region where crude oil is being mined and oil spillage frequently occurs. Another reason of interest in choosing the locations for the study is that the spills in these communities occurs both at water and farmlands with communities living very close to the spill areas unlike the spills of Deepwater Horizon Gulf of Mexico (2010), Ixtoc 1 oil spill (1979), Exxon Valdez oil spill in Alaska California (1989), Hebei Spirit oil spill South Korea (2007), COSCO Busan oil spill (2007), Antonio Gramsci oil spill (1979), Tsesis oil spill (1977) and other spills which occurred at sea, hence this study gives a broader understanding of impact of spills both on water habitats, water users, residents and the people's reactions. Many studies have shown that the impact of spill can be for a short time and long time, however, the longtime impact can still be observed after over as much as fifty after the spill (whitehead et al 2012, Fernandes et al., 2013; UNEP, 2011).

The study is using the stakeholder's theory (Freeman & Reed 1983), crisis management theory from the "The manifesto of the Communist", (Karl Marx and Friedrich Engels 1886) and participation theory (Chambers, 1994; Chambers & Wint, 1997; Cohen & Uphoff, 1977, 1980)) as relevant, underpinning and consolidating theories of the study. The justification for this is because the stakeholders in oil spill include the oil companies and staff, the communities, the government, the media, the businesses and the society at large, as all the stakeholders were affected once the oil spilled. Similarly, the oil spill leads to variation of crisis; crisis within the oil companies (management and staff finding why and how), crisis between the oil companies and communities affected, government and the society at large. This oil spill crisis needs to be well managed for peace and tranquility in oil spill locations. Similarly, the participation theory assessed the communities' participation in the oil spill and at what levels they did. Did they participate actively at identification, cleanup response, monitoring and evaluation of the oil spill? This important role of participation helped in assessing not only the importance of the spill to them but also the impacts on them and the resilience that followed as a backup to reduce the negative impacts.

1.1 Background of the study

The particular location of this study is Ohaji/Egbema and Oguta communities in Imo State. The Ohaji/Egbema and Oguta communities in Imo State are where we have major oil spillages and they are predominantly farmers. The communities' major occupation is fishing and crop farming and the oil spillage destroys the farmlands and pollutes the water making it difficult for fishes to survive and farm crops to survive. These led to loss of jobs, low income, health problems, occupational displacement, poverty and host of other socioeconomic problems (Obi, 2014; Salako et al., 2012; Wegwu et al., 2011; Mohaddes & Pesaran, 2013; Hodler, 2006; Kurtz & Brooks, 2011; Hirdan & Santos, 2013). The problems created by oil spillage and gas flaring has led to lots of socioeconomic and environmental problems coupled with militancy and political struggles in the region and Nigeria in general.

The Niger Delta Region of Nigeria is characterized by oil and gas pollution, environmental degradation, youth militancy and kidnapping, air pollution and other problems (Alumuna et al., 2017; Paki & Ebienu, 2011; Amaraegbu, 2011; Abraham, 2011). All these problems are traced to the activities of the multinational oil companies operating in the region. The Niger Delta Region of Nigeria covers nine states in the southern part of the country comprising Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and Rivers State. This region is World's third largest wetland after Holland and Mississippi, characterized by significant biological diversity (Ajibola, 2012, Mbachu, 2012). Currently the population of this wetland forest rich in natural resources and aquatic habitat is about thirty million people (Nigeria National Population Commission, 2006). The population of the communities under this study has continued to migrate from the rural areas to the cities due to the negative impacts of the oil spillage.

Oil spill is the uncontrolled release of crude oil into the environment (Rim-Rukeh, 2015). As cited in Nwoko (2014, p.38), Burger (1997) defined oil spillage as the "intentional or unintentional release of crude oil in the form of hydrocarbon compounds into the environment, either on the land or on the water bodies, as a result of human activities". Oil spill can be in the form of liquid, gas and solid and can be grouped into small when it is less than 25 barrels in island water or less than 250 barrels on land, offshore or coastal waters. It is medium when the discharge is over 25 to 250 barrels into water or 250 to 2,500 barrels on land or offshore and coastal lines. Similarly, it is regarded as Major spill when over 350 barrels in island water or over 4,500 barrels are discharged on offshore and coastal lines (Nwoko, 2014). The economic, human and environmental effects of oil spill include, loss of income both on the oil companies and the communities or locations of spill, the loss of share capital at the stockmarket (Meeuwissen, 2012; Afolabi et al., 1985; Garza-Gil, Prada-blanco and Xose, 2006). The oil spill led to a lot of losses to the fishing industries (ITPOF, 2014), and some of these losses led to great psychological trauma (Buckingham-Howes et al., 2019). Similarly, some of the economic losses include loss to hotels, businesses around the spill location, cost of cleanup and other sectoral losses (Natale, 2010; Betinis 2010; Ramseur, 2012; Gill and Picou, 2001). Furthermore, other studies found out that oil spill has damaging impact to communities which led to a lot of loss and economic cost (Abbriano et al., 2011; NOAA, 2010; Cleveland, 2010; Jones, 2011).

The ecological effects on the biota (both plants and animals) and a broad range of ecological changes, cellular, organismic and ecosystems also witness great changes, the toxic substances affects organism while the water pollution affects tourism and human uses of the water including using it as means of transportation and trade (Rim-Rukeh, 2015). Oil spill and oil exploration have contributed to increased poverty level within the Niger Delta Region of Nigeria raising the argument on if oil is a blessing or a curse (Mikesell, 1997; Mohaddes & Pesaran, 2013; Hodler, 2006; Kurtz & Brooks, 2011; Hirdan & Santos, 2013; Obi, 2014). Oil spills causes serious environmental disasters, often leading to significantly devastating impacts on the environment, ecology and socio-economic activities of an area and the effects can last for many years even after the cleanup (Whitehead et al 2012, Fernandes et al., 2013).

The type and urgency of response during spillage in the study communities is of importance. Response adopted in each spill depends on the type of spill, the quantity of spill, the density and type of oil, weather at the time of spill and the location of spill (Etkin et al., 2005). The evaluation of the spill, type of response and the socioeconomic impact is of importance to explain the situation in the study locations and compare it with the various scholarly findings of response, cleanup operations and impacts in different oil spill locations of the world. Empirical research has shown that prompt response to oil spill have helped greatly in reducing the impact on humans and the environment (Etkin et al., 2005; Gill et al., 2014; Chang et al., 2014).

Previous studies have discussed oil spillages mostly at the macro levels such as impacts on national income and stock exchange, cost and effects on the GDP and GNP, health and psychological stress, environmental impacts and pollution etc. and emphasis have been on spillages on sea and spillages from tankers and vessel accidents (David, 1992, Rim-Rukeh, 2015, Ajugwo, 2013, Chang et al., 2014, Major & Wang, 2012, Shultz et al., 2014, Gill et al., 2011; 2012; 2014; Rung et al., 2015; 2016; 2019). Pan et al., (2015) evaluated the economic impact of Penglai 19-3 oil spill in China and found that the economic impact was enormous on the Yantai fishery and the Yantai mariculture business. This resulted in reduction of the productivity of crustaceans, shellfish, algae, sea cucumbers and sea urchins which led to macro-economic loss in the economy. Similarly, Palinkas et al., (1993) examined the relationship between exposure to the Exxon Valdez oil spill and subsequent cleanup efforts and the prevalence of generalized anxiety disorder, posttraumatic stress disorder (PTSD), and depressive symptoms in 13 Alaska communities. They found that the exposure and contact with oil spill made them particularly vulnerable to depressive symptoms, hence they concluded that oil spill leads to severe health hazards and symptoms to the people living in the oil spill locations.

Similarly, Park et al., (2019) investigated the health impact of Hebei Spirit Oil Spill which occurred on 7 December 2007 in China and found that children in the oil spill site exhibited a lower level of pulmonary function and higher prevalence of allergic rhinitis, also adults who live there and participated in the cleanup experienced higher urine levels of the oxidative stress biomarkers malondialdehyde and 8-hydroxydeoxyguanosine, changes in haematological parameters and increases in respiratory diseases and mental health problems. Gill et al., (2011; 2012; 2014) examined the human impacts the Exxon Valdez oil spill in Alaska and found that there was sociocultural disruption and psychosocial stress and the critical role protracted litigation, prolonged ecological

damage, community and mental health problems for over two decades after the spill. Similarly, Rung et al., (2015; 2016; 2019) investigated the harmful and long-term effects of the Deepwater Horizon Oil Spill on women and cleanup workers and found that it led to women's depression and mental distress, and domestic conflict. Likewise, Chang et al., (2014) conducted a study on the impact of oil spill and found that oil can affect ecological processes that cause direct harm, e.g., health impacts from eating seafood with bioaccumulated oil toxins; oil spill stressors can change intermediary processes. Also, other studies have found the negative impact of oil spill on humans and causing severe DNA degradation, cancers, birth and reproductive defects, irreversible neurological and endocrine damage, and impaired cellular immunity (Rodríguez-Trigo et al., 2007, Zock et al., 2007, Aguilera et al., 2010, Major and Wang 2012). These studies were on the macro impact of oil spill and their findings have exposed the dangerous health, economic and cost related and the social effects of oil spill in different locations of the world. The main focus of this study was exploring and analyzing at the micro level, the impact of oil spillage on the people residing and sourcing their means of livelihood in these communities in Imo State.

Furthermore, the study looked into the resilience of these families, people and communities dislocated and impoverished by the oil spill. What did these people and communities do to survive the negative impacts of the spills? Likewise, the study on impacts of oil spill cannot be generalized as the location, the personal and social resources available to the affected, the environment, quantity of oil spilled and the weather affects the impacts (Sabucedo et al., 2009). Therefore, no two oil spills are the same and their impacts differs. Furthermore, this study investigated the effects of spillages both on water and on farmlands as witnessed in these communities in Imo State and the Niger Delta Region as most of the previous studies have only assessed the impact of spill on water caused by vessel accidents or blow out during oil explorations (Pan et al., 2015, David, 1992, Palinkas et al., 1993, Rim- Rukeh, 2015, Ajugwo, 2013, Chang et al., 2014, Major & Wang, 2012, Shultz et al., 2014, Gill et al., 2012).

The oil spill has caused problems of insecurity in the region which expanded, degenerated and transformed into militancy, kidnapping and killing of both local and expatriate staffs of oil companies causing lots of concern to both the Nigerian governmental, the oil companies as well as the international communities (Alumuna et al., 2017; Paki & Ebiefa, 2011; Amaraegbu, 2011; Abraham, 2011). For the recent few years, "militants have fought with government forces, sabotaged oil installations, taken foreign oil workers hostage and carried out lethal car bombings amongst others. Six Shell flow stations were seized by community groups and 127 Shell staff were held hostage". Military troops were subsequently deployed to the western Niger Delta, although violence continued to erupt periodically in the entire region (Ihayere et al., 2014, p. 14). The current situation is that the issue of kidnapping and hostage taking, youth restiveness and militancy is no more of the Niger Delta Region only but has expanded into all the states of the Nigerian Federation including the administrative head Abuja (Badmus, 2010; Ayoade, 2011; Amaraegbu, 2011; Abraham, 2011; Alumuna et al., 2017). This is because the government and security agencies have not taken adequate measures to control it and the perpetrators now see it as a very fast way of making huge money as each abducted person pays millions to secure freedom. This is an issue of a failed state that has no regard for the welfare and security of the citizenry (Alumuna et al., 2017; Abiodun, 2012). Oil spill response especially in a bigger spill is targeted towards

removing and potentially recovering the spilled oil from the spill site, causing minimal further harm to the environment, and accounting for available resources and worker safety issues (Aguilera et al., 2016).

This study investigated and analyzed the oil spill in these communities, the communities participation in the spill identification, monitoring, evaluation and cleanup and their adjustments or resilience through occupational changes and coping strategies to reclaim not only their farmlands but maintaining their health, psychological trauma, community cohesiveness, morals and insecurity.

The harmful impacts of oil spill have been mentioned in various studies in various locations ranging from the social, psychological, health, environmental and cleanup operations and each study has similar but peculiar findings (Chang et al., 2013, Hazen et al., 2010, Gutierrez , 2011, Lee et al., 2010, Zock et al., 2007, Jung et al., 2017, Ha et al., 2013, Choi et al., 2016, Yu et al., 2010, Gwack et al., 2012, Janjua et al., 2006, Yim et al., 2012, Hong et al., 2014, Cheong et al., 2011). Researches has shown that early response to oil spillage has reduced the impacts (Balena, 2015; Gutierrez, 2011; Hazen et al., 2010; NOAA, 2010, p.9; Etkin et al., 2005; White & Molloy, 2003; Klemas & Blazauskas, 2014). These findings on the impact of oil spill have been based on these studies on spill on sea and coastal waters. This present study specifically looked at the micro level of these impacts in the communities in Imo State and the Niger Delta Region of Nigeria.

1.2 Statement of Problem

The oil spill has caused several problems in these communities as oil spill destroys their farms lands making it unfit for cropping and crops already planted on the farms dies off or gives very poor yields. Crop and fish farming are the main occupation of these communities and their main sources of income. The oil spill on the waters pollutes the water, killing the fishes and other aquatic animals, this causes the fish farmers to have little or no harvest if at all they see fishes to catch which leads to low income and other multiplier effects on them and their families. Similarly, the oil spilled on the farmlands caused poor crop yields and low productivity. This pollution from oil spill is a big problem and has caused a lot of socioeconomic problems to the communities. Many researchers have given their findings on the oil spill, causes, response and impacts in locations like Gulf region of Mexico, Venezuela, Alaska in California, the Gulf war spill, the spill in Netherlands, the spills of New Zealand, Turkey, Guimaras in Philippine, Hebei Spirit Oil Spill in South Korea etc.

The proactive solution to a problem cannot be address until the cause and causes are known, hence the study investigated the causes of oil spill in Imo State and the Niger Delta Region of Nigeria as previous authors have given conflicting information on the main causes of spill and this research with its micro facts finding approach interacted with the farmers and residents of these communities to understand their perceptions on the causes of oil spill in their communities and the magnitude of impacts. While Adelana and Adeosun (2011) says corrosion contributed 36% and sabotage is 36%, Department of Petroleum Resources of Nigeria (2014) gave corrosion 15% while sabotage 58%.

Causes of oil spills are burst/raptured/corrosive pipes, over pressure failures/overflow of process equipment components, sabotage of blowing up of well heads and flow lines (Kate, 2011, Nwankwo & Irechukwu, 1981). Nwilo & Badejo, (2005) emphasized on vandalization as the major cause.

Similarly, there is the problem of oil spill cleanup in the location of study. Cleanup operations after oil spill varies from location to location and the urgent or quick intervention in cleanup helps to reduce the impact of oil spill. Hence, the speed and method of cleanup is usually a big problem in all oil spills (Etkin et al., 2005) and this study is to investigate the level of cleanup, communities' participation in oil spillage identification and cleanup and its relationship with their culture and well-being. How are these cleanup problems solved by both the oil companies and the communities in event of oil spill needs to be addressed. The type and urgency of response during spillage in the study communities is of importance. The evaluation of the spill, type of response and the socioeconomic impact is of importance to explain the situation in the study locations and compare it with the various scholarly findings of response, cleanup operations and impacts in different oil spill locations of the world. Empirical research has shown that prompt response to oil spill have helped greatly in reducing the impact on humans and the environment (Etkin et al., 2005; Gill et al., 2014; Chang et al., 2014; Ramseur, 2012).

There are some lapses on the implementation of the oil spill laws and policies of Nigerian government which have resulted to negative impact on the oil spill communities. A major lapse in these statutes is making tangential reference to compensation for oil spillage as they deal primarily with acquisition rather than injurious affection (Babawale, 2013). It is believed that the lapses in the full implementations of international and local laws have created the problems including non-adequate compensations and corporate social responsibilities programs in these locations of study, hence, not able to manage the crisis emanating from oil spill. This study explored the extent these legislation and inability to enforce the laws has affected the communities in these oil spill locations through the communities' perception of the laws and their implementations. There have been various Acts on oil and environment in Nigeria including Oil Pipelines Act Cap 145, LFN, 1990 which contains provisions that are directly related to compensation arising from oil spillage, the Land Use Act (1978), Minerals Act Cap 121 of 1946, and Petroleum Act No. 51 of 1969 now Cap 350 LFN 1990, Mining Act No 24 of 1990, Oil in Navigational Water Act, Cap 337 LFN 1990 (all consolidated in the latest Laws of Federation of Nigeria (LFN, 2010)). Section 11 (5) of the Oil Pipeline Act provides that the holder of a license shall pay compensation to any person whose land or interest in land is injuriously affected by the exercise of the right conferred by the license, for any such injurious affection not otherwise made good.

The study looked at these local legislations and the implementation of laws relating to oil spill and mitigation. The issues of compensation and the positions of the local and international laws on compensation is the consolation and remediation to the communities. It should be of interest to note that most local oil spill laws are related to international laws, only that the local laws are more particular putting into consideration the operating local laws and the type of spill prevalent. This research investigated the role these laws played in these oil spilled communities in alleviating their pains.

Other authors have conducted studies on the impacts of oil spill in various locations ranging from the social, psychological, health, environmental and cleanup operations and each study has similar but peculiar findings. Similarly, the oil spill was found to have polluted the environment with adverse health impacts like Oil spills causes serious environmental disasters, often leading to significantly devastating impacts on the environment, ecology and socio-economic activities of an area and the effects can last for many years even after the cleanup (whitehead et al 2012, Fernandes et al., 2013). Chowdhury et al., (2017) investigated the devastating impact of oil pollution on agricultural production in Bangladesh as a result of oil spillage high level of irrigation problem due to the pollution of surface water, bio-diversity losses and hazardous impact. Similarly, “exploitation has increased the rate of environmental degradation and has perpetuated food insecurity leading to loss of livelihood” (Elum et al., 2016, p. 12880). People in the oil spill affected areas complain about health issues including breathing problems and skin lesions; many have lost basic human rights such as good health, access to food, clean drinking water, and an ability to work (Egwu, 2012; Ajugwo, 2013; Adelana & Adeosun, 2011).

The negative impact of oil spill and oil pollution in the Niger Delta Region includes increased incidence of certain diseases, like bronchial, asthma, upper respiratory track diseases, gastro-enteritis cancer, and partial deafness, especially in children, due to the flaring of gas while the water borne diseases predominant includes diarrhea and worm infection (Babatunde, 2010). Adverse physiological responses, blood disorders, negative reproductive outcomes, reduced immunity to disease and parasites, and cancers of the various organs are experienced symptoms of oil spill in Nigeria (Nriagu, 2011). Gill et al., (2012) discovered that residents of Alabama close to the spill area were affected both socioeconomically, higher levels of spill-related psychological stress in respondents as the spill posed threats to their economic future, family health, and family finances on direct exposure to oil and contaminants. Sebastian and Hurtig (2004) says in Amazon basin Ecuador women exposed to oil exhibited symptoms of skin mycosis, tiredness, itchy nose, sore throat, headache, ear pain, diarrhea, gastritis and red eyes. The similarity of these studies is that their impacts on humans, fishes and other aquatic animals and environment were all negative. Cleanup workers had reported at least one health problem, including headache, rash, eye redness, respiratory problems, nausea, and abdominal pain and in Galicia Spain, cleanup staff in the Prestige spill registered mainly eye redness, headache, sore throat, trauma, nausea, dizziness, and breathing difficulty (Sua' rez et al., 2005). Similarly, D'Andrea and Kesava (2018 and 2019; Hong et al., 2014; Jung et al., 2017) research found workers involved in Deepwater Horizon Gulf oil spill and Hebei oil spill cleanup operations suffered significant alterations in hematological and hepatic functions. Result from other studies agrees on the negative health impact of oil spills on cleanup workers and people (Zock et al., 2007; Janjua et al., 2006; Lee et al., 2010).

The similarity of these studies and findings is that oil spill has negative impacts and the extent of the impacts depends on the quantity spilled, the weather at the time of spill, the density of the oil, the volume of oil spilled and the type and quick response that follows the spill. It is important to note that urgent response and cleanup method has been problems to spill and rapid response and good modern technological equipment and methods coupled with information to stop the spill and effective cleanup help to reduce the impact in the communities (Chang et al., 2014).

Several authors conducted research on oil spill in different locations (Chang et al., 2013, Hazen et al., 2010, Gutierrez, 2011, Lee et al., 2010, Zock et al., 2007, Jung et al., 2017, Ha et al., 2013, Choi et al., 2016, Yu et al., 2010, Gwack et al., 2012, Janjua et al., 2006, Yim et al., 2012, Hong et al., 2014, Cheong et al., 2011) . These studies conducted on oil spill yielded different findings and these motivated conducting research into the oil spill, socioeconomic impact and communities' participation in Imo state Nigeria. Hence, this is certainly a new research being in a different location, the volume of spill varies, the weather different, the density, the response and impacts also varies. The special characteristics of this study are that it assessed the impact of oil spill both on water and on farmlands unlike previous studies that have studied oil spill on water and coastal neighbourhood. Compensation of the affected companies, people and communities in event of oil spill has been a problem and various oil companies and government have employed serious measures to ensure that adequate and prompt compensations were made. This compensation issue and benefits is also a problem in the location of study. In the early 70's compensation for tanker spills damages and spill cleanup cost were covered by the two international conventions; the Civil Liability Convention (CLC) and the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (FC). Later in 1992, these laws were revised to cover and enhance its coverage on the cost of environmental damage, reinstatement cost and post –spill studies so as to identify and take the required measures to ensure and hasten recovery of the damaged environment (Dicks, 2006). This convention tried to put initial and rapid compensation for the reasonable cost of cleanup and for urgent compensation for the financial and commercial losses incurred by the victims as a result of the oil tanker pollution. This global trend applies to the location under study and this study investigated the extent of compensation and benefits the communities enjoy after oil spill in accordance with the international and local laws and policies. This study investigated and identified the compensation problems arising from oil spill in the location of study.

There are a lot of socioeconomic problems attached to oil spill when it occurs. This study found out the socioeconomic impact the spill has on the residents, their farming (fish and crop) and the local businesses. The socioeconomic indicators used in the framework are culture, education, environment, income/ benefit, health and psychological stress and their relationship, and the impact of oil spill on them so as to determine their multiplier effects on the communities and well-being. The impact of oil spill on the community's well-being looked into the impact of oil spill on the standard of living UNDP Human Development Index (HDI) which include health, education, income (Yang, 2018). Well-being is a broad term which can be grouped into objective (external) and subjective (internal) and it can motivate people toward success, improve health and longevity, strengthen relationships, and boost the economy (Howell et al., 2016). The measures of progress or well-being such as health, psychological well-being, environment, social capital, cultural capital, or indicators such as basic needs met, or time use are being used as indices of measuring well-being (McLean, 2014). The objective well-being are described with terms defining material well-being and the quality of life: these terms are formed and influenced by such factors as the level and stability of income, the conditions of residence, the opportunity of having education, the quality of the social and natural environment, safety and security, and the opportunity to realize social and civil rights and needs. While the subjective are moral and psychological aspect of well-being explaining how people experience and evaluate their lives (Alatartseva & Barysheva, 2015). The study on oil spill in Imo State considered some of these indices

like psychological stress, health, income, education and environment to access the impact on community's well-being.

There are social and psychological problems as a result of the oil spill which include occupational displacements, loss of ancestral homes, familiar surroundings, religious and other cultural artefact (Nwilo & Badejo, 2005). The social impacts of oil spill were explained to involve the rural dwellers and aborigines as their environments are being affected and the inflow of workers to handle the cleanup exercises also affects the social fabrics of the rural communities (Martin, 1999, Fall et al., 2001, Esclamado, 2011, Rhoan, 2011). Tourism industries suffer greatly in some oil spill locations as most tourists avoid such locations for fear of contamination and infections (Jones, 2011; Chang et al., 2014; Garza-Gil, 2006). Many researchers have analyzed the destructive effects of oil spill on water inhabitants and their findings revealed that it destroys not only the animals but also their eggs and larvae (Incardona et al., 2009, Aguilera et al., 2010, Judson et al., 2010, Major & Wang, 2012, Selako et al., 2012). Pollution of rivers through oil spillage could result in massive extermination of fishes and thereby threaten the social and economic life of the communities whose livelihood depends on the contaminated water and these at the end affects their health (Iwejingi, 2013). The sociocultural, environmental and psychosocial impact of oil spill has also been very unhealthy, creating serious negative impacts in oil spill locations (Gill et al., 2012; 2014). This exertion is relevant as study by UNDP (2010), stated that more than 60 per cent of the people in the Niger Delta region depend on the natural environment for their livelihood. Oil spills causes serious environmental disasters, often leading to significantly devastating impacts on the environment, ecology and socio-economic activities of an area and the effects can last for many years even after the cleanup (Whitehead et al 2012, Fernandes et al., 2013). There are health problems in the location of study which were linked to the oil spills. The harmful effects of oil spill on health of people that has one contact or the other in various spills over the world makes the study of its impact very important (Sriram et al., 2011; Goldsmith et al., 2011; Lee et al., 2010; Solomon & Jensen, 2010; Eykelbosh, 2014). Despite the cleanup of oil spill, findings have shown that the impacts last for longer years, like stated by UNEP, (2011) oil spill effects can last for over forty years. In Ejama-Ebubu in Eleme local government area of Rivers State Nigeria, the study found heavy contamination present 40 years after an oil spill occurred, despite repeated clean-up attempts. The UNEP, (2011) also, discovered that the level of contamination of usable water by the oil was seriously demanding urgent needs to save the communities from the dangers associated with usage of water contaminated by oil spill. The impact of oil spill on the vegetation in Ogoni land, Niger Delta was harmful as the root crops were destroyed and the farmland remediation and revegetation very difficult. Even when the lands were recovered after many years, the yields were still not encouraging (UNEP 2011). The study of the effect of oil spill is not usually concluded within a short time as various studies continue to yield results; a good example is after five years of the Gulf of Mexico spill of 2010, about twenty-six (26) of the scientist who were on ground to report about the Gulf oil spill and impacts were of the opinion that 11% of Gulf were less healthy today, dropping from an average 73 to 65 on a scale of 100 to zero (Schleifstein, 2015). However, five years is a short period of time to actually assess the effect of spill as impacts of spills can still manifest 40 years after (UNEP 2011). This study generally assessed the impact of oil spill on the residents of Ohaji/Egbema and Oguta in Imo state of Niger Delta Region Nigeria with special interest on the micro level impacts.

Previous studies have discussed oil spillages mostly at the macro levels and emphasis have been on spillages on sea and from tankers assessing the general impact on environment and the society. Similarly, some studies on oil spill in Imo State and Niger Delta have concentrated mostly on the environmental, sociopolitical and militarizational impacts. This study looked at the micro levels of spillage as it affects the people residing and sourcing their means of livelihood in these communities under study. The Macro levels of oil spill impacts looks at the oil spill nationally and globally. These impacts included economic and GDP, the fluctuation on company's share index when there were spill like the BP Gulf of Mexico spill that affected the BP shares and stock market. The drop in total sectoral income due to spill (Picou et al., 2009; Natale, 2010; Betinis 2010; Buckingham-Howes et al., 2019; Meeuwissen 2012), the national environmental impact due to pollution, the national cost on controlling the spill and other socioeconomic cost and effects (Gill et al., 2012; Ramseur, 2012). The total impact on aquatic organisms and environment was negative (Yuewen & Adzibbli, 2018). Similarly, other studies in other locations considered the psychological stress caused by the spill (Price 2010; Grattan et al., 2010; Choi Kyung-Hwa et al., 2016 Rung et al., 2015, 2016, 2019; Shultz et al., 2015; Choi et al., 2015, 2017).

On the other hand, the micro impacts consider the impacts directly to the local communities where these spills occurred. These impacts considered their culture, the education of their children, their individual and family income, the health of the people including the psychological; Onyechi et al., 2016; Nriagu, 2011). Likewise, the micro level considered the health of the people in these communities as a result of the spill and inhaling the smell of these crude oil as well as drinking and cooking with the polluted water (Egwu, 2012; Ajugwo, 2013; Adelana & Adeosun, 2011). Furthermore, the micro level considered the impact of oil spill in the location of study relative to social crimes, militancy, kidnapping, rape and general crime and criminal tendencies amongst youths and residents in line with previous researches (Badmus, 2010; Ayoade, 2011; Amaraegbu, 2011; Abraham, 2011; Alumuna et al., 2017).

There have been problems of back-up (resilience) after oil spill so as to caution the effects of the spill on the people. The study looked at the possible resiliency strategies adopted by the people of these communities after the spills. Resiliency which would have helped in bailing these communities out have not been effective. Lack of funds and the neglect by the government have been attributed to lack of collective resiliency. Hence, the people have individually devised survival strategies like occupational changes, construction of fish ponds in their compounds, combining farming with petty trading and commercial transportation (commercial motorcycles and tricycles), taking small loans from banks for those that have collaterals to back up the loans and relocating to the cities for mini jobs. These therefore forms the type of resiliency in these communities as a survival strategy after the oil spills. Furthermore, the resiliency of the people to overcome and better their lives despite these oil spills were investigated as that is part of the problems of these communities. The negative impact of oil spill has led to several problems as mentioned in the study. The non-payment of compensation to these people has aggravated their sufferings and increased poverty which led to low standard of living and well-being below minimal standard.

The similarities of these findings were the negative impact of the spill on culture, economic including income, health and environment. However, the magnitude of the impacts differed. The social crime, militancy, kidnapping and general crime incidences in the location of study have not been reported in other studies in other countries. Also, the lack of compensation found in the location of study is not applicable in other study locations. Assessing the effects of spillages both on water and on farmlands as witnessed in these communities in Imo State is a unique study. Most studies on oil spill in other countries have only assessed the impact of spill on water and coastal areas (Pan et al., 2015; David, 1992; Palinkas et al., 1993; Rim- Rukeh, 2015; Chang et al., 2014; Major & Wang, 2012; Shultz et al., 2014; Gill et al., 2012). Studies have been going on in various locations on the impact of oil spill on the socioeconomic life of the habitats and communities ranging from the Exxon Valdez oil spill in 1989 in Alaska to Gulf of Mexico spill 2010, Prestige oil spill, Venezuela spill, New Zealand, Australia, Gulf war spill, strides of Melaka Malaysia, Philippines, Libya etc., but not much have been done to assess the socioeconomic impact of the oil spill in Ohaji/Egbema, and Izombe Oguta in Imo State of Nigeria.

This research seeks to fill this gap in the body of knowledge, by investigating and analyzing the causes of spill, types of response, impact of spill on the life of communities in Imo State using the mentioned socioeconomic indicators, resident's participation in cleanup operations and resiliency compared to the experiences of spills in other locations and countries.

1.3 Research Question

To enable the researcher, achieve the above goals, the following research questions were designed.

1. What are the main causes of oil spill in Imo State, Nigeria?
2. What are the responses and cleanup during and after the spill?
3. To what extent have government policies and other regulatory mechanisms helped the community in the event of an oil spill?
4. What are the levels of benefit and compensation, and communities' participation in the oil spill crisis and cleanup?
5. What are the socioeconomic impacts of oil spills on the communities? Are these adverse socioeconomic impacts interrelated?

1.4 Research Objective

The general objective of this study was to investigate the impact of oil spill on the life of the Ohaji/Egbema and Oguta communities using the socioeconomic factors, and resident's participation in cleanup operations in Imo state Nigeria.

The specific objectives are:

1. To explore the main causes of oil spill in these communities.
2. To determine the response and cleanup during and after spill.
3. To explore the extent government legislative policies and other regulatory mechanisms have helped the communities in event of spill.
4. To determine the level of benefits and compensations, and communities' participation in oil spill cleanup.
5. To analyze the socioeconomic impacts of oil spills on the communities, and the relationships among these impacts.

1.5 Research gap

The previous studies were on oil spill impacts on the sea and coastal waters as they evaluated the health impacts, psychological impacts, environmental and cultural impacts (Gill et al., 2012; 2014; Choi Kyung-Hwa et al., 2016 Rung et al., 2015, 2016, 2019; Shultz et al., 2015; Choi et al., 2015, 2017). But the present study investigated and analyzed oil spill impacts both on water and farmlands, including residential areas as pipelines crisscrossed residents and oil spill occurs in these residents too. The difference in the locations of the study made the studies vary as literature has it that no two oil spills are the same nor exerts the same impact. Likewise, previous studies have studied the impact of oil spills at the national, global and aggregate levels, examining the fishery production, effects on the GDP and GNP, shares fluctuations at the stock exchange, chemical and national environmental pollution (Macro), the present study looked at impacts of oil spill at the micro level; investigating the impacts to the crop farmers, fish farmers and other people in these rural communities.

Resiliency implies measures applied to adjust to the negative effects of a phenomenon. The psychologist sees resilience as the process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress. It is "bouncing back" after a serious negative events and hazards ((Yang, Bae, & Chung, 2016; Bonanno, 2012; Finucane et al., 2020). Previous studies on oil spill in other locations varied in the methods of resiliency, as people had adjusted after the spill through the huge compensations paid and they were able to start new businesses and life style (Chang, Stone, Demes, & Piscitelli, 2014; Yang, 2017; Cheong, 2012; Farber, 2014; Ramseur, 2011). Also, their national insurance cover helped them to take care of the health and psychological impacts of the spill (D'Andrea & Kesava Reddy: 2018). But in the location of study, the compensation was not

implemented and when at times it was paid, it was very little after years of litigation and health insurance scheme was not operational (Oluduro, (2012). Similarly, previous studies have either used quantitative or qualitative approach to conduct their studies but the current research has adopted mixed methods (qualitative and quantitative combined) so as to give a wholistic understanding of the oil spill phenomenon in the location of study.

1.6 Significance of the study

1.6.1 Theoretical

Theoretically, the study would help to emphasize the importance of the stakeholder theory, crisis management theory and participation theory and their relevance in the oil spill. Stakeholder theory simply states that the stakeholders of a company are not just its direct owners but that stakeholders are any person, group or entity that a corporation has benefited or burdened by its actions and those who benefit or burden the firm with their actions (Steiner, 2012; Miles, 2012). This is to say that the primary stakeholders in an oil spill situation includes the workers working at the spill site while the major stakeholders include, the environment, the fishing industry, government and tourist-dependent businesses and communities. Stakeholder's theory is a management theory and did not initially embrace community development; hence its utilization in the oil spill and community development fills a gap in the theory. Similarly, the crisis management theory usually is a management as well as political economy theory and its adoption was relevant in the study as oil spill and community development are interrelated. Oil spill creates a big crisis which needs intelligent and urgent attention so as to reduce the great impacts it has in the oil companies, the communities, and the society at large. Once there is an oil spill, the situation becomes tensed up and needs urgent and specialized management style as earlier response reduces the impacts (Hazen et al., 2010; Gutierrez, 2011; Klemas & Blažauskas, 2014; Balena, 2015). How quick and effective management of such crisis is very important despite the facts that research has it that the impact of spill last many years after the spill.

1.6.2 Methodological

The study adopted mixed methods which is the combinations of qualitative and quantitative. Previous studies have adopted either quantitative or qualitative and their respondents and informants have been fishermen, people living or handling businesses along the coastal waters (Chang et al., 2013, Hazen et al., 2010, Gutierrez, 2011, Lee et al., 2010, Zock et al., 2007, Jung et al., 2017, Ha et al., 2013, Choi et al., 2016, Yu et al., 2010, Gwack et al., 2012). Similarly, other studies on oil spill on high sea (water) and coastal areas due to ship accidents adopted qualitative or qualitative (Balena, 2015; Gutierrez, 2011; Hazen et al., 2010; NOAA, 2010, p. 9; Etkin et al., 2005; White & Molloy, 2003; Klemas & Blažauskas, 2014; Yim et al., 2012, Hong et al., 2014, Cheong et al., 2011). But in this study, the respondents and informants have been fish farmers, crop farmers, leaders of trade unions, traditional rulers (chiefs), youth leaders and activist as the location of study is a rural community. The purposive interviews of face to face and telephone were conducted on thirteen (13) people selected who were introduced by

the youth leaders as informants with good knowledge of the phenomenon and who were willing to give the information needed by the researcher. Similarly, total of 376 questionnaire were used for the quantitative analysis and these were randomly administered. The use of mixed methods in the study was a methodological significance.

1.6.3 Practical

There has been conflicting information on the main causes of oil spill in Nigeria. The oil companies most times points accusing fingers to the youths while the youths and other international observers attribute higher percentage of the causes to the oil companies (Aprioku, 1999; Nwankwo et al., 1998; Ndifon, 1998; Orubu et al., 2004; Kate, 2011; Nwankwo & Irechukwu, 1981; Oyende, 2012). This in-depth study would throw more light on the main causes of oil spill from the farmers and fishermen since in most cases they first discover the spills.

The research practically is important as it actually found out the impact (negative and positive) of the oil spill within the study area. This study and investigations have shown that kidnapping and hostage taking where ransom were demanded before the victims were released have developed within these communities due to the negative relationships between the communities and the oil companies caused by oil exploration, spill and neglect (Badmus, 2010; Ayoade, 2011; Amaraegbu, 2011; Abraham, 2011; Alumuna et al., 2017). Environmental degradation, economic strangulation, social impacts on health, education, household and occupational displacement have been the negative impacts of the oil spillage in these communities. There would be well-articulated structural occupational changes to accommodate people who have been displaced in their jobs due to the oil spill. There has been continued fighting with highly sophisticated weapons between the Federal Government troops and the oil bunkering groups.

The study through findings and suggestions would encourage the government and the oil companies on corporate social responsibility programs that would be beneficial to the communities to reduce the youth's hostilities, restiveness and kidnapping making them to engage in meaningful activities so the issues of kidnapping and hostage taking would stop. Likewise, the study practically highlighted the causes of oil spill in these communities which will help to control or stop most of the spills and oil bunkering. There is also need for the Federal Government to institute and empower the ministry of agriculture and natural resources to establish a land reclamation and revegetation program in these communities.

Practically, this would help in the use modern and scientific methods to recover the farmlands polluted by the oil spill and literature have found that these Chemical, physical and thermal methods used for the cleanup of soil have been found to have negative effects. The physical method includes excavation of crude oil contaminated soil and this is the quickest and safe way but takes longer time. The chemical methods use Hydrogen peroxide and ozone as strong chemicals oxidant for the removal of crude oil from soil (Ahmad et al., 2020). The reclamation of farmlands after spill takes some time and the local methods is to allow the land to go fallow for several years while natural and

artificial manures are dropped on the farmland periodically. This process of biological methods such as microbial remediation and phytoremediation would help to activate the activities of soil bacterial and microorganisms for quick land recovery. Biological methods are a traditional method that involves the use of living organisms (bacteria, fungi and plants) to degrade harmful substances present in the environment (Ahmad et al., 2020; Han, 2013; Thapa et al., 2012; Wang et al., 2017; Yu et al., 2020).

1.6.4 Policy

The policy implication of the study is that it would be guiding the authorities; both government and the stakeholders to evaluate the modalities for the oil company's operation. This would be in respect of revisiting the strict implementation of the local legislation and international law guiding their operation and communities' compensation therein during such oil spills. There should be emphasis on strict implementation of these laws and the safety rules so as to safe guide the environment and the communities involved. The socioeconomic and environmental impact of these oil spills derived from this study would help the government and stake holders in finding a more acceptable media of reconciling the social, cultural, economic and environmental negative effects of the spills and appeasing the indigenes through adequate compensation of their loss of economic crops, livelihood and cultural integration. Policy decisions on the adoption of mixed methods approach instead of the top-bottom methods currently in operation would help in mutual dialogue between the stakeholders in issues of oil spill in these communities.

This study would also inform the stakeholders at the location of study on the response during oil spill and stimulate further efforts on modern approaches of response during oil spill. Findings from similar researches have it that earlier response to oil spill helps to caution the effects (Pourvakhshouri, 2008; Hazen et al., 2010; Gutierrez, 2011; Klemas & Blažauskas, 2014; Balena, 2015).

Similarly, the policy implication of the study is that it would help the federal government and oil companies to reason the need to mediate and disarm these militant groups to reduce inter communal rifts, kidnapping and asking for ransom/ killings and other social ills that have developed in these oil rich communities. The Government and oil companies would look into the issues of increasing scholarships to the indigenes of these oil communities as well as establishment of medium training scheme for the middle manpower as well as creating employment opportunities for these youths once they graduate from their trainings. The youth's actions on oil wells, pipe lines vandalized and illegal oil bunkering may be reduced through proper government policies once the recommendations of this study are implemented to a greater extent.

The lack of compensation has not been able to put the victims of oil spill bck to life hence the federal government and oil companies should liase and plan a good resiliency for these communities. This study have found that individual resiliency have not been effective in the location of study due to poverty, governmental program is therefore necessary.

1.7 Scope of the study

This study evaluates the oil spills in the Niger Delta Region of Nigeria with particular reference on Imo states of Nigeria. Generally, the scope of study covers the breadth and depth of the study (Konting, 2019). In Imo State, oil spill is currently experienced in Ohaji/Egbema, Ngor-Okpuala and Izombe in Oguta communities. Most of the spills occurs in Ohaji/Egbema and Izombe in Oguta hence the study was concentrated in these two locations, though the socioeconomic impact of the spill spreads to other locations of the states as the people and communities are inter related through socioeconomic and political activities.

The scope of the study covers these selected variables or indicators: education, culture, environment, income and benefits, health including psychological stress which was triggered off by the environmental pollution leading to occupational displacement and large migration of the younger ones to the city to look for jobs. The depth furthermore, covered community participation in oil spill which involves the identification and cleanup operations. Similarly, the scope covers the category of respondents and informants in the study who are fish farmers, crop farmers and traders in these communities of study as the oil spills affected them negatively. The range of respondents and informants are the ages of 18 through sixty-eight and above who must be citizens or non-citizens who have resided in these locations for at least five years. However, the location of study could have been extended to cover all the three oil communities but getting data from the third locations was highly risky as kidnapping was going on daily in that location especially kidnapping strange faces and holding them hostage for ransom. Therefore, there was likelihood that if the researcher had gone there for data collection, he might not have been alive to conclude this research. The militants were very hostile in allowing easy access to the oil spill sites and the Federal Government security agents stationed at routes to the two locations did not allow access despite the fact that the researcher received permissions from the traditional rulers and also hired some local youths who assisted him in the data collection process. The oil spill locations for security reasons were condoned off and guided by heavily armed security personnel, however, this was not a problem since the study is mainly on the socioeconomic impact and communities' participation and not on the oil spill sites.

The depth furthermore, covered community participation and resilience in oil spill which involves the identification and cleanup operations and how they adjusted to the negative impacts. The findings of this study may not be generalized to other oil spill locations in Nigeria and other countries since researches has it that the impact of spill varies with location, the type of spill, the amount of spill, the weather and the response operation. In the same vein, the sociocultural and environmental differences among the people and spill environment makes different spill have different impacts, though at times the impacts might be similar but they cannot be exact. However, the study would be a guide to other studies on oil spill and response in other locations of the world. The methodology, the questionnaire used and the interview guide having been approved by the eminent professionals of the Ethic committee of Universiti Putra Malaysia and an external expert in authentication of instruments makes it valid and reliable for use in similar studies all over the world.

1.8 Organization of Chapters

The dissertation is grouped into five Chapters. Chapter one is the introduction and background of study, followed by the highlights and statement of problem, the research objective and Questions, the significance and scope of the study. Chapter two provides critical review of the solid theories that forms the bedrock of the research and the empirical reviews relating to the study. Chapter three is the methodology used in the study so as to extract the necessary data to achieve the research objectives. This is mixed methods research hence the design is a random sampling involving primary data collection of questionnaire and interviews, hence appropriate design is adopted. Chapter four discusses the results derived from the data collected and lastly chapter five summarizes the findings, highlights the policy implementations, limitations of the study and suggestions for further research.

1.9 Conceptual and Operational Definition of Terms

Community

Conceptual definition: Community as any collectivity of individuals, groups, subgroups and /or institutions or their representations which share time, space and resources for mutual concern (Sabran, 2003; Aref et al., 2010).

Operational Definition: For this study, community is defined as a group of people living in the Niger Delta Region generally and specifically in Ohaji/Egbema, and Oguta communities in Imo State Nigeria who share common views, virtues, goals and interest.

Community Development

Conceptual Definition: Community development involves the process of organisation, facilitation and action that allow people to create a community in which they want to live through a conscious process of self-determination (Maser, 1997).

Operational Definition: In this study, Community development means the ability of people of Ohaji/Egbema and Oguta communities in Imo State Nigeria to come together to champion what interest them most collectively with their resources or that from outside for increased general well-being.

Community well-being

Conceptual Definition: Community Well-being is a broad term which can be grouped into objective(external) and subjective (internal) and they factors that can motivate people toward success, improve health and longevity, strengthen relationships, and boost the economy (Howell et al., 2016) and measures of progress or well-being such as health, psychological well-being, environment, social capital, cultural capital, or indicators such

as basic needs met, or time use are being used as indices of measuring well-being (McLean, 2014).

Operational Definition: In this study, community well-being are those factors that can improve the standard of living of all people living and doing businesses in Ohaji/Ebgema and Oguta Imo State Nigeria.

Participation

Conceptual Definition: Participation is the active engagement of stakeholders and the people (minds, hearts and energy) in their own developmental activities from the very beginning of project identification, prioritization, planning, implementing, evaluation and monitoring (Chambers, 1992; Bopp and Bopp, 2006).

Operational Definition: In this study, participation is defined as the active involvement of the people of Ohaji/Egbema and Oguta communities in the oil spill matters from identification through monitoring and the impacts the spill has on them and their communities.

Socioeconomic

Conceptual Definition: Social economics examines the interaction of economic valuations with economic activity and economic institutions and measures their outcome against basic ethical values (Hellmich 2015, p.6).

Operational Definition: In this study, socioeconomic means the consideration of impacts of oil spill on education, culture, environment, income and health including psychological stress.

Socioeconomic indicators

Conceptual Definition: Demographic and socioeconomic factors include gender, racial and ethnic minority status, education, health and financial (economic) status influence mental health outcomes (Blackmon, et al., 2016, p.67).

Operational Definition: In this study, the socioeconomic indicators (factors) include gender, marital status, education, health, income, environment and culture.

Monitoring

Conceptual Definition: Monitoring can be defined as: “a continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing development intervention with indications of the extent of

progress and achievement of objectives and progress in the use of allocated funds”. (World Bank, 2006).

Operational Definition: In this study, monitoring means the continued and organized system of seeing that the oil spill is identified, response and cleanup operations done with the standardized specifications and that the objectives of the cleanup achieved to the satisfaction of all stakeholders and the communities.

Evaluation

Conceptual Definition: Evaluation is the process of determining the worth or significance of a development activity, policy or program to determine the relevance of objectives, the efficacy of design and implementation, the efficiency or resource used, and the sustainability of results. (World Bank, 2006).

Operational Definition: Evaluation in this study means the reassessment of the oil spill incidents to ensure it is well cleaned and possibly compensation paid to all affected.

Stakeholders

Conceptual Definition: The narrow definition of stakeholders only includes the groups that are vital to the survival and success of the organization, while the wide or broad definition accommodates all groups that can affect or be affected by the actions of the corporation (Freeman & Reed, 1983).

Operational Definition: The stakeholders in the oil spill in the locations of study and the Niger Delta Region of Nigeria includes not only the staff of the oil companies but also the environmental activist, the fishing industry, allied businesses, the media, the government and communities living close to the spill area.

Crisis

Conceptual Definition: “The manifesto of the Communist”, see the society as organized crisis between two classes based on ownership or non-ownership of the means of production. Crisis is seen as “a major occurrence with a potentially negative outcome affecting an organization, company, or industry, as well as its publics, products, services, or good name” (Fearn-Banks, 1996, p.1).

Operational Definition:

The hostile relationship between the oil companies, the oil workers, the Nigerian government and the people living and doing their business within and around the communities under study and including other people externally involved in the actions such as media, environmentalist, civil societies, non-governmental organizations and humanity.

1.10 Summary

This chapter provided an overview of the background of study which explained the situation of oil spill and the issues surrounding the spill and location of study. It highlighted what previous literature have said about oil spill, what is the current situation and what the research is all about. It highlighted what is oil spill and how oil exploration started in the Niger Delta Region of Nigeria. The research questions, objectives, were formulated to assist the researcher in perfecting the research. Being a mixed methods research, the qualitative studies are explorative in nature and does not identify dependent and independent variables. There was need to identify the independent and the dependent variables of the study for the quantitative part. Hence the oil spill as the independent variable was identified while the dependent variables were the Education, Culture, Health – Psychological Stress, environment and Income (benefit sharing). The significance of the study, the scope of the research, the organization of the chapters and the definition of terms were all explained in this chapter.

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LIST OF PUBLICATIONS

- Isidiho, A. O., Burhan, N. A. S., Sabran, M. S., Assim, M. I. S. A., & Talib, A. T. (2020). Assessing the Effects of Oil Spill on Clean-up Workers and Communities' Participation in Imo State Nigeria. *Journal of Contemporary Issues and Thought*, 10(2), 10-24.
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Conferences, Seminars/ Workshops Attended

1. Asmara, Anja's. Publications in Q1 and Q2 Journal. Seminar, Universiti Putra Malaysia, 8th September, 2020.
2. Din, Mohamed Shariff. Scientific writing for postgraduate Candidates. Universiti Putra Malaysia Online Lecture Series, 17th June, 2020.
3. Prof. Dr. Tan Chin Ping. Introduction to Thesis Writing. Auditorium, Faculty Veterinary Medicine, Student Affairs, Learning Support and Publication School of Graduate Studies UPM. 23rd December, 2019.



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