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Relationship Between Oil Theft, Pipeline Vandalism, and Security Costs With Revenue Losses

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This is to certify that the doctoral study by

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MBA, University of Liverpool, 2015

B.Eng, Federal University of Technology, Owerri, 2002

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

The oil and gas multinational companies (MNCs) in the Niger Delta continue to face numerous challenges operating in the region, especially concerning the loss of revenue. Based on the resource dependence theory, the purpose of this correlational study was to examine the relationship between oil theft, pipeline vandalism, security costs, and revenue. Eighty-eight mid- to high-level managers of oil and gas completed the Factors That Affect Company Revenue instrument. The results of the multiple linear regression analyses indicated the model was able to significantly predict revenue, $F(3,88) = 947{,}279.44$, $p < .001$, $R^2 = 1.000$. All 3 predictors contributed significantly to the model, with pipeline vandalism recording the highest beta value ($ß = .553$, $p = .000$), the oil theft predictor with the next highest beta weight ($ß = .451$, $p = .000$), and the security costs predictor with the next highest beta weight ($ß = .387$, $p = .000$). The leaders of the oil and gas MNCs could use the outcome of this study in creating strategies and policies that guide their operations in the region, which would improve the relationship with host communities and mitigate their efforts in reducing the loss of revenue. Improved relations would result in a reduction of oil theft, pipeline vandalism, and security costs, thereby reducing revenue losses. The implication of positive social change includes implementation of more corporate social responsibility strategies and improving the economy of the region and the livelihood of the host communities.

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Dedication

This DBA journey has been a long one and in all that time, I have had the wonderful and loving support of my family. I have had to miss a lot of family events and spent a lot of time away from them. Thanks to my husband, Nnamdi, and my children, Zinachidi, Ugonna, Jidechi, and Tobechukwu, for all your love and understanding.

To my mom, sister,and the rest of my family, thanks.

Thanks be to God for seeing me through!

Thanks to everyone who believed in me. I did it! We did it!

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I would also like to say a big thank you to all the friends I made along the way (you know who you are!).

Cheers!

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Section 1: Foundation of the Study

The major objective of most global businesses is to make a profit and sustain methods of reducing revenue losses. Most business leaders have as their target, efficient and successful operations through exploring successful methods for meeting business challenges (Rajput, Marwah, Balli, & Gupta, 2013). Understanding the relationship, if any, between oil theft, pipeline vandalism, and security costs and their effects on multinational companies (MNCs) revenue losses in the Niger Delta are central themes of this study. The discovery of crude oil in 1956 in the Niger Delta increased the socioeconomic imbalance in the host communities of this region, leading to an increase in animosity towards the MNCs operating in the region (Ako, 2011). Determining the effects of the variables of this study from experienced practitioners might furnish insights in the Niger Delta and proffer possible sustainable solutions.

Background of the Problem

Revenue declines because of oil theft impact on MNCs in the oil and gas sector in the Niger Delta. Despite some strategies employed by these companies, the high rate of oil theft has not changed. More than 300,000 barrels of crude are lost daily through pipeline vandalism, oil theft, and other illegal methods (Boris, 2015). Most downtime in MNC operations is because of safety and security uncertainties. Nigeria discovered oil in 1956, and most of it is from the Niger Delta part of the country (Kadafa, 2012). However, most people in the Niger Delta live in extreme poverty and do not directly gain from its resources (Ebegbulem, Ekpe, & Adejumo, 2013). Because of criminal acts such as oil theft and vandalism of oil MNCs facilities, restiveness and dissatisfactions are rife in host

communities. The Niger Delta is now a hostile environment for the oil MNCs as its people feel marginalized (Akani & Oladutire, 2015). According to Ayoola and Olasanmi (2013), the main contention is the vast resources being taken by the MNCs with little or no concern for the environment and people of the Niger Delta. Ayoola and Olasanmi added that neglect, inadequate infrastructure, and poor basic amenities were the major features of these areas.

According to Okon (2014), the illegal oil theft replaced the traditional and legitimate economic activities in the Niger Delta region, and the individuals and criminal groups move stolen crude to large barges for sale to foreign buyers. The scourge of oil theft continuously threatens the sovereignty of Nigeria, the well-being of its people, and the national economy (Okon, 2014). The perception of unequal distribution and state repression coupled with the issue of marginalization has constituted volatile factors in the unfolding scenario (Oluwadare & Oyebode, 2013). Oluwadare and Oyebode (2013) observed that two groups exist in the oil bunkering: those who steal and sell the crude, and those who have their local refineries for processing stolen crude oil. According to Oluwadare and Oyebode, the individuals who carry out sabotage, deliberately destroy oil refineries, pipelines, and depots. My intent in this study is to equip the leaders of the oil and gas MNCs in the Niger Delta with the knowledge of how the correlates of oil theft, pipeline vandalism, and security costs impact the revenue of the organizations. The successful implementation of these strategies would ensure the increase of the organization’s profits.

Problem Statement

Revenue losses in the oil and gas industry in the Niger Delta, Nigeria have increased even more since 2012, causing considerable financial problems for the MNCs and the Nigerian government (Ingwe, 2015). The Nigerian National Petroleum Company (NNPC), a major shareholder of the MNCs, reported losses of revenue because of pipeline tampering increasing by 58% from 2012 to 2013 (Nigerian National Petroleum Corporation, 2013). The general business problem is that leaders lack the knowledge of the correlates of revenue losses in the oil and gas sector. The specific business problem is that some leaders in the oil and gas industry in the Niger Delta, Nigeria lack the knowledge of the relationship between oil theft, pipeline vandalism, security costs, and revenue losses.

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between the predictors' oil theft, pipeline vandalism, security costs, and revenue losses in MNCs operations in the oil and gas industry. The independent variables were oil theft, pipeline vandalism, and security costs. The dependent variable was revenue losses. The targeted sample population consisted of mid- to high-level leaders of oil and gas MNCs in the Niger Delta. The implications for positive social change could include the potential to improve relations between the MNCs management and the local communities and to improve the quality of life of host communities.

Nature of the Study

I used the quantitative method to examine the relationship between the identified independent and dependent variables. According to Turner, Balmer, and Coverdale (2013), researchers use the quantitative method to test the relationship between variables and produce results that support the tests on the hypotheses. As a result, I used the quantitative method. By using the qualitative approach, researchers usually derive themes from the subjective answers of the research participants (Yin, 2014). Researchers who use the mixed methods approach combine the quantitative and qualitative, comingling the attributes from both design methodologies (Garcia & Zazueta, 2015; Landrum & Garza, 2015). Therefore, I did not use the qualitative method or the mixed method.

I used the quantitative method with a correlational design to investigate the relationship between three independent variables and one dependent variable. Using the correlational design approach, researchers can examine the direction and strength of the relationship between the predictor/independent variables and criterion/dependent variables (Curtis, Comiskey, & Dempsey, 2015). With experimental designs, the researcher may use randomization and a control group, while with the quasi-experimental designs; other means select the compared groups (Dong & Maynard, 2013). Researchers often use the experimental designs to examine causal relationships among variables (Wallen & Fraenkel, 2013; Whitley & Kite, 2013), which is not the case for this study. Therefore, I did use the quasi-experimental and experimental design.

Research Question

To what extent is there a significant statistical relationship between oil theft, pipeline vandalism, security costs, and MNCs loss of revenue?

Hypotheses

$H_0$1: There is no significant statistical relationship between oil theft and loss of revenue.

H_a1: There is a significant statistical relationship between oil theft and loss of revenue.

$H_0$2: There is no significant statistical relationship between pipeline vandalism and loss of revenue.

H_a2: There is a significant statistical relationship between pipeline vandalism and loss of revenue.

$H_0$3: There is no significant statistical relationship between security costs and loss of revenue.

H_a3: There is a significant statistical relationship between security costs and loss of revenue.

Theoretical Framework

A theoretical framework shows the context for carrying out research and analyzing its findings (Turner et al., 2013). The theoretical framework to support this study is Pfeffer and Salancik's (1978) resource dependence theory (RDT). Pfeffer and Salancik explained the relationship between organizational and environmental forces and showed that organizations' management responded to resource dependencies by

developing interorganizational arrangements (Drees & Heugens, 2013). According to Drees and Heugens (2013), these arrangements include alliances, joint ventures, in-sourcing arrangements, and mergers and acquisitions. Pfeffer and Salancik (2003) stated that sometimes organizations' management manages these resource dependencies by creating several forms of inter-organizational arrangements to overcome the possible environmental restrictions.

The RDT applied to this study because of the emphasis that external factors such as oil theft, pipeline vandalism, and security costs impact the revenue of the MNCs operating in the Niger Delta negatively. I used the RDT to provide the required information regarding how organizational leaders can manage relations between companies and host communities to reduce uncertainty in their operating environment (Carter & Rogers, 2008). With this study, the goal was to determine if a relationship exists between oil theft, pipeline vandalism, and security costs with the loss of revenue. The analysis may yield a proactive, robust, and comprehensive approach to controlling oil theft, pipeline vandalism, and security costs for oil and gas MNCs in the Niger Delta.

Operational Definitions

Corporate social responsibility (CSR): These are company initiatives that go beyond just profit making; CSR involves carrying out good causes, socially responsible business activities that show the company's ethical standards (De Roeck, Marique, Stinglhamber, & Swaen, 2013).

Force majeure: This is a legal term that consists of three major elements, externality, unpredictability, and uncontrollability (Burke, 2017).

Multi-national companies (MNCs): MNCs are companies headquartered in one country with other operational entities located in other countries different from the headquarter country (Osuagwu & Obumneke, 2013).

Oil bunkering: Stealing of crude oil from pipelines and oil facilities and transporting in different vessels for sale (Ingwe, 2015).

Pipeline vandalism: Destruction of pipelines carrying crude oil to and from oil and gas MNC facilities causing a severe shortage of the product usually carried out by criminals (Omotoso & Omotoba, 2013).

Stakeholders: Any individual or group that has a stake or interest in the operations of a company, Mellat-Parast (2014) stated that stakeholders are people who can influence a company's decision and gain from the organization's management achievement.

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions are unverified opinions held by researchers during their study (Roy & Pacuit, 2012). Foss and Hallberg (2014) explained that assumptions are settings that ensure research validation. Similarly, Kirkwood and Price (2013) defined assumptions as the position a researcher takes that determines the scope of the study, its design, and the conclusions from the findings. I relied on three assumptions; first, participants who had sufficient knowledge of the topic to contribute meaningfully to the study would answer the survey. Second, participants would be truthful in answering the questions in the survey. Third, statistical analysis would be appropriate to determine the correlation between the three study variables.

Limitations

Limitations are possible issues that can affect the finding of study results (Brutus, Aguinis, & Wassmer, 2013). Similarly, Horga, Kaur, and Peterson (2014) stated that limitations are shortcomings that researchers cannot control. Limitations are unavoidable in research because of unforeseen circumstances or situations. The area of study, the Niger Delta region of Nigeria, represented the geographical boundaries of the study. The results may not be valid for other locations or regions, and the data or outcomes may not be transferable, leading to further study on the topic. Another limitation was that of survey fatigue, which could occur if the survey questions were too many (North & Giddens, 2013). In addition, results of the survey and its accuracy depended on the truthfulness of the participants' answers to the survey questions.

Delimitations

Delimitations are factors that limit the scope and state the boundaries of the study but that are all under the researcher's control (Anthonisz & Perry, 2015). Delimitations are self-imposed limitations or boundaries for a study (Delen, Kuzey, & Uyar, 2013; Ionel-Alin & Irimie Emil, 2013). Another delimitation was that participants must have managerial skills with production experience in the oil and gas industry in the Niger Delta region of Nigeria. Those who did not work in the area would not participate. Because correlation does not mean causation, the study participants cannot arrive at a causal conclusion. Unlike a causal relation, the correlation of variables does not mean that one causes the other (Wood & Spekkens, 2015).

The research objective was to test for a potential correlation between oil theft, pipeline vandalism, security costs, and revenue losses. Investigating causal effects of leadership styles was not an objective of this study. The results of this study may be relevant to other oil companies operating in the Niger Delta, especially the indigenous companies, but it may not be useful to other businesses in another sector. Studying similar locations with a larger participant population may further validate the results of this study.

Significance of the Study

Contribution to Business Practice

According to Oluwadare and Oyebode (2013), the government and oil MNCs operating conflict with the oil communities causing them to use various methods such as sabotage, vandalism, and oil bunkering to disrupt their activities. Anifowose, Lawler, van der Horst, and Chapman (2012) stated that attacks on pipelines had affected market volatility and scarcity of oil products in Nigeria, adding that pipeline vandalism had a connection to the rising international price of oil. In addition, the Nigerian government officials from NNPC stated that about 400,000 barrels of crude oil were stolen daily costing $1 billion in lost revenues (Balogun, 2015). Accepting the recommendations of this study and incorporating them into the company business strategy could help improve the business practice of MNCs operating in Nigeria, improve the community's perception of MNCs, and reduce their revenue losses. Better understanding between all parties would enhance relations and increase tolerance on both sides, which could result in reduced resistance to the MNCs operations in the Niger Delta region.

Implications for Social Change

The objective of this quantitative study was to examine the relationship between oil theft, pipeline vandalism, and security costs with the loss of revenue to the MNCs. The findings could help the leaders of the oil and gas MNCs stop losing revenue because of oil theft and pipeline tampering, which could lead to more financial capacity to fund more CSR initiatives in the host communities to help alleviate their difficult situations and improve their livelihood by improving the economy of the region. Furthermore, the implementation of CSR initiatives could influence and improve the livelihood of host communities and make them more amiable to the presence of the MNCs (Enuoh, 2015). Leaders improving their CSR initiatives could lead to better infrastructure such as good health centers, schools, markets, and better employment opportunities and skills acquisition.

Review of the Professional and Academic Literature

The goal of this quantitative study was to identify correlations that leaders can use to understand the causes of revenue losses for MNCs in the Niger Delta. I achieved this objective by carrying out a quantitative correlational study of leaders in oil and gas MNCs in the Niger Delta in Nigeria, focusing on mid- to high-level managers in oil and gas MNCs. I reviewed articles, books, dissertations, websites, and corporate reports (see Table 1).

Table 1

Source of Identification and Distribution

Publications	Total	%
Resources	212	
Journals	190	
Books	18	
Other sources	4	
Peer reviewed journals	181	85
Resources within 5 years of graduation	181	85

I focused particularly on the variables of the study and used databases including the Walden University Library, Google Scholar, CrossRef, SAGE, EBSCO, Business Source Complete, Dissertations, Science Direct, and Emerald Management. The key research terms included: *oil theft in the Niger Delta, pipeline vandalism in Niger Delta, causes of revenue losses in MNCs in the Niger Delta, conflict in the Niger Delta*, and *security in the Niger Delta.* The resources used in this study included peer and non-peer reviewed journal articles, dissertations, and books. The peer-reviewed articles in this study were 181 out of 212 sources, making up 85% of all sources as verified by the Ulrich Periodicals Directory, and sources within 5 years from the anticipated completion of this study were 181 out of 212 sources, which is also 85%.

The purpose of the study was to examine the relationship, if any, between the variables oil theft, pipeline vandalism, and security cost and revenue losses in oil MNCs in the Niger Delta region of Nigeria. Within the scope of this study, I focused on the hypotheses investigating the correlation between oil theft and revenue losses, pipeline vandalism and revenue losses, and security costs and revenue losses. This study differed from others, as the purpose was to investigate the correlation between the independent

variables and the revenue they affect. Some earlier studies addressed the effects of oil theft and its consequences to the communities where MNCs operate, while other researchers also tried to measure the increase in pipeline vandalism and the impact of the oil spill on the environment and its people.

Resource Dependence Theory

Casciaro and Piskorski (2005) explained that the RDT stated that an organization's survival depends on its ability to get its critical resources from its external environment. Casciaro and Piskorski explained that to reduce uncertainty in the availability of resources, an organization's management tries to restructure its needs several ways. According to Casciaro and Piskorski, these methods include bypassing the causes of the poor availability of resources by reducing interest in the required resources or directly interacting with the organization through the exchange of information, goods, and friendship. Gaffney, Kedia, and Clampit (2013) noted that RDT posited that organizations are an open system, dependent on contingencies in their external environment. Gaffney et al. explained that often the organization's external environmental forces could restrict the company's management, but an organization's management tries to reduce its dependencies on it through strategies that endorse its environment. According to Gaffney et al., RDT says that an organization's management should respond to the environment by managing the relations with other groups and compete with its rivals in the global market. The creators of the theory not only emphasized the theoretical statement of power in the organization, they brought it to life

through descriptions of the method by which an organization's management manages its external environment (Casciaro & Piskorski, 2005).

There are three aspects of the RDT theory: (a) importance of a company's ability to get and sustain resources, (b) existance within other groups that affect its access to required resources, and (c) companies trying to reduce their dependence on others while making others depend on them (Gaffney et al, 2013). Casciaro and Piskorski (2005) explained that the main concept of RDT was constraint absorption, which means granting the rights to control resources that create dependencies to the dependent factor. Hillman, Withers, and Collins (2009) explained that through RDT, organizational management tries to reduce its environmental interdependence and uncertainty, and noted that RDT has a significant influence on strategic management dependent on exigencies in the external environment. External factors have a significant impact on organizational behavior, and though their leaders may be constrained, they can act to lower or eliminate environmental uncertainty and dependence (Hillman et al., 2009).

Leaders bring several benefits to the organizations and can attract and co-opt members of host communities into the company and through this relationship acquire necessary resources (Hillman et al., 2009). Although RDT is helpful in producing strategies to manage external factors, further research would be beneficial (Hillman et al., 2009). RDT looked at how organizational leaders tried to manage their operations and the environment in which they work (Khieng & Dahles, 2014). Khieng and Dahles (2014) stated that RDT had three assumptions: (a) social context matters, (b) organizations create strategies to retain their autonomy and objectives, and (c) power is key in guiding

the organizational management decisions. Yeager et al. (2014) stated that there have been studies on the effect of the external environment on organizations, the organizational structure, strategies, and performance. In addition, organizational management reacts to its environment, and the uncertainty and RDT show that management bases its decisions on the level of uncertainty (Yeager et al., 2014).

Yeager et al. (2014) posited that the RDT shows that to be successful, an organization's management should function in accordance with its external environment; the organization's survival is based on harmony between its external environment and its internal strategies and decisions. RDT posited that no organization is self-sufficient or self-sustaining; the organization depends on other factors to provide the resources required to survive, and through these resources, these factors influence the organization's management (Akingbola, 2012). According to Khieng and Dahles (2014), the stability of the external environment where organizations operate is important because, in its absence, problems occur. When an organization depends on a resource greatly, the more vulnerable they are to external factors and actors in the environment (Khieng & Dahles, 2014). Ribeiro and Colauto (2016) stated that no organization was an island on its own; its leaders could not overlook the importance of external resources to their performance. Ribeiro and Colauto explained that RDT shows the need for good leadership in managing external resources.

Good leaders act as a connection between their organization and their external environment as they help establish links between the firm and external resources and this concept is known as *''board interlocking''* (Ribeiro & Colauto, 2016). Ribeiro and

Colauto (2016) posited that with the RDT, good leadership minimizes the uncertainty of contingency factors. According to Akingbola (2012), RDT depends on three factors, firstly, the level to which the resource is critical to the performance of the organizations; secondly, the degree of control personnel have on how resources are used; and lastly, if there are alternatives to the resources. These factors show the level of dependence between the organization and their external environment (Akingbola, 2012). Bass and Chakrabarty (2014) explained that MNCs leaders try to obtain their resources to either satisfy their short-term needs or safeguard them for their long-term plans. Bass and Chakrabarty stated that some MNCs leaders consider resources that protect their future more important than those used for their immediate needs, and explained that organizations use RDT to investigate why they compete for resources amongst themselves. By internalizing the resources, organizations depend less on others and become more powerful.

Bass and Chakrabarty (2014) stated that a resource-based view and resource security theory all complement the RDT, as implementing these theories ensured an improved performance. A gap in the RDT was that organizations did not place much emphasis on their methods of acquiring resources, suggesting resource security theory as an alternative (Bass & Chakrabarty, 2014). Lai, Chu, Wang, and Fan (2013) used the RDT to show how organizations handled their dependence on their environment, explaining that RDT described organizations as open systems that heavily relied on factors in the environment, which controlled resources they needed, thereby restricting them. Lai et al. noted that MNCs leaders try to structure their inter-relationships with

other stakeholders to acquire and maintain the resources they need to improve their performance. According to Lai et al., through RDT, leaders made decisions within constraints such as (a) mergers and joint venture, (b) integrating community members into boards, (c) building strong ties with the government, and (d) executive succession.

Considering only two RDT strategies - inter-organizational relations and integration was a limitation, noting that other strategies – political action and executive succession were viable future research topics (Lai et al, 2013). Lai et al. (2013) noted that another limitation was that they focused only on China; therefore, their outcomes were not generalizable, and social, economic, and cultural factors should be included in future research. Bode, Wagner, Petersen, and Ellram (2011) compared information processing and RDT, stating that both were open system based, which faced the challenge of environmental uncertainty. The difference between the two theories was determined by the degree by which the environmental uncertainty was an encountered problem that required a solution (Bode et al, 2011). The authors also noted that information processing focused on the internal workings of organizations and how the environmental uncertainties affected their performance, while RDT concentrated on the relationship between the organization, environment, and other stakeholders (Bode et al, 2011). Bode et al. added that issues arising from uncertainty, in addition to lack of control and power, required solutions. According to Bode et al., the RDT shows that dependence on another party for required resources means that the organization is vulnerable and needs to sustain the relationship to achieve its objectives. The higher the level of dependence, the more important it is for the maintenance of stability (Bode et al., 2011).

Newbert and Tornikoski (2011) explained that organizations tended to focus largely on acquiring resources without thinking about their environment and social ties to it, stating that a good relationship between all shareholders, would build mutual trust and obligations. According to Newbert and Tornikoski, this relationship could be either relationally embedded or structurally embedded and ultimately influence the resource acquisition costs. RDT largely concentrates on resource acquisition in organizations, the way organizations handle environmental constraints, and the relationship between the organization and the environment (Amalou-Döpke & Süß, 2014). Amalou-Döpke and Süß (2014) emphasized the main assumption of the RDT, which is that actors do not control the resources they require, but they could work with others to have access to them. When management develops relationships for the sole reason of gaining access to the resources it requires, asymmetric dependencies occur, and the higher the dependence, the more superior the imbalance between both parties who act in opportunistic ways to reduce their reliance on each other, while increasing the other's dependence on them (Newbert & Tornikoski, 2011).

To buttress the point, Newbert and Tornikoski (2011) stated that RDT shows that complete dependence on few vendors could cause a loss of negotiating power and higher costs of resources required. In their study, Newbert and Tornikoski stated that their limitation was the focus on only cost and resources as factors that impacted performance and suggested that future researchers could investigate the effects of growth, profitability, and survival in the industry. However, according to the Amalou-Döpke and Süß (2014), objectives of parties involved in the resource dependent relationship include lowering the

degree of uncertainty regarding the availability of resources as well as the level of dependence of one actor on another. These objectives depend on three factors: (a) importance of the resources to the actor, (b) their control over other critical resources, and (c) availability of alternative resources (Amalou-Döpke & Süß, 2014). However, none of the three factors alone is enough for resource dependence (Amalou-Döpke & Süß, 2014).

Powell and Rey (2015) investigated the RDT in public and non-profit institutions, explaining how individuals can use it to develop strategies and improve resource capacity. Powell and Rey delved into the theory's structure for measuring organizational performance through the scope of the environment where it is located; and how the organization gets its required resources from that environment. Peng and Beamish (2014) explained that organizations could not generate all the resources they need to survive, and the dependence on the external environment created some degree of uncertainty in acquiring the necessary resources, thereby encouraging the organization to be more autonomous. Peng and Beamish further stated that the RDT aids the understanding of the relationship between parent and subsidiaries in MNCs, and through the size and quantity of resources controlled, RDT could know the strength of the company.

Leaders of organizations can manage resource dependence strategies to enable a higher possibility of organizational change, survival and sustainability, and adaptation in response to changes in external and environmental forces (Powell & Rey, 2015). According to Powel and Rey (2015), RDT has three main themes: (a) the environmental impact on organizations, (b) organizational efforts to manage environmental challenges, and (c) how the environmental challenges impact the internal structure of organizations.

In adopting this approach, public institutions could face the problem of seeking funds outside the traditional methods to survive; RDT strategies are only helpful if they can help organizations get resources in challenging environments (Powell & Rey, 2015). Peng and Beamish (2014) noted that factors that affect the access to the required resources also affect the parent-subsidiary relationship regarding subsidiary control.

According to the Peng and Beamish (2014), whoever contributes the required resources plays a key role in determining the relationship between parties involved. Knol, Janssen, and Sol (2014) stated that the RDT shows that organizations rely on others to provide the resources they require to survive. The strength of an organization depends on the resource relationship it has with other organizations and that organizations try to increase their power by changing their internal structure to acquire and sustain the resources they need (Knol et al, 2014). Peters (2014) defined RDT as the degree of influence external resources have on an organization, and how it affects its behavior, RDT maintains that organizations must acquire resources to survive in its industry. Peters explained that organizations do not necessarily have to adapt to their environment, instead, they can adapt their environment to themselves. According to Peters, when management can manipulate its environment for the organization's benefit without the need for adaptation, the required resources could become limitless.

RDT means organisational survival that heavily relies on its ability to access critical resources from its external environment, the theory stated that the behaviour of the firm depends on two factors: (a) the resources and (b) the dependence of one organisation on another to gain access to the required resources (Wolf, 2014). Wolf

(2014) stated that this dependence gives power to one group over the other, the RDT allows organizations to think of strategies that will help them lower the resource dependencies and increase control over their resources. Leaders of organizations can manage resource dependence strategies to enable a higher possibility of organizational change, survival and sustainability, and adaptation in response to changes in external and environmental forces (Powell & Rey, 2015). According to Powel and Rey (2015), RDT has three main themes: (a) the environmental impact on organizations, (b) organizational efforts to manage environmental challenges, and (c) how the environmental challenges impact the internal structure of organizations. In adopting this approach, public institutions could face the problem of seeking funds outside the traditional methods to survive; RDT strategies are only helpful if they can help organizations get resources in challenging environments (Powell & Rey, 2015).

According to Wolf (2014), issues such as scarcity, overconsumption, and pollution that threaten access to resources, improve when implementing a supply system chain management (SSCM) strategy. Wolf added that by promoting social welfare and environmental protection in the supply chain, there is long-term access to the resource. Hazen, Skipper, Ezell, and Boone (2016) stated that RDT provides a lens for understanding how organizations adapt to changes in its external environment. Hazen et al. explained that the theory suggests that organizations that lack required resources form relationships with others that would give them access; the organizations would do this to survive. According to Hazen et al., within the supply chain context, RDT was useful across a broad range of applications. Hazen et al. posited that individuals could use RDT

to counter the argument that proper supply chain management (SCM) is equally beneficial to all members.

Alternatives to the Resource Dependence Theory

Resource security theory. Bass and Chakrabarty (2014) noted that because natural resources are scarce, competition in resource extraction has become fierce and state-owned enterprises (SOE) had begun to grow in strength in the global business environment and compete with MNCs and other SOEs. Bass and Chakrabarty observed that MNC management require resources for exploration, which grants them long term security, or exploration which gives them short term security. Although researchers used RDT to investigate how organizations vied for resources from a limited pool, they were also on the quest of securing their resources (Bass & Chakrabarty, 2014). Gaille (2010) stated that by securing the availability of resources, SOEs improved their geopolitical positions and power as they depend less on other organizations and countries for the same resources.

Conservation of resource theory. Resource salience in organizational science founded the concept of conservation of resource theory (COR) and the fact that individuals usually create, protect, and nurture their resources (Lanivich, 2013). Researchers use this theory in describing coping mechanisms organizations implement to reduce the strain of potential or actual resource loss (Lanivich, 2013). Hobfoll's (1989, 1998, 2001) theory of conservation of resource (COR) stated that individuals and organizations that lack resources experience stress causing them to be susceptible to further losses.

Lanivich (2013) stated that the sources of strain consist of uncertainty regarding the business, opportunity costs, and potential loss of time, energy and other resources. According to Byrne et al. (2014) explained that the COR theory has two major themes: (a) using resources on any task leads to its depletion and (b) individuals tend to avoid resource loss. Hobfoll's theory of COR showed that with more resources, organizations reduce stress and become capable of making more gains (Feldman, Davidson, & Margalit, 2015).

Oil Theft

Wilson (2014) stated that security lapses, government negligence for the area's development, greed, and criminal intent of the international traders were responsible for oil theft. In his study, Wilson explained that illegal oil bunkering had been the primary source of oil theft in the Niger Delta for both internal and external use, carried out by indigenous and foreign individuals. Local people carried out small-scale theft made possible because of the location of the pipelines in remote areas within the community, and the pipeline locations made it difficult for MNCs leaders to provide security for these facilities (Wilson, 2014). According to Wilson, the large-scale theft involved foreign traders collaborating with local individuals to siphon oil directly from oil facilities and terminals into their tankers or barges. Years of unrest in the Niger Delta had led to armed groups attacking oil and gas facilities and stealing their product, disrupting their operations, kidnapping personnel and sabotaging pipelines (Obenade & Amangabara, 2014).

Obenade and Amangabara (2014) observed that these activities had reduced the oil production levels, further reducing revenue for development. As a result of the oil theft and sabotage, illegal refineries had been set up to produce crude products causing an adverse impact on the people and environment and resulting in 150,000 barrels of crude being stolen daily and $10 billion of crude oil lost annually (Obenade & Amangabara, 2014). An extract from the Transparency Initiative, physical and process report showed that the total amount lost by several MNCs –SPDC, Chevron, and NAOC from theft and sabotage from 2009-2011 was $11 billion (Obenade & Amangabara, 2014). According to Obenade and Amangabara, these criminal activities had caused several MNC management to declare *force majeure* in 2011. Hennchen (2014) pointed out that in 2003, militants stole about 70% of the oil revenue; the theft was because of the poor distribution of oil revenue and lack of economic and social development in the oil-producing communities. By 2011, more people lived in poverty than before oil was discovered and as a result, criminal groups formed to take back profits from the government and oil MNCs through oil theft, and redistribute it to the poor in the Niger Delta (Hennchen, 2014).

Oyefusi (2014) stated that over 136 million barrels of crude oil valued at US$10.9 billion, had been lost to oil theft and sabotage in the period between 2009 and 2011. Oyefusi (2014) added that pipeline vandalism cost an extra 10 million barrels valued at US$894 million. The Shell company representative revealed that their organization lost US$5 billion yearly to illegal activities from 2009 to 2012; occasional attacks by local criminals had become well-coordinated operations by prepared criminals (Oyefusi,

2014). According to Oyefusi, the Nigerian finance minister Ngozi Okonjo-Iweala further expatiated that $1.2billion was lost monthly which was equivalent to 17% drop in revenue causing several companies to threaten to shut down their operations. Similarly, Ugor (2013) observed that from 2005- 2009, large youth groups in the Niger Delta had taken up arms against MNCs and the Nigerian State; they attacked oil facilities, and sabotaged oil production and carried out oil bunkering. Ugor noted that these actions reduced the national daily output by 750,000 bpd, which was about fifty-percent out of the total output at that time. According to Ugor, in 2009 after the government's operations against the militants, in retribution they attacked Chevron's Okan manifold, which controlled 80% of the organization's shipment of oil. In addition, in the first six months of 2009, several attacks carried out against the $120billion oil and gas facilities caused several oil MNCs leaders to declare force majeure and shut down their operations (Ugor, 2013).

While investigating the issue of conflict in the Niger Delta, Agbiboa (2013) argued that the amnesty programme initiated by the Nigerian Government for the militants did not address the main issues that continued to nurture grievances in the Niger Delta. The Movement for the Emancipation of the Niger Delta (MEND) carried out attacks on oil production facilities and was involved in oil theft, sabotage, kidnapping, and destruction of oil facilities (Agbiboa, 2013). According to Agbiboa, in many cases, MEND had given prior notice of their attacks showing that the government could stop them, and true to their threats, they reduced the oil production from 2.6M barrels in 2006 to 1.6M in 2009. JohnMary (2014) posited that oil theft in Nigeria was a huge crisis and

an economic issue based on the sophisticated network through which oil theft happened. The security agencies had not been able to stop the thieves who sold about 90% of the stolen oil in the global markets while refining and selling only 10% locally (JohnMary, 2014). JohnMary explained that bunkerers stole most of the crude oil and both the MNC management and government lost revenue to them; the former finance minister Ngozi Okonjo-Iweala said that Nigeria lost a fifth of its revenue to theft in 2012.

Ufuoma and Omoruyi (2014) noted that Nigeria was on the verge of an economic crisis due to the high rate of oil theft, which has cost the government about $1billion monthly; adding that oil theft was a result of the government's management inability to meet the basic needs of the Niger Delta people. Stopping oil theft would require the joint efforts of the government, oil MNCs, security agencies, and the Niger Delta people (Ufuoma & Omoruyi, 2014). Ufuoma and Omoruyi stated that not only locals were involved in the criminal act of oil bunkering, and the host community did not view oil theft as a wrong act because they believed they were taking what originally belonged to them. Apart from the economic impact, oil theft had a bearing on the environment; Balogun (2015) noted that the issue of oil theft became a big problem in 2012 after the government granted the perpetrators of these acts amnesty. About 400,000 barrels were lost in 2012, and the oil MNCs leaders and the government spent $1 billion monthly in lost revenues, and oil spilled into the environment, which went unnoticed for an extended period led to the pollution of land and water bodies (Balogun, 2015). Balogun also stated that government had stepped up their efforts against the perpetrators and had destroyed many of their equipment, but this did not reduce the rate of theft. Similarly, Boris (2015)

stated that Nigeria continued to lose over 300,000 barrels of oil daily despite the government's high investment in security.

Criminal activities had grown to such an extent to cause a major government response to protect their oil facilities; their activities had repercussions for all stakeholders, the community, government, and international bodies (Vreÿ, 2012). According to Vreÿ (2012), the issue of oil bunkering started with just seven cases in 1993 and increased to 10 percent of daily output by 2004, which was equivalent to 200,000 barrels, and by 2008 about $22.5 million, was lost daily. In their study, Gonzalez and Derudder (2016) investigated why sabotage had remained a problem in the Niger Delta from 2009 to 2015 despite the amnesty programme. Gonzalez and Derudder (2016) explained that Nigeria suffered from the natural resource curse, which often led to violence that had adverse financial effects on the country; sabotage and oil theft through artisanal refining and bunkering had caused instability, as about 7-10% of the total production was bunkered, estimated at $1billion. Statistics provided by Shell grouped their oil facilities incidents into two - sabotage/theft and operational failures, and showed that sabotage and theft caused over half of all incidents (Gonzalez & Derudder, 2016).

Ugor (2013) stated that the armed conflict by the militants had a significant impact on the oil revenue of the oil companies and the Nigerian government, noting that despite the government's management effort using military options, it proved insufficient in tackling the issue. According to Ugor, though many of ex-militants had given up armed fighting in addition to governments' investment of billions of naira in the amnesty programme, conditions had not changed for these individuals, and the unemployment

levels remained high. Oil bunkering involved stealing oil from government and company facilities through complex and international rackets, and the Shell Petroleum Development Corporation of Nigeria (SPDC) stated that annually, oil theft cost them US$5-7 billion (Ugor, 2013; see Figure 1).

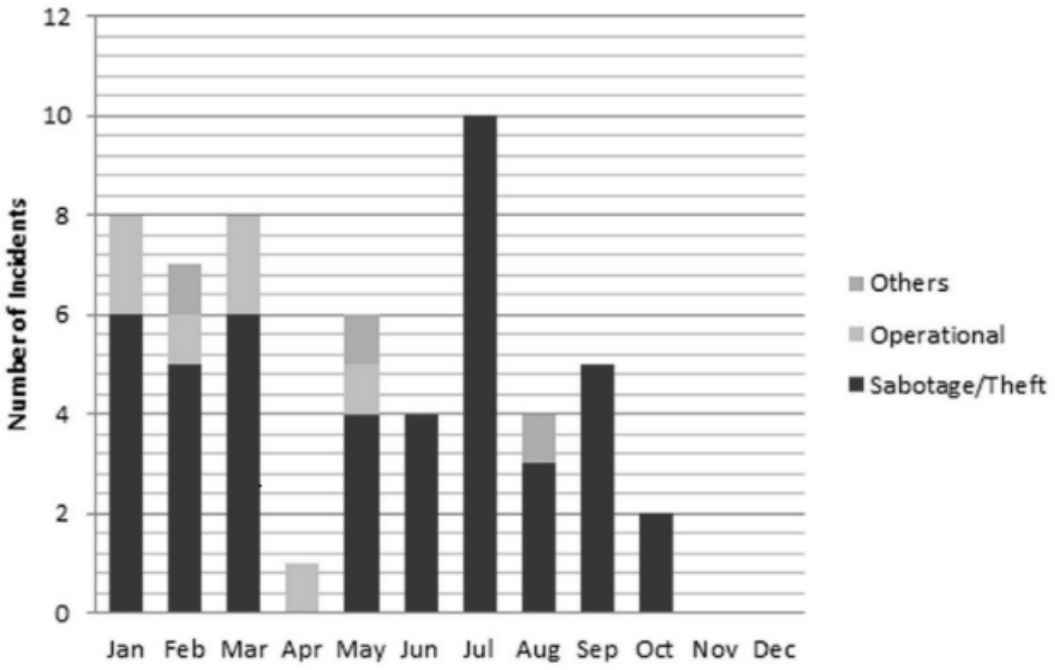

Figure 1. Number of oil spills/year (Shell.com.ng, 2016).

Pipeline Vandalism

Omodanisi, Eludoyin, and Salami (2014) observed that there were about 5120km of pipelines managed by the government through the NNPC, and supplying crude oil contents to facilities all over the country. Although there were laws that stipulated a 47.5m buffer around the oil pipelines, this did not stop vandalism, showing that the measures were inadequate, management of the pipelines was poor, and information tracking of the facilities was inefficient (Omodanisi, Eludoyin, & Salami, 2014).

Omodanisi et al. noted that causes of vandalism included faulty and exposed pipelines, inadequate security, and sabotage, pointing out that the most common causes of vandalism were sabotage as it caused about 60% of the failure in petroleum pipelines in Nigeria. Osaghae (2015) noted that unemployment levels were high, much of the infrastructure did not exist or were in poor states, and quality of life and security was poor. The region expected that the oil MNCs would provide employment opportunities, better infrastructure to the indigenes of the host communities and compensation for losses caused by pollution and other hazards (Osaghae, 2015).

According to Osaghae, when this did not happen, the militant groups commenced sabotage, kidnapping of oil workers, attacks on oil facilities, pipeline vandalism, and bunkering. These activities caused a massive loss of revenue and forced the government to consider more peaceful reconciliation options, however, this had not entirely solved the problems of the region (Osaghae, 2015). Okoli and Orinya (2013) explained that the national security of Nigeria was threatened through these criminal activities, especially because the pipeline networks allowed for easy access, thereby increasing the occurrence of vandalism. According to Okoli and Orinya (2013), apart from economic losses and environmental degradation, there was also the fact that during oil theft, fire and explosions had destroyed lives, the environment, the land vegetation, and animals. Similarly, Ejumudo (2014) noted that Niger Delta region was a hotbed of conflict, which included pipeline vandalism because to youth attacks of oil facilities, pointing out that about 3200 cases of pipeline vandalism occurred between 1993 and 2007. The militant groups changed their tactics of only attacking oil facilities and started attacking

personnel, one time attacking six flow stations and kidnapping hundreds of personnel and shutting in about 10,000 barrels of oil (Ejumudo, 2014). (see Figure 2).

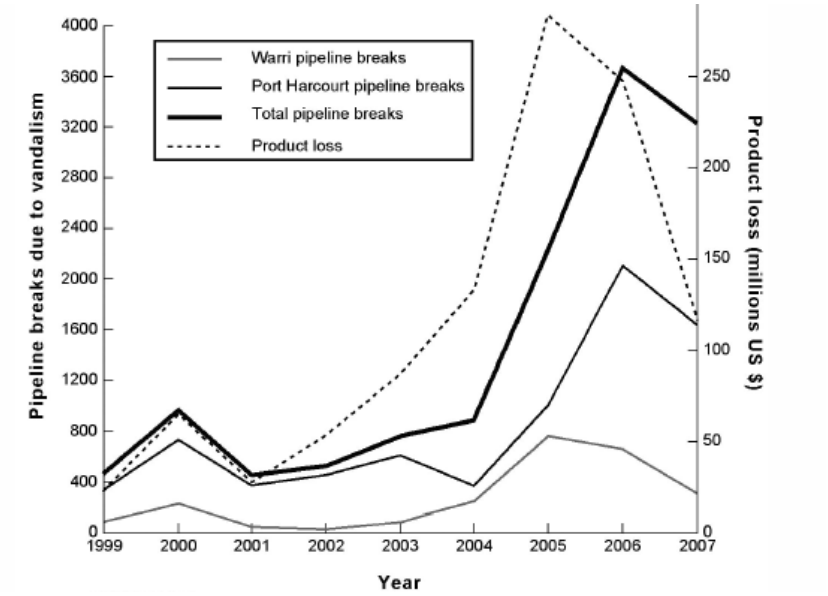

Figure 2. Pipeline breaks 1999 – 2007 (Watts & Ibaba, 2011)

According to Ejumudo (2014), at a time, Atiku Abubakar, the Nigerian vice president stated that the country lost 4.4million of its local currency from 400 pipeline attacks between January and August 2000 (see Figure 2). Yeeles and Akporiaye (2016) examined the impact of pipeline interdiction or sabotage in their study; previous researchers had pointed out that pipeline sabotage was the reason for underperformance in the sector. According to Yeeles and Akporiaye (2016), all parties involved in oil production had argued their failure to hit high production targets and maintained was because of pipeline sabotage. Government statistics had shown that oil MNCs faced direct risks from sabotage of pipelines, which had enormous costs (Yeeles & Akporiaye, 2016). Anugwom (2014) noted that though the conflict and insecurity in the Niger Delta had reduced through the amnesty program introduced by the government, total peace and

a solution to the crisis had remained elusive. According to Anugwom, the region had a different terrain which was well known by its inhabitants and allowed them to easily carry out activities like the kidnapping of oil workers, sabotaging oil facilities and escaping the government security agencies.

Oteh and Eze (2012) explained that pipeline vandalism was a result of underdevelopment and negligence of communities by the government thereby making poverty endemic. The personnel of the oil MNCs had good living conditions such as health care, safe water, and electricity, the oil producing communities lacked these amenities, and this had led them to agitate for a fair share of the oil wealth generated from their lands, thus leading to violent conflicts becoming more frequent (Oteh & Eze, 2012). Oteh and Eze pointed out that greed had led some of the community population to sabotage the facilities of the MNCs leading to pollution, as a way of forcing the MNCs leaders to pay compensation to the affected communities. Omotoso and Omotoba (2013) observed that MNCs and Nigeria had suffered severe shortages of crude oil due to the criminal activities of vandals who attacked pipelines feeding oil facilities leading to insufficient supply. In the past, pipeline vandalism and oil theft mainly occurred in the riverine communities, but this had changed as in recent times, moving to land areas through more daring and dangerous methods (Omotoso & Omotoba, 2013). According to Omotoso and Omotoba, this issue was no longer just Nigeria's problem; The issue has become a global issue as well because a shortage of the crude oil affected global production and oil prices too.

Okolo and Etekpe (2010) defined pipeline vandalism as the illegal or unauthorized act of damaging pipelines to disrupt the supply or to siphon off crude oil for personal use or sale. The large quantity of exposed pipelines and oil facilities increased criminal activities and made them easily accessible to vandals and oil thieves, and the proximity to communities made them more vulnerable to vandalism (Okolo & Etekpe, 2010). According to Okolo and Etekpe, the government had created laws to address the issue of pipeline vandalism, creating security agencies to handle them, unfortunately, despite the government actions; groups that were more militant formed resulting in an increase of the occurrences. Omotoso and Omotoba (2013) further posited that over 6000 lives had been lost because of the pipeline vandalism in addition to other damages, adding that this problem had also led to the exit of several oil companies resulting in serious adverse effects on the economy. Omotoso and Omotoba stated that vandals continued to develop means to get to the buried pipelines mostly located in the swamps, and results from this issue showed that crude oil worth millions were lost annually to oil theft. Akpomera (2015) noted that Nigeria had the unfortunate record of having large volumes of crude oil stolen from over 6000km pipelines in the country, pointing out that in the first quarter of 2013, the NNPC lost US$1.23 billion in revenue. (See Table 2).

Table 2

Historical Statistics of Pipeline Vandalism

S/no	Date of vandalization	Name of mnoc & location of facility	Duration of damage (days)	Quantity of crude oil	Average price	Amount (n 000)
1	May 3, 2003	Mobil Producing Nigeria Unlimited, Eket, Akwa Ibom	60	Massive spill through rivers to Bayelsa, Rivers & Akwa Ibom States	-	1,163,210
2	May 18, 2003	Shell Petroleum Development Company of Nigeria Ltd (SPDC), Warri, Delta State	38	120,000 barrels	29.20	133,150
3	Aug20 – 30, 2003	SPDC, Egwa I & II flow stations at Azuzuama, Batan, Beniseed, Opu-Krushi, Ogbotobo & Odidi I & II, Delta and Bayelsa States.	10	500,000	29.20	146,000
4	Nov 20, 2003	SPDC, Forcado Terminal, Delta State	14	604,500	29.20	247,120
5	Jan 10, 2004	Chevron Nigeria Ltd, Macaraba & Aotonana, OGBE-Ijoh, Delta State	20	100,000	38.73	77,460
6	March 9, 2004	Nigerian Agip Oil Company (NAOC) Sagbama, Foropa & Nembe Creeks, Bayelsa State	28	105,000	38.73	113,870
7	Sept 20, 2004	SPDC, 15 Flowstatins in Bonny and Burutu in Rivers & Delta States	60	98,450	38.73	228,880
8	Jan 3, 2005	NAOC, Nembe Creek 1,2 & 3, Bayelsa State	10	120,000	55.43	66,250
9	Feb 10, 2005	Chevron, Escravos, Delta State	8	400,000	55.43	177,380
10	Feb 10, 2005	SPDC, Chenomi Creeks in Warri, Delta State	5	180,000	65.71	59,140
11	June 8, 2006	SPDC, Oporoma, Bayelsa State	15	145,100	65.71	143,020
12	March 20, 2007	SPDC, Abiteye & Olero, Delta State	20	200,000	76.13	304,520
	Total			2,572,600		2,860,170

Note: Pipeline vandalism in Niger Delta 2003-2007(Etekpe & Okolo, 2010)

According to Akpomera (2015), one of the pipelines most affected was the 97km Nembe Creek trunk line, which has about 53 break-points alone costing the government US$1.1 billion to replace. Omodanisi, Eludoyin, and Salami (2015) noted that the pipeline network was a vital part of the oil and gas infrastructure, which needed protection. The Pipeline and Products Marketing Company Limited (PPMC), which is a business unit of NNPC, remains responsible for monitoring and maintaining over 5,120km pipelines across Nigeria (Omodanisi, Eludoyin, & Salami, 2015). According to Omodanisi et al., most of the pipeline vandalism were acts of sabotage. Urciuoli, Mohanty, Hintsa, and Gerine Boekesteijn (2014) explained that supply chains in the energy industry are critical as disruption could have a huge impact as they include pipelines, which were particularly vulnerable as they were not protected by perimeter barriers. According to Lekwot, Balasom, Dyaji, and Yakubu (2014), Nigeria has lost over N150.5 million in revenue due to pipeline vandalism, and over 2,550 people lost their lives. Over 5000km of pipelines made up of 4315 multi-product lines to 23 depots and 666km of crude oil lines to four refineries (Lekwot, Balasom, Dyaji, & Yakubu, 2014).

Nnadi, El-Hassan, Smyth, and Mooney (2014) stated that the incessant attacks on pipelines in Nigeria have caused it to be in the global news, pointing out that these attacks were a serious threat to the oil and gas industry and Nigerian economy. According to Nnadi et al. (2014), greed and protest against oil organizations activities fueled vandalism activities. Onwuka and Dike (2015) stated despite the efforts of the Nigerian government in setting up measures to protect the oil and gas pipelines, increased surveillance by the military and ex-militants stiffer penalties and oil thieves; vandalism

had remained a challenge. Onwuka and Dike stated that pipeline vandalism affected not only downstream but also upstream activities, the environment, as well as the economy, and oil spills that resulted from pipeline sabotage had polluted the environment. Öztürkoğlu and Lawal (2016) explained that petroleum distribution through pipelines had become the most viable means in recent times noting that frequent breakdown along the pipeline network caused downing of tools until repairs were carried out, thereby affecting the economy.

Security Costs

Mboho and Udousoro (2014) described vandalism as activities that stopped or slowed the progress of the communities, lowered the integrity of the community and put the economy of the nation at risk. According to Mboho and Udousoro, Nigerian government employed the para-military agencies to protect and prevent the destruction of facilities like pipelines, noting that raising the awareness of the risks and dangers involved could eradicate vandalism. Oromareghake, Arisi, and Igho (2013) stated that insecurity had become a major disturbance to the MNCs leaders and their workers operating in the Niger Delta, and the inability of the government and security agencies to act caused an escalation of the attacks. According to Oromareghake, Arisi, and Igho, the high rate of insecurity had resulted in the reduction of oil exportation by 25%, and militants' actions and the price of using the security agencies had cost the MNCs and Nigerian government billions of naira annually. Securing the pipelines and other facilities had become a difficult task causing the loss of about 120,000 to 150,000 bpd; and as a

result, many MNCs had moved their operations to other regions in the country (Oromareghake, Arisi, & Igho, 2013).

Oghoghomeh and Ironkwe (2012) stated that MNCs leadership along with the government spent large amounts of money to hire security agents and peacekeeping forces to protect their personnel and facilities from attacks. Oghoghomeh and Ironkwe noted that the NNPC lost about N10.2b in 2001 due to pipeline vandalism and through their study, and determined that the cost of peacekeeping in the Niger Delta had a big impact on the Gross Domestic Product (GDP) of Nigeria and the economic development of the country. News sources within the country stated that the amount spent on securing oil facilities was almost equivalent to the cost of providing development to the population (Oghoghomeh & Ironkwe, 2012). Oghoghomeh and Ironkwe concluded that addressing the conflict in the Niger Delta was more cost-effective for the government than continuing to pay for security. Ajiye (2015) observed that the rate of insecurity for lives and properties in the Niger Delta had increased since the emergence of militant groups and observed that the crisis had taken on a new angle involving oil bunkering, and kidnapping, making the region among the most dangerous in the world. According to Ajiye, the militant's activities had become a major threat to the MNCs, and Nigeria's main source of revenue, the insecurity of the region had made the government lose billions of dollars in income and reduced the value of the region. Ajiye added that only by addressing the issue of security could there be sustainable development.

Aghedo (2015) stated that in 2009, to improve the security situation in the Niger Delta, the Nigerian government initiated an amnesty program that pardoned about 30,000

militants and their reintegration into the society. This fragile peace led to an increase in the rate of oil production, however, the cost of maintaining the peace had been huge, as over 200 billion naira had been spent on the programme so far (Aghedo, 2015). Aghedo and Osumah (2014) pointed out that apart from the loss of lives, organizations, and Nigeria, in general, had incurred huge losses because of the violence in the Niger Delta. The Technical Committee on Niger Delta issues estimated that Nigeria lost about US$61.6 billion to oil theft and pipeline vandalism between 2006 and 2008 (Aghedo & Osumah, 2014). According to Aghedo and Osumah, the Nigerian government spent about N400billion in securing the region and oil and gas facilities, which was a huge increase in security expenditure, stating that oil and gas MNCs operating in the region spent about US$3.7 billion on security in 2007.

Aaron (2015) observed that the Nigerian government in their attempt to protect their oil and gas facilities had implemented a strategy of using ex-militant commanders paying them about N5.6 billion as ‘protection fees.' These costs were in addition to contracts worth millions of dollars *awarded* to ex-militant commanders for the procurement of vessels for use by the nation’s military in policing the region (Aaron, 2015). According to Aaron, because of these initiatives, the rate of militant attacks reduced for a period but was short-lived, adding that effects of oil theft and pipeline vandalism were causing a hemorrhage of the economy, impacting its ability to implement its budget. Nwangwu and Ononogbu (2014) stated that because of the issue of national security in Nigeria, the country diverted scarce capital in the national budget to procure military weapons, reducing the capital that meant for other critical areas such as

education and infrastructure. According to Nwangwu and Ononogbu, in 2008, 2009, 2010, and 2011, the Central Bank of Nigeria spent N292.7billion, N276.5 billion, N422.9 billion, and N563.2 billion respectively.

Revenue Losses

Agbaeze, Udeh, and Onwuka (2015) stated that the oil sector in Nigeria had experienced disturbances in recent times due to pipelines vandalism of, illegal bunkering and oil theft. These activities had caused the major oil companies operating in the Niger Delta such as Shell, Total, and Agip to declare force majeure (Agbaeze, Udeh, & Onwuka, 2015). According to Agbaeze et al., oil companies lost about $1.23billion in 2013 alone, and the Nigerian government took the fight to the global scene, asking the international market to treat stolen crude oil like stolen diamonds as they both generated blood money, violence, and conflict. Aghedo (2015) noted that at the height of the Niger Delta conflict, oil production dropped from 2.6million barrel per day (bpd) to a mere 700,000 bpd because of oil theft and production shut-ins. Many organizations including oil MNCs had relocated their personnel from the Niger Delta due to security concerns, those that remained paid their staff higher wages and employed more security for protection, increasing the cost of doing business in the region (Aghedo, 2015).

From 2005-2009, there was an increase in the rates of piracy and other criminal activities like vandalism of oil facilities and kidnapping, and all this caused severe oil and gas MNCs to leave Nigeria while others stopped their activities, declaring ‘‘*force majeure*’’(Orji, 2013). According to Orji (2013), piracy activities were a significant threat to the economic stability of the MNCs, the Nigeria government and its security and due

to the insecurity and high risk involved in the transportation of oil products, the shipping costs had increased for stakeholders. Osumah (2013) noted that by 2006, the communal activities including the forceful occupation of flow stations, pipeline vandalism, and bunkering had increased, causing the government to initiate amnesty programs for the militants (see Table 3). According to Osumah, losses increased from $6.8M from1999 to 2005 to $91billion daily in 2006, explaining that although the amnesty program gave some economic relief to the Nigerian government and oil MNCs, there were still a lot of contentious issues.

Table 3

Historical Statistics of Daily Production

Year	Av Bonny light crude (USD billion)	Volume of stolen barrels per day (bpd)	Value of oil stolen (USD billion)	Assumed production shut-in (bpd)	Value of production (USD billion)	Daily av. Stolen and shut-in	Total value (USD billion)
2000	28,49	N/A	N/A	250000	2,6	N/A	N/A
2001	24,50	N/A	N/A	200000	1,8	N/A	N/A
2002	25,15	N/A	N/A	370000	3,4	N/A	N/A
2003	28,76	300000	3,2	350000	3,7	650000	6,9
2004	38,27	300000	4,2	230000	3,2	530000	6,4
2005	55,67	250000	5,1	180000	3,7	430000	8,8
2006	66,84	100000	2,4	600000	14,6	700000	17,0
2007	75,14	100000	2,7	600000	16,5	700000	19,2
2008	115,81	150000	6,3	650000	27,5	800000	33,8

Note. N/A = not available. Value of Nigeria's average daily production stolen and shut, 2000-2008 (Osumah, 2013)

Adusei (2015) stated that in the 1990's, several militia groups began a violent insurgency against the government and oil MNCs which crippled the oil and gas production, their actions forced MNCs like Shell, Chevron, and Total to shut down some their wells and installations. According to Adusei, production fell by 50% from 2.6

billion barrels in 2005 to 1.3 billion barrels in 2009 reducing exports and revenue for both government and oil MNCs. Many MNCs were forced to leave some of their locations, reducing their oil production operations; oil revenue lost by government and MNCs totaled about $100 billion between 2003 and 2008 causing the Nigerian government to offer amnesty to those involved in the insurgency (Adusei, 2015).

Eke (2016) noted that because of the conflict in the Niger Delta region, production of oil dropped from 2.4 million bpd to 700, 000 bpd. The activities of the militants had come at an expense to the oil sector and Nigerian economy, costing the Nigerian government US$160 million and US$4.4 billion annually in damages and lost revenues respectively (Eke, 2016). Akpomera (2015) explained that because of the foreign exchange gained from crude sales, high numbers of vandalism and theft seriously reduced the nation's revenue and the Nigerian 2013 budget l US$7.56 billion because of theft and vandalism. Adegbite (2013) noted that the theft of Nigeria's crude oil had affected the growth of the economy, explaining that perpetrators sold substantial amounts of stolen crude meant for export outside the country. According to Adegbite, many parties take part in the oil theft and bunkering, and the most common methods included puncturing the pipeline and tapping it at the point of puncture. The loss of revenue had forced the Nigerian government management to adjust its budget to make up for shortfalls (Adegbite, 2013).

Transition

The purpose of the study was to determine the relationship between oil theft, pipeline vandalism, security costs, and revenue losses in MNCs in the Niger Delta.

Section 1 included the foundation and background of the study, the problem and purpose statements, and the nature of study, which explained my reasons for selecting quantitative research method and the multi-case study design. Section 1 also included the study research question, hypotheses and the theoretical framework, assumptions, limitations, and delimitations of the study. Section 1 concluded with the significance of the study and a review of the professional and academic literature.

Section 2 included (a) the review of the purpose statement, (b) the role of the researcher, (c) participants, (d) description of the methodology and design, (e) population and sampling, (f) ethical research, (f) data collection, and (g) data analysis, reliability and validity. Section 3 included the research questions, hypotheses, and findings. Section 3 also contained the application to professional practice, implications for social change, recommendations, and researcher reflections.

Section 2: The Project

The objective of this quantitative, correlational study was to examine the relationship, if any, between oil theft, pipeline vandalism, security costs, and revenue losses in MNCs operating in the Niger Delta. The participants' responses and the analyses of them determined the correlation between these three factors and their impact on MNCs revenue losses. In Section 2, I present the method and design for conducting the research. This section includes the following subsections: purpose of the study, role of the researcher, participants, research methods, research question, hypotheses, population, data collection and analysis, and the description of the reliability and validity of the study.

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between the predictors of oil theft, pipeline vandalism, security costs, and revenue losses in MNCs operations in the oil and gas industry. The independent variables were oil theft, pipeline vandalism, and security costs. The dependent variable was revenue losses. The targeted sample population consisted of mid- to high-level leaders of oil and gas MNCs in the Niger Delta. The implications for positive social change could include the potential to improve relations between the MNCs' management and the local communities and to improve the quality of life of host communities.

Role of the Researcher

Marshall and Rossman (2013) stated that the researcher is the primary data collector, organizer, interpreter, and analyzer, and explained that the researcher's role is

more passive than active. I have had 13 years' experience in the oil and gas industry in the Niger Delta in Nigeria. Furthermore, I have worked in various capacities with the Department of Petroleum Resources in monitoring the quantity and effects of oil theft in the Niger Delta, which shows further professional involvement with the study background and constructs. Per the Belmont Report (1978), researchers carrying out studies that involve human participants should be doing so per the established ethical standards and guidelines. The goal of the Belmont report is to protect the participants from abuse from the research (Office of the Human Research Protections, 1979). The Belmont Report defined three basic ethical standards: respect for persons, beneficence, and justice in selecting research participants (as cited in Vitak, Shilton, & Ashktorab, 2016).

I maintained the highest ethical standard possible in all stages of the study and obtained the required approval from the Institutional Review Board (IRB) of Walden University to carry out this research. During the data collation process, the goal was to explain the requirements to all the participants who would take part and then upload the survey questions to the Internet where they could go into to answer the questions. I used Survey Monkey to collect the data, and I protected the participants' rights and maintained anonymity. All my interactions with participants were conducted in a professional and polite manner.

The researcher will adapt to developing situations and act with respect to the participants (Postholm & Skrøvset, 2013). Postholm and Skrøvset (2013) added that the researcher should have a high level of self-respect, confidence, and the will to persevere

and not succumb to opposition. According to Postholm and Skrøvset, the researcher will often not have control over everything but should be dynamic and able to respond and react to any situation. Yin (2011) stated that the role of a researcher during the data collection period is as follows: collect and analyze data, report the findings, maintain participant confidentiality, and carry out the research ethically.

Participants

The sample population for this study consisted of mid- to high-level managers who work in the oil production section of oil and gas MNCs operating in the Niger Delta. I had no direct relationship with any of the participants; I gained access to potential participants by requesting for permission for participants email addresses from the technical division's managers of the organizations (see Appendix A). For this study, I used Survey Monkey's software to enable the ability to collect participants' responses online. All participants received an email inviting their participation with instructions to guide them if they decided to participate in the study (see Appendix B). After collecting data from participants, I ensured their protection by storing the data in a password-protected computer for at least 5 years before their destruction as stipulated by the IRB regulations. I also respectfully communicated with the participants. I relayed my appreciation for their efforts in taking part in the study.

Using demographic questions in a survey allows researchers to examine the characteristics of the participants to ensure that the participants meet the criteria to participate in a study (Connelly, 2013). I used the following criteria to select participants: work sector, work experience, and work location as participants should have work

experience in the oil and gas sector in the Niger Delta in Nigeria. The Survey Monkey online survey had a welcome page, which contained an introduction explaining the need for the survey and directions on how to proceed. The data collection process began after receiving the Walden University IRB approval. I included an invitation letter in my notification to all participants to assure them of the confidential nature of the study (see Appendix B). Also included were the benefits of the study to the oil and gas industry, and I informed them that their participation was voluntary and that the data collated would be available to them upon their request.

Research Method and Design

Research Method

Crede and Borrego (2014) stated that quantitative methods measure the interaction among variables and answer the research questions. When the research goal is to obtain objective, unbiased, scientific, and valid results, researchers use theoretical frameworks often associated with quantitative studies and positivism (Yost & Chmielewski, 2013). The positivist theory deals more with correlation than causality and focuses on the relationship between constructs (Tsang, 2013). Positivism is the approach ingrained on the principle that truth and reality are free and independent of the viewer and observer (Aliyu, Bello, Kasim, & Martin, 2014; Assalahi, 2015). According to Lunde, Heggen, and Strand (2013), researchers who use the positivist approach tend to use quantitative research methods to determine relationships between variables. Leedy and Ormrod (2013) explained that quantitative methods determine the status of relationships between variables. Quantitative researchers explain phenomena by

collecting and analyzing numerical data (McCusker & Gunaydin, 2014). In addition, Wagner, Hansen, and Kronberger (2014) stated that quantitative research is a method where researchers use statistical and inferential measures to corroborate results. Quantitative research allows researchers to defend the results of their study using statistical methods. The quantitative method met the needs for this study because of the intent to test three independent variables: oil theft, pipeline vandalism and security costs against the dependent variable: revenue losses.

In contrast, in a qualitative study, the researcher asks the how and why questions to obtain a detailed understanding of a phenomenon (Gillespie, Dietz, & Lockey, 2014). Leedy and Ormrod (2013) explained that qualitative designs usually addressed questions and experiences. According to Yilmaz (2013), unlike the quantitative researchers, qualitative researchers make local and context-dependent assumptions in their studies. I chose not to use qualitative research methods because my study was numeric and I did not investigate the behaviors or experiences of the participants. The purpose of this study was to test hypotheses and make statistically valid inferences.

Caruth (2013) explained that mixed-methods consists of quantitative and qualitative methods. The benefits of these practices are evident when different research questions require different methods to eliminate the weakness of single methods studies (Afrifa, 2013). Mayoh and Onwuegbuzie (2013) noted that the mixed-method approach requires the researcher to collate both quantitative and qualitative data and analyze them through deductive and inductive methods. However, the mixed-method involves more time, funding, and skills to integrate both approaches (Donaldson, Qiu, & Luo, 2013).

The objective of my study was not to combine qualitative and quantitative methods to determine the relationship between the variables; therefore, I did not use the mixed method design for my study.

Research Design

Researchers determine the research design based on the research question, target population, data collection, and analysis techniques (Wester, Borders, Boul, & Horton, 2013). I used the correlational design, which is non-experimental because it is most suited to studying relationships between variables. Correlational design enables the researcher to identify the strength of the relationship between two or more variables (Coman, 2015; Punch, 2014; Tudor & Georgescu, 2013). Examining the relationship between constructs without manipulating them aligns with a correlational design (Gerring, 2011). Venkatesh, Brown, and Bala (2013) explained that researchers use non-experimental designs when examining the association with causation. The correlational design includes charts, graphs, and tables to explain the findings better (Frels & Onwuegbuzie, 2013). The use of online survey was appropriate for my study, as the survey would allow the ability to reach a larger number of participants.

Experimental and quasi-experimental design often determine causality in studies (Chatterji, Findley, Jensen, Meier, & Nielson, 2015; Kim & Steiner, 2016); both facilitate the manipulation of control groups and variables to measure possible causal relationships (Rovai, Baker, & Ponton, 2013). Although there may be a cause-and-effect relationship between variables (Reinhart, Haring, Levin, Patall, & Robinson, 2013), an experimental research design often requires manipulating the variables (Wester et al., 2013; Wisdom et

al., 2012). The primary intent of this study was one of correlation and not causation; as a result, I did not use the experimental or the quasi-experimental design (Horner & Minifie, 2011). Froman and Owen (2014) explained that unlike the quasi-experimental and experimental design, the correlational design goes beyond showing that a relationship exists; the correlational design also indicates the strength of the relationship. The purpose of this study was not to carry out random experiments but to determine the relationship between the variables.

Population and Sampling

The population of this study included mid- to high-level managers of MNCs in the oil and gas industry. The target was individuals with work experience in the production departments of their organizations for several years and who had knowledge of the variables in this study. Though purposeful sampling is the technique used most often in qualitative studies because of specific boundaries guiding them (Robinson, 2014), I chose to use purposeful sampling because purposeful sampling involves identifying and selecting participants knowledgeable about or experienced with the study topic (Palinkas et al., 2015). Purposeful sampling enables the researcher to focus on participants who fit the criteria appropriate for a particular study.

When characteristics or traits link items, events, and individuals into a meaningful group, these groups become known as populations. Acharya, Prakash, Saxena, and Nigam (2013) stated that sampling is the method of choosing study units from a target population. Tabachnick and Fidell (2013) explained an acceptable sample size is both statistically viable and economically feasible. In determining the optimal sample size, the

researcher needs to know the acceptable level of significance, statistical power, and effect size (Wisdom et al., 2012). First, the significance level shows what the researcher needs to safeguard against to avoid accidentally rejecting a true hypothesis (Faul, Erdfelder, Buchner, & Lang, 2009). Second, the statistical power shows show the ability of a test to avoid the rejection of a false hypothesis. Last, Tabachnick and Fidell stated that the effect size of a study determines the size of associations or differences in a test. Selection of the most appropriate sample size is vital for ensuring the credibility of content analysis study (Elo et al., 2014).

The two major types of sampling are probabilistic and non-probabilistic sampling (Brick, 2015; Callegaro, Villar, Yeager, & Krosnick, 2014). The random and non random characteristics refer to the probabilistic and non-probabilistic methods (van Hoeven, Janssen, Roes, & Koffijberg, 2015). According to Brick (2015) and Callegaro et al. (2014), probabilistic sampling is a better sampling method for empirical studies; but researchers favor the non-probabilistic sampling methods because of their cost saving practices. Purposive sampling is a non-probabilistic sampling method carried out through the researcher's field knowledge and connections with the target population (Acharya et al., 2013; Barratt, Ferris, & Lenton, 2014). Although data from many participants' aligns with quantitative studies, one of its disadvantages is that the external validity of findings from purposeful online sampling is largely unknown (Barratt et al., 2014). I used the SPSS software to mitigate these disadvantages.

An appropriate sample size of participants in a study increases the reliability of the research outcome and depends on the following inputs: effect size, alpha value, and

power level (Field, 2013). Field (2013) explained that effect size is the standard method of measuring the magnitude of the observed effect, and the power level is the probability that the test would detect and effect. Field also explained that the alpha level is the point where the statistical analysis accepts or rejects the null hypothesis and normally assumed to be 0.05.

Researchers often use the statistical software G∗Power for their sample sizing (Field, 2013). I used the G∗Power Software version 3.1.9.2 to determine the appropriate sample size for data collection. Using a priori power analysis and assuming $\alpha = 0.05$, power .80, and effect size = .15 for three predictor variables (see Appendix C), a minimum sample size of $N = 43$ participants would achieve a power of 0.80 for three variables. Poor response to online survey is sometimes a problem for researchers (Rao & Pennington, 2014); although the minimum sample size was 43 participants, I invited 100 participants for the study.

Ethical Research

Ethics is an essential aspect of every research; ethical research is free from unfair discrimination, harming participants, and violating their privacy (Snowden, 2014). Respect, beneficence, and justice are the three principles that are important in a study, according to the Belmont Report Protocol (1979). Ensuring the names of the participants and their organizations are confidential protected will protect the privacy of those involved in the study (Mitchell & Wellings, 2013). To guarantee the participants privacy, no one else but the researcher has access to the data, and no translation by a third party is needed (Gibson, Benson, & Brand, 2012; Hardicre, 2014). I did not send out the survey

until gaining approval from the Walden University's IRB. I completed the National Institute of Health required training on Protecting Human Research Participants, and my National Institute of Health certificate is presented in Appendix D. All data collated by researchers should be confidential (Connelly, 2014). All data collated will be kept confidential, and I will not use the data for any other purpose outside of this study. The cover page of the survey contained the reason for the study, and I informed the participants that they had the right to withdraw from the study at any point in the process. Grossoehme (2014) stated that maintaining privacy and confidentiality at all times in a study was necessary. I did not mention the names of the individuals and their organizations in the study.

Wilson, Kieburtz, Holloway, and Kim (2016) wrote that IRB requires development, adoption, and enforcement of proper guidelines by the researcher to follow ethical standards and to protect participants in a study. I did not know any of the participants of this study, work in the same organization, and nor pay for their participation or hold any position of authority over them. Participants could withdraw at any time during the study by exiting the survey. All data collected from the participants are available to them upon request; the data are stored for 5 years for their protection and then will be destroyed. Mitigation of potential risks during a study through obtaining informed consent, and protection of privacy and confidentiality are necessary (Xie, Wu, Luo, & Hu, 2010). I obtained IRB approval from the Walden University with approval number 07-28-17-0595196 that expires on July 27th, 2018.

Data Collection Instruments

There was no survey instrument appropriate for my study; therefore, I created a survey. Murray (2013) explained that researchers used the Likert-type scale to measure subjective characteristics of the selected participants. The Likert-type scale is a psychometric scale for surveys (Barua, 2013). Barua (2013) stated that the broad range of the Likert-type scales allows the participants to show the intensity of their responses. Participants response or response burden can influence the quantity of data through the following ways: no response, late response, and measurement error (Bavdaz, Giesen, Cerne, Lofgren, & Raymond-Blaess, 2015). Bavdaz et al. (2015) stated that in spite of these issues, usually; the response burden would be minimal.

The survey had two sections – demographic section and revenue based section. The demographic section had five questions, the revenue-based section had three sections with 9, 8, and 10 questions respectively (see Appendix E). The approximate completion time for the survey was 15 minutes. According to Field (2013), instrument validity is the ability of the chosen instrument to measure the stated variables, while instrument reliability shows the consistency to the instrument when interpreting the data in different conditions. The Cronbach's alpha coefficient provides a better estimate of true reliability (Peterson & Kim, 2013)). A Cronbach's alpha coefficient of 0.70 is an acceptable criterion for internal consistency reliability (Field, 2013; Ibrahim & Perez, 2014).

Data Collection Technique

Instrumentation includes methods of gathering information, and they can be used to boost the validity and dependability of data collected (Zohrabi, 2013). Using a reliable

data collection instrument is a good way of ensuring the validity of the data collected and also to show that it is representative of all variable of interest (Wisdom et al., 2012). The use of a correct data collection instrument from the onset largely minimizes unforeseen challenges during data collection (Rimando et al., 2015). I used the survey tool as the instrument to collect data for my study. Before conducting the study, I conducted a pilot survey to assure reliability and validity of the data (see Table D1).

A pilot study is the cornerstone of a good research; it is an essential initial step in research and applies to all research methods (Hazzi & Maldaon, 2015). A pilot study allows the chance to prepare the research team or participants for a larger study, to obtain preliminary information about the instrument and evaluate the analysis of data collected for errors (Morin, 2013). The objective of a pilot study was to help establish the validity and reliability of the survey instrument used to collate data from the study participants. After the IRB approved my proposal, I conducted the pilot test. The aim of carrying out a pilot study is to measure the range of ideas that participants of the survey may have and analyze the way the variables of the study work together (Orsmond & Cohn, 2015; Whitehead, Sully, & Campbell, 2014).

I carried out a content validation of the survey questions. Content validity index (CVI) is a method usually used to determine the importance of survey question for an instrument creation (Squires et al., 2013). To validate a survey instrument, the participants usually should be between 10 and 40 (Johanson & Brooks, 2010). However, for this instrument, I used five participants. Squires et al. (2013) explained that the CVI score shows the degree of agreement between the raters of the questions. The CVI index

can be for either each question (I-CVI) or the overall scale (S-CVI). I used the I-CVI for my content validation. To calculate the content value index (CVI), participants will rate the value of each question using a 4-point scale; 1 – not relevant, 2 – somewhat relevant, 3 – quite relevant, 4 – highly relevant (Polit, Beck, & Owen, 2007). Lynn (1986) created guidelines for what an acceptable CVI should be in relation to the number of participants. According to Lynn, using five or less participant, the CVI should be 1.0, and for more than five participants, the CVI should be at least .83. I conducted the pilot study, and each participant had their CVI > 0.83, meeting the CVI guidelines. This outcome confirmed that the survey was relevant to the study topic (see Table D1).

There are 32 survey questions with 27 questions having the 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The participants received a notification email, and gained access to the survey through the Survey Monkey website through a link and completed the survey online. I also included a link to the online survey for participants so they can forward to their colleagues and friends who are working in the oil and gas industry. One advantage of using online survey is that the researcher can reach many participants in a shorter time. I inputted the participant's response into an Excel spreadsheet before importing the data to the SPSS software for analysis. I chose Survey Monkey as a tool for this study because Survey Monkey is user-friendly, compatible with several web browsers and computer configurations, and supports SPSS for data importation and employs high-level data protection measures consistent with industry standards (Gill, Leslie, Grech, & Latour, 2013). Survey Monkey has an established environment and physical safety measures that ensure data protection

(Beauvais, Stewart, DeNisco, & Beauvais, 2014). I will store all the raw data, and provide the data upon request.

Data Analysis

The research question for this study is - to what extent if any is there a significant statistical relationship between oil theft, pipeline vandalism, security costs, and MNCs loss of revenue?

The hypotheses are as follows:

$H_0$1: There is no significant statistical relationship between oil theft and loss of revenue.

H_a1: There is a significant statistical relationship between oil theft and loss of revenue.

$H_0$2: There is no significant statistical relationship between pipeline vandalism and loss of revenue.

H_a2: There is a significant statistical relationship between pipeline vandalism and loss of revenue.

$H_0$3: There is no significant statistical relationship between security costs and loss of revenue.

H_a3: There is a significant statistical relationship between security costs and loss of revenue.

I used the SPSS version 21 to analyze my data and discarded those that had discrepancies or were incomplete. For the demographic section where the Likert-type Scale was used, I used a dummy coding for the responses. A dummy coding is a method

of reassigning or substituting numerical values to qualitative variables (Sharma, Mittal, & Khurana, 2014). I used descriptive, correlational and multiple regression analyses to answer the research question and hypotheses. According to Boesch, Schwaninger, Weber, and Scholz (2013), to easily translate and understand the raw data, researchers use the descriptive analysis. In addition, the correlational hypothesis is most appropriate in determining the relationship between several variables in a quantitative study (Pichler, Varma, Yu, Beenen, & Davoudpour, 2014)). The multiple linear regression analysis consists of using multivariate data to determine the correlation between more than two independent variables and the dependent variable (Field, 2013). Multivariate data consists of more than two variables (Devore, 2015). In cases where there is just one independent and one dependent variable, a bivariate regression is most suitable (Field, 2013; Green & Salkind, 2014). I did not use the bivariate regression analysis for my study because of having several variables.

The Pearson Product- Moment Correlation shows the strength and directions between two variables (Fritz, Morris, & Richler, 2012). In my study, because I had more than two variables, I did not use the Pearson Product-Moment Correlation. The goal was to use multiple linear regression analyses to test hypotheses 1-3. Researchers use the level of significance (p) of 0.05 to know whether to reject the null hypotheses or not (Nimon & Oswald, 2013). Nimon and Oswald (2013) explained that if the significance value is less or equal to 0.05, the null hypothesis is rejected and where it is greater than 0.05, the null hypothesis is not rejected. To test the null hypothesis of my study, I used the significance of regression (Stang & Poole, 2013).

In carrying out multiple regression analyses, researchers have some of the following assumption – normality, linearity, multicollinearity, and homoscedasticity (Lopez, Valenzuela, Nussbaum, & Tsai, 2015). The assumption of normality means that there is a normal variable distribution (Trawinski, Smetek, Telec, & Lasota, 2012). The assumption of linearity means that there is a linear relationship between all variables (Dumitrescu, Stanciu, Tichindelean, & Vinerean, 2012). The assumption of homoscedasticity is that a relationship exists between each of the independent variable and the dependent variable (Arendacká, 2013; Vindras, Desmurget, & Baraduc, 2012). The assumption of multicollinearity is that there is a relationship between two or more independent variables (Midi & Bagheri, 2013; Zainodin & Yap, 2013).

Violations of these assumptions could lead to either Type I or Type II errors. Type I error occurs when researchers reject the true null hypothesis while Type II error occurs where researchers reject a false null hypothesis (Button et al., 2013). In the case of assumption of violations, researchers could use non-parametric procedures such as discriminate analysis to analyze the data (Bhandari & Iyer, 2013). However, bootstrapping can be used in cases of assumption violation (Field, 2013). With bootstrapping, the sample becomes the entire population for analysis (Mooney & Duval, 1993).

Study Validity

This section consists of defining reliability and validity based on instruments used in the study. Validity and reliability are necessary in research to measure the consistency of an instrument and continuity of a construct. To reduce subjectivity in a study,

operational measures should be included (Ronau et al., 2014). According to Ronau et al. (2014), several sources of evidence, chain of evidence, and informant review of a draft of the case study made up the operational measures for construct validity. People who go through the study should be able to understand how the researcher made his conclusions from the chain of evidence. Responses collected from the participants of the study make up the evidence; these responses provide the data, which will provide answers to the research questions.

Two important factors in a research outcome are internal and external validity. To maintain internal validity, the researcher should maintain a consistent treatment to all variables (Rothman, 2014). Internal validity should do with the credibility of instruments used in the study. Instrument validity involves the process of verifying if an instrument correctly measures the defined constructs (Evans, Hartshorn, Cox, & Martin de Jel, 2014). This study design is a correlational design and threats to internal validity apply only to experimental studies alone (Rahman & Post, 2012), therefore not affecting this study.

Yin (2014) explained that external validity consists of the generalizability of a study. According to Ronau et al. (2014), the finding of a study should be generalizable and able to apply to other organizations. External validity also applies to the ability of the sample to be representative of the population (Olsen, Orr, Bell, & Stuart, 2013). Using the SPSS analysis software for analysis helps to reduce the external validity threats (Lehtola et al., 2013). Linley and Hughes (2013) also explained that researchers could improve external validity by ensuring that the sample represents the target population.

Statistical conclusion validity is the extent to which researcher can make accurate inferences from data analysis (Brutus et al., 2013). According to Tabachnick and Fidell (2013), it is the ability to make an accurate analysis of the strength of the correlation between the independent and dependent variables. Statistical conclusion validity threats are the degree to which appropriate statistical approaches, adequate sampling procedure, and reliable measurements were used and conclusions matched data (Anestis et al., 2014; Becker, Rai, Ringle, & Völckner, 2013). These threats consist of factors that may affect the outcome drawn from the data collated and analyzed (Neall & Tuckey, 2014). These threats could cause two errors: (a) Type I and II errors and (b) low accuracies (Heyvaert & Onghena, 2014). Type I errors occur in situations where no difference or correlation exists, but the researcher makes one exist. Type I errors happens when a researcher does not find a difference while one exists (Kratochwill & Levin, 2014). Threats to statistical conclusion validity include low statistical power, low reliability of measures, and a random variety of cases (Boesch et al., 2013).

In this study, some of the threats to statistical conclusion validity included sample size, data assumptions, and reliability of the instrument used. According to Kratochwill and Levin (2014), adequate sampling, the use of correct statistical tests, and measurement procedures can reduce these threats. A moderate effect size of 0.15 allows a researcher to determine significance (Fritz et al., 2012). The power of .80 is appropriate in recognizing a sample sufficient to identify and reject a false null hypothesis and combat Type I and II errors (Cooper & Schindler, 2013). I used an effect size of 0.15, alpha of 0.5 and power of 0.80 with a large sample size of about 100 participants to allow for sufficient power.

Summary and Transition

The purpose of Section 2 was to provide an overview of the following: (a) the review of the purpose statement, (b) the role of the researcher, (c) participants, (d) description of the methodology and design, (e) population and sampling, (f) ethical research, (f) data collection, and (g) data analysis, reliability and validity. Following the ethical standards of the University is important, and I ensured confidentiality and protection of the participants in the process of carrying out my study. The participant's consent form and organization's permission letter promoted this during the study.

Section 3 will consist of the research questions, hypotheses, and analysis of the responses from the participants' survey, which will become the findings of the study. It also contains the application to professional practice, implications for social change, recommendations, and researcher reflections. I hope that the oil and gas MNCs leaders in the Niger Delta will benefit from the analysis and findings of the data that collated.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this quantitative correlational study was to examine the relationship between oil theft, pipeline vandalism, security costs, and revenue losses in oil and gas MNCs in the Niger Delta of Nigeria. In this study, the independent variables were oil theft, pipeline vandalism, and security costs, and the dependent variable was revenue losses. Section 1 included the study introduction, the problem and purpose statement, research questions and hypotheses, and a review of available literature regarding the study topic. Section 2 contained the methods involved in carrying out a quantitative correlational study using various statistical analyses in an ethical manner. Section 3 contains the results of the study, analysis of the findings, and recommendations for future research.

Presentation of the Findings

With this study, I focused on determining the relationship between oil theft, pipeline vandalism, and security costs on revenue losses of MNCs operating in the oil and gas sector in the Niger Delta of Nigeria. I examined if the three independent variables had any impact on revenue losses. I collected data from participants who completed the online survey hosted by SurveyMonkey, and this provided the basis for my study findings. Eighty-eight out of a 105 participants (83.8%) selected through purposeful sampling completed the online survey. I deleted all responses with incomplete data and used the SPSS Version 21 for analyzing the survey data. This section begins with the descriptive statistics and a description of the tests for assumptions. I also examine the

assumption of normality, homoscedasticity, linearity, and noncollinearity. To determine the relationship between the independent and dependent variables, I conducted a correlational analysis between them by testing the hypotheses using several multiple linear regression analyses. The null and alternate hypotheses for the research question were as follows:

$H_0$1: There is no significant statistical relationship between oil theft and loss of revenue.

H_a1: There is a significant statistical relationship between oil theft and loss of revenue.

$H_0$2: There is no significant statistical relationship between pipeline vandalism and loss of revenue.

H_a2: There is a significant statistical relationship between pipeline vandalism and loss of revenue.

$H_0$3: There is no significant statistical relationship between security costs and loss of revenue.

H_a3: There is a significant statistical relationship between security costs and loss of revenue.

The results of the regression analyses indicated that all the null hypotheses $H_0$1, $H_0$2, and $H_0$3 were rejected and all the alternative hypotheses H_a1, H_a2, and H_a3 were accepted. The regression analysis testing supported statistically significant relationships between the independent variables and the dependent variable. In addition, the assumption testing showed no signs of violations.

Descriptive Statistics

The participants comprised of those working in the oil and gas sector of the Niger Delta in Nigeria. Table 4 shows the descriptive frequencies and percentages of the demographic data. Table 5 consists of the descriptive statistics for the independent variables. The mean for oil theft, pipeline vandalism, and security costs were 2.2739, 1.7524, and 2.6057 respectively.

Table 4

Population Frequencies

	Category	Frequency	%
Age			
	18 – 29 years	3	3.4
	30 – 49 years	79	89.8
	>50 years	6	6.8
Employed			
	Yes	87	98.9
	No	1	1.1
Currently working oil & gas sector			
	Yes	87	98.9
	No	1	1.1
Years of experience			
	1-5 years	7	8.0
	5-10 years	15	17.0
	10-15 years	43	48.9
	15-20 years	12	13.6
	20-25 years	11	12.5
Organizations operations in Niger Delta			
	5-10 years	10	11.4
	10-15 years	3	3.4
	15-20 years	1	1.1
	20-25 years	1	1.1
	>30 years	73	83.0

Note. N = 88

Table 5

Descriptive Statistics

		Oil theft	Pipeline vandalism	Security costs
N	Valid	88	88	88
	missing	0	0	0
Mean		2.2739	1.7524	2.6057
Std. Error of Mean		.03868	.04210	.03673
Median		2.3300	1.7500	2.6000
Std. Deviation		.36282	.39489	.34453
Variance		.132	.156	.119
Skewness		-.548	.308	-.255
Std. Error of Skewness		.257	.257	.257
Kurtosis		.699	-.211	1.498
Std. Error of Kurtosis		.508	.508	.508
Range		2.00	1.88	2.00
Minimum		1.00	1.00	1.30
Maximum		3.00	2.88	3.30

Statistical Model Assumption Testing

Using multiple linear regression tests required meeting several assumptions: normality, linearity, multicollinearity, and homoscedasticity. In this study, I tested for normality and multicollinearity using the sample size of 88 participants. In testing for the assumption of normality, researchers use the Q-Q plots (Korkmaz, Goksuluk, & Zararsiz, 2014). To test for normality, I produced Q-Q plots based on the mean scores of the independent variables (oil theft, pipeline vandalism, and security costs) and inspected them visually. The mean scores for all three independent variables followed the trend line (see Figures 3, 4, and 5 respectively).

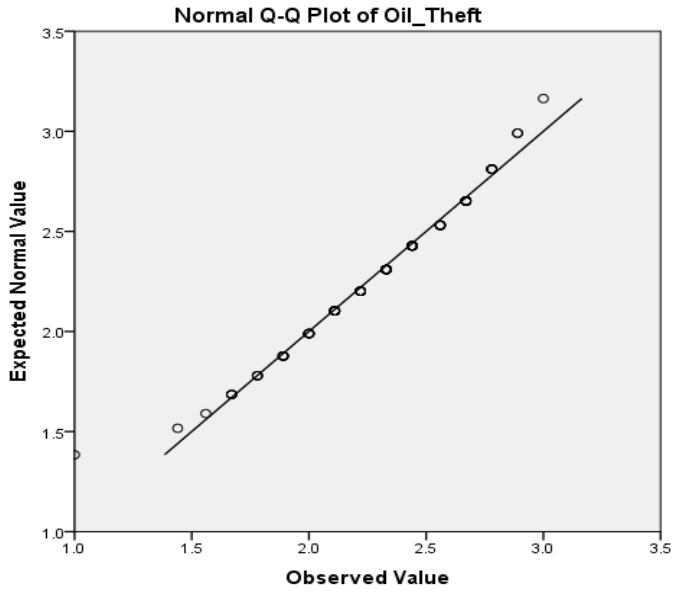

Figure 3. Q-Q plot of mean scores on the oil theft variable

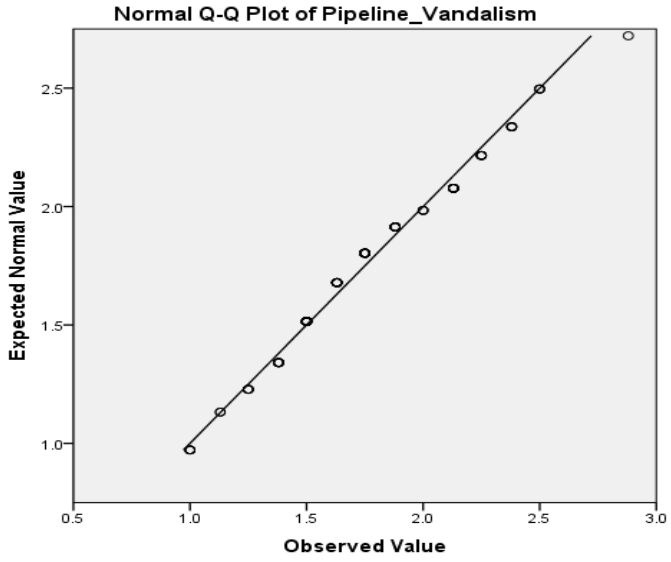

Figure 4. Q-Q plot of mean scores on the pipeline vandalism variable

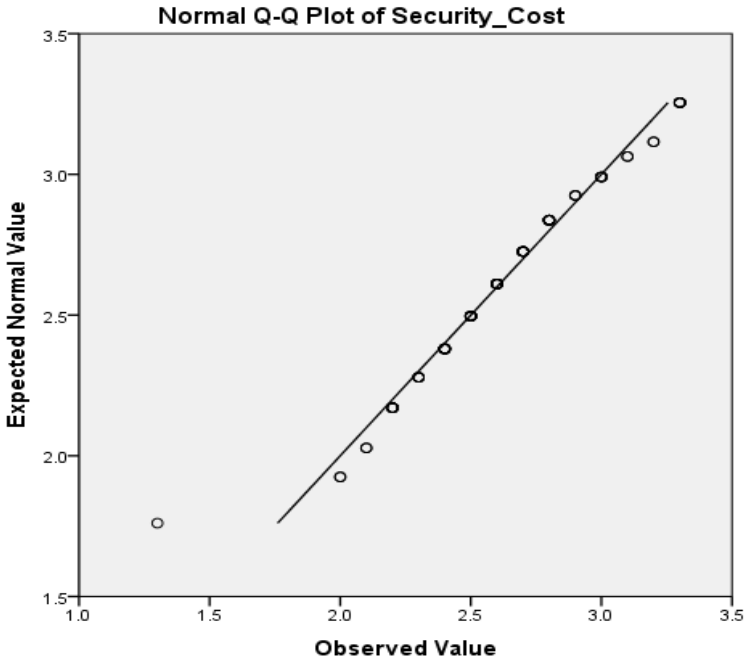

Figure 5. Q-Q plot of mean scores on the security costs variable

A further test for normality was the box plots; I also visually screened the box plot for outliers. Outliers are values that are different from the rest of the data and may have the ability to bias the statistical model (Field, 2013). The outliers shown on the boxplot for independent variables are on the oil theft and security costs variables (see Figure 6). Researchers can confirm that the outliers are reasonable values using outlier labeling rule using $g = 2.2$ as the recommended value (Hoaglin, Iglewicz, & Tukey, 1986). Using the outlier-labeling rule, I observed that the two outliers observed from the box plot are not statistically significant (see Table 6 & 7)

$$\text{Upper} = Q3 + (2.2 * (Q3 - Q1))$$

$$\text{Lower} = Q1 + (2.2 * (Q3 - Q1))$$

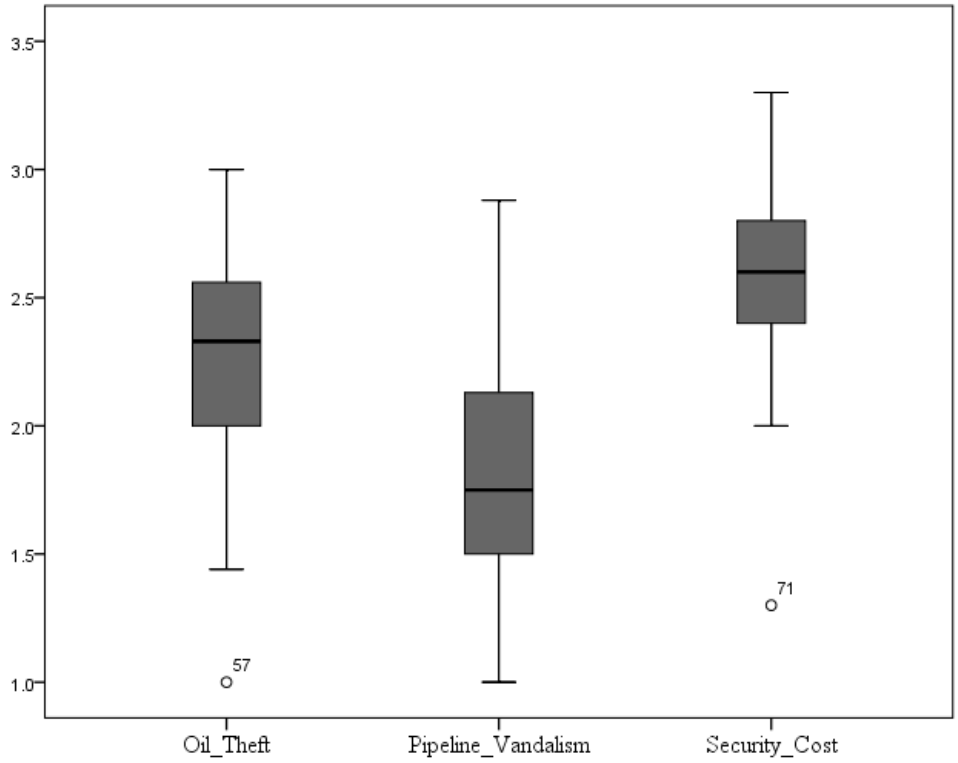

Figure 6. Boxplot for score on the independent variables showing outliers

Table 6

Percentiles

		Percentiles						
		5	10	25	50	75	90	95
Weighted average	Oil theft	1.6700	1.7800	2.0000	2.3300	2.5600	2.7800	2.7800
	Security costs	2.1000	2.2000	2.4000	2.6000	2.8000	3.1000	3.3000

Table 7

Extreme Values

			Case number	Value
Oil theft	Highest	1	47	3.00
		2	6	2.89
		3	18	2.89
		4	2	2.78
		5	29	2.78[a]
	Lowest	1	57	1.00
		2	69	1.44
		3	39	1.56
		4	64	1.67
		5	63	1.67[b]
Security costs	Highest	1	18	3.30
		2	43	3.30
		3	44	3.30
		4	56	3.30
		5	80	3.30
	Lowest	1	71	1.30
		2	87	2.00
		3	85	2.00
		4	35	2.10
		5	22	2.10

Note. a. Only a partial list of cases with the value 2.78 are shown in the table of upper extremes.
b. Only a partial list of cases with the value 1.67 are shown in the table of lower extremes.

I tested for multicollinearity through statistical examination of collinearity tolerance and variance inflation factor values. Table 8 shows that the collinearity statistics were within the allowable values. The variance inflation factor values for all the independent variables were less than 10, and the tolerance values were below 1.0, showing the absence of multicollinearity (Field, 2013).

Table 8

Collinearity Statistics

Variables	Tolerance	VIF
Oil theft	.846	1.182
Pipeline vandalism	.874	1.145
Security costs	.922	1.085

Note. Dependent variable: revenue losses

To test for homoscedasticity, I plotted a scatter plot to show the relationship between the residual error variances and the predicted variable, which was revenue losses (see Figure 7). There was no apparent pattern to the scatterplot that showed that any assumption had been violated. At the end of all the assumption tests required for regression analysis, the outcome of the tests did not show any violations; therefore, I did not conduct any bootstrapping procedures.

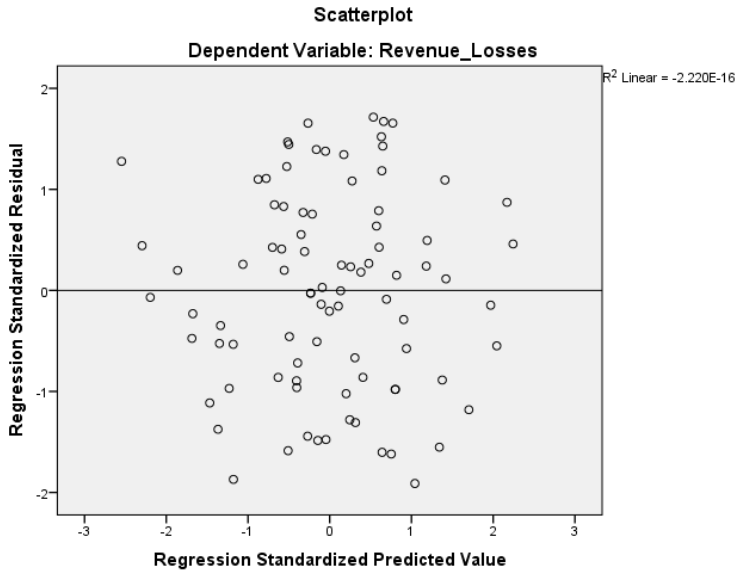

Figure 7. Scatterplot depicting the relationship between standardized predicted and residual revenue losses.

Research Questions and Hypotheses Tests

To investigate the research question and all the hypotheses, I used the multiple linear regression methods to explore the relationship between the independent variables and the dependent variable and their significance. The alpha value of significance was set as 0.05. The regression equation of all three independent variables were significantly related to the dependent variable, where $R^2 = 1.000$, adjusted $R^2 = 1.000$, $F(3, 88) = 947279.44$, $p = 0.000$ (see Tables 9 & 10).

Using SPSS, I calculated the multiple correlations (R), a squared multiple correlation (R^2), and an adjusted squared multiple correlation (R^2 adj; Green & Salkind, 2014). According to Green and Salkind (2014), these three indices determine how well the linear combination of independent variables in the regression analysis correctly predicts the dependent variable. The value of R ranges from 0 to 1, where $R = 0$ means

there is no linear relationship between the independent variable and the dependent variable (Green & Salkind, 2014). Similarly, where $R = 1$ means that the linear combination of the independent variables precisely predicts the dependent variable. In Table 9, $R = 1$, implying that all independent variables (oil theft, pipeline vandalism, and security costs) precisely predict the dependent variable (revenue losses). All the null hypotheses $H_0 1$, $H_0 2$, and $H_0 3$ were rejected and all the alternative hypotheses $H_a 1$, $H_a 2$, and $H_a 3$ were accepted.

Table 9

Regression Analysis Summary for Predictor Variables

Model	*R*	*R* Square (R^2)	Adjusted *R* square	Std. error of the estimate
1	1.000[a]	1.000	1.000	.04933

Note. a. Predictors: (Constant), security costs, pipeline vandalism, oil theft

When interpreting the values of *R*, which are between 0 and 1, *R* may be squared or multiplied by 100 and the resulting outcome may be interpreted as the percentage of criterion variance from the linear combination of the independent variables (Green & Salkind, 2014). In Table 9, $R^2 = 1$ indicated that the three independent variables effect on the dependent variable was 100%.

I observed that *F* ratio for the ANOVA (see Table 10). *F* ratio is the ratio of two mean square values, the mean square of the model and the residual mean square (Field, 2013). The *F* ratio represents the improvement in the prediction of the outcome as compared with the inaccuracies in the model (Field, 2013). A good model would have an F ratio > 1 and it would be expected to be greater than the residual mean square.

According to Field (2013), a large *F* ratio implies that the regression is formative and the model is acceptable. In the ANOVA table (see Table 10), the *F* ratio is 947279.445 signifying that the model is regression formative and all the null hypotheses are highly unlikely.

Table 10

Regression Analysis ANOVA Results

Model		Sum of squares	*df*	Mean square	*F*	Sig.
1	Regression	6916.437	3	2305.479	947279.445	.000[b]
	Residual	.204	84	.002		
	Total	6916.641	87			

Note. a. Dependent variable: revenue losses

b. Predictors: (Constant), security costs, pipeline vandalism, oil theft

The unstandardized coefficients (β) are the weights associated with the regression equation, and they signify the relative importance of the independent variables (Green & Salkind, 2014). To further understand the relative importance of the weights, Beta values were used, where the weights are better understood if all the variables (independent and dependent) are standardized to have a mean of 0 and standard deviation of 1 (Green & Salkind, 2014). The order of relative importance of the independent variables are as follow: (a) oil theft = .451, (b) pipeline vandalism = .553, and (c) security costs = .387 (see Table 11).

Table 11

Regression Analysis Coefficients Results

Model		Unstandardized coefficients		Standardized coefficients	*t*	Sig.	95.0% CI	
		B	Std. Error	Beta			Lower bound	Upper bound
1	(Constant)	.002	.048		.046	.963	-.093	.097
	Oil theft	11.091	.016	.451	699.928	.000	11.060	11.123
	Pipeline vandalism	12.495	.014	.553	871.906	.000	12.466	12.523
	Security costs	10.008	.016	.387	626.024	.000	9.976	10.040

Note. $N = 88$

Confidence interval (CI) and *p*-values project statistical certainty, and a *p*-value of 0.05 and 95% CI indicate high certainty (Ellingson, 2013). The lower and higher boundaries of the CI imply that the population mean is within these values.

Based on the application of regression analysis, the study findings were as follows:

- The independent variable, oil theft was statistically significant. $B = 11.091$, 95% CI (11.060, 11.1231), $p < 0.01$
- The independent variable, pipeline vandalism was statistically significant. $B = 12.495$, 95% CI (12.466, 12.523), $p < 0.01$
- The independent variable, security costs was statistically significant. $B = 10.008$, 95% CI (9.976, 10.040), $p < 0.01$

The outcome of this study analysis indicates that there is a statistically significant relationship between the three predictors and revenue losses. The RDT stated that organization's survival depended on their ability to get their resources from the external environment and operate in the region successfully. The outcome of this study supports this claim.

Applications to Professional Practice

The purpose of this study was to examine factors that cause revenue losses for MNCs. Applying this to professional practice begins with understanding the importance of profitability and sustainability in the life of an organization. Because of the competitive and dynamic nature of global business, many organizations search for innovative ways to stay ahead of their rivals (McMurrian & Matulich, 2016). According to McMurrian and Matulich (2016), management responds to the challenges by creating partnerships and more collaborative relationships with their stakeholders and shareholders.

Business organizations' profitability depends on factors such as revenue, capital, and cost, depending on profitability measures (Yensu, Yiadom, & Awatey, 2016). For oil and gas, MNCs operating in the Niger Delta, having a conducive environment to work in, would be beneficial to them. Findings from this study show that MNCs have to engage more with their host communities, communication being key in a successful relationship. According to Gladden (2014), communication is a leadership skill necessary for human management. Effective CSR and development programmes such as basic infrastructure,

sustainable initiatives and community participation strategies are recommended for better results (Enuoh & Inyang, 2014).

Implications for Social Change

There are several social change implications from this study, a profitable oil and gas industry would be advantageous not only to the MNCs in the Niger Delta but also the environment, the host communities and its people, and the Nigerian government. The outcome of this study could encourage the social change as leaders of the MNCs in the oil and gas sector of the Niger Delta would change their operational and organizational strategies to improve the relationship between all shareholders and stakeholders. This would create a better environment and increase profitability. Integrating sustainability into the core business strategies of the MNCs would encourage innovation that would allow for an improved relationship between stakeholders (Micah & Umobong, 2013). Improving corporate social responsibility (CSR) schemes and investing in strategies that would empower the people and improve their livelihood.

The findings of this study could also help the Nigerian government in creating policies and regulations that would guide the operations of the MNCs and the host communities in understanding the value of the facilities located in their region. The host communities would gain from having a good relationship with the MNCs operating in their region.

Recommendations for Action

The outcome of this study showed that the three variables oil theft, pipeline vandalism, and security costs have significant bearings on revenue losses of MNCs in the

Niger Delta. Study findings could be useful in creating probable methods of minimizing loss of revenue. MNC leaders could use the outcomes of this study to identify potential areas for improvement such as human resource (HR) policies, CSR strategies, and interaction with both host communities and the Nigerian government. When given the opportunity, I intend to share the outcome of this study at professional and governmental conferences. In addition, publishing this study in the ProQuest / UMI dissertation and other scholarly journals is essential in disseminating the outcome of this study to a larger audience.

Oil spill resulting from oil theft and pipeline vandalism have been destructive to the traditional economy and livelihood of the host community (Elum, Mopipi & Henri–Ukoha, 2016). Developing the Niger Delta economy through sustainable development strategies such as capital infrastructure would reduce poverty (Oguduvwe, 2013).

Recommendations for Further Research

Using 88 participants made of mid- to high-level manager from two oil and gas MNCs in the Niger Delta, I examined the relationship between oil theft, pipeline vandalism, and security costs and revenue losses. Further studies could include more demographic groups, independent variables and a larger number of participants in other local and international companies in Nigeria.

The study outcome showed that the three predictors had a significant relationship with revenue losses. Further studies could investigate the relationship between pairs of the predictor variables such as – oil theft and security costs or pipeline vandalism and security costs. In addition, in the study, participants included only mid- to high-level

managers in the selected MNCs; further studies could include lower level personnel. The perception of the lower level personnel could provide another level of knowledge on this topic.

Reflections

I had initially planned on carrying out a qualitative study on this topic before settling on using the quantitative method. I have had a long working experience in the oil and gas industry in the Niger Delta, and I was aware of the reoccurring issues of the region. My experience in the industry spurred my interest to investigate the impact of several factors on revenue losses of the MNCs operating in the region. On completing this study, my knowledge on the various factors that affect the revenue of oil and gas MNCs in the Niger Delta has grown immensely. I encountered a few challenges during my study, firstly, getting approval from the leadership to forward my survey to their employees was challenging. Secondly, response to my online survey was slow, which further extended my initial duration for data collection. Thirdly, using the SPSS software was another challenge, but through the process of analyzing and interpreting the data collected, my knowledge of the software has improved. The outcome of this study has further buttressed my perception that revenue losses caused by the predictor are a major problem that should be addressed. Conducting a quantitative study using an anonymous online survey helped eliminate any personal bias I may have had and any possible influence on the participants of the study.

Conclusion

The purpose of this study was to investigate the potential relationship between oil theft, pipeline vandalism, and security costs on revenue losses of oil and gas MNCs in the Niger Delta, Nigeria. The results of the descriptive and inferential statistics and conclusions are in alignment with the concept of the underlying theoretical framework of the study. The study outcomes are consistent with existing literature on the causes of revenue losses in MNCs in the Niger Delta.

The regression analysis showed statistically significant relationships between the dependent and independent variables. Based on the rejection of all null hypotheses, the study outcome indicates that all the predictors, oil theft, pipeline vandalism, and security costs affect the revenue of MNCs and when reduced or eliminated, revenue increases.

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Appendix A: Letter to the Multinational Oil and Gas Companies

XXXXXXXX Company,

Dear Sir/Madam

Request for permission to recruit research participants

I am Ijeoma Nwachukwu, a Doctor of Business Administrations (DBA) student at Walden University. I wish to request permission to recruit search participants in your organization. I am examining the relationship between oil theft, pipeline vandalism, and security costs on revenue losses for oil and gas multinational companies in the Niger Delta, Nigeria.

I have selected your organization to carry out this study because it is one of the leading oil and gas multinational companies in Nigeria. I wish to request for 50 mid- to high-level employees to participate in this study. I will conduct this study through an online survey administered by SurveyMonkey. I intend to send an email containing the link to the online survey to you so you can send on my behalf to the selected participants. The inclusion criteria for study eligibility include – participant should be above 18 years, employed in the oil and gas sector in the Niger Delta, and have years of experience. Participation is voluntary and participants will have to read and agree with the online consent form (on the first page of the survey) before they can access and complete the survey. Data collection will last for two weeks and I will send a reminder mail to you to forward to participants on my behalf.

To ensure ethical standards are maintained, your organization and employees who have participated will remain anonymous and all data, confidential. Upon request, I will send you a 1-2 page summary of the research findings. Findings of the study may prove beneficial to leaders in the oil and gas industry in Nigeria.

For further correspondences and clarifications, please contact me at xxxxxxxxxxx@waldenu.edu.

Thank you for your support.

Regards.

Ijeoma Nwachukwu

Walden University

Appendix B: Invitation Letter

Dear Sir/Madam,

My name is Ijeoma Nwachukwu and I am a doctoral student in Business Administration specializing in Leadership at the College of Management and Technology of the Walden University, USA. My research is to determine the relationship between the variables: oil theft, pipeline vandalism, and security costs and revenue losses in the oil and gas industry in the Niger Delta in Nigeria.

Your participation will involve answering questions in an online survey which will be administered by SurveyMonkey®. The survey consists of 4 introductory questions and 19 Likert type questions on a 5-point scale and takes approximately 15 minutes to complete. You are not required to provide any identifying information. All other information provided will be confidential and protected. Feel free to forward this letter to any potential eligible participants who you believe would qualify for this investigation.

You can access this online survey anywhere you have Internet access by clicking this link:

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

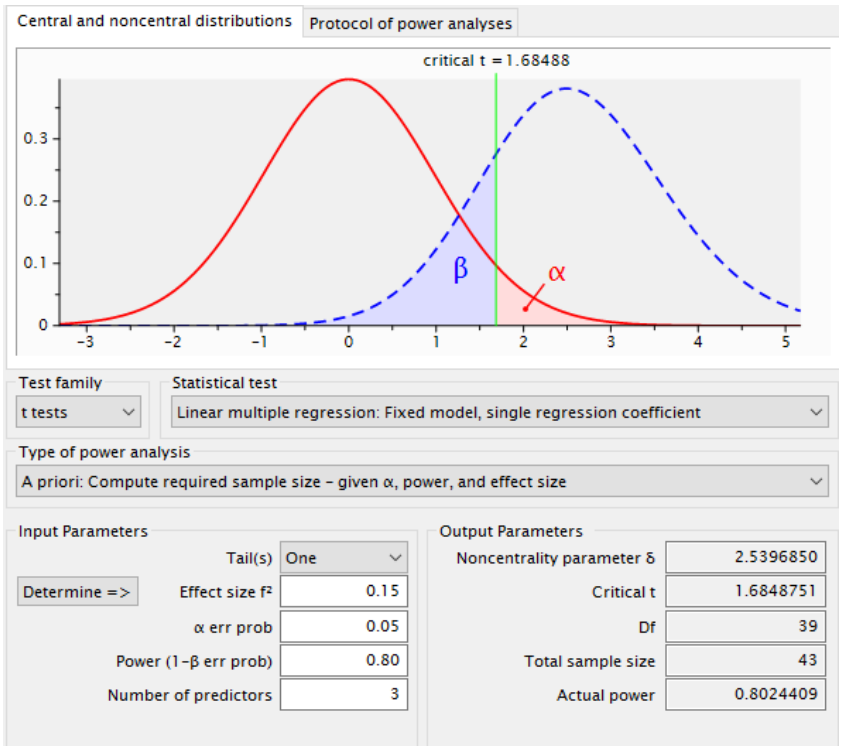
If necessary, please contact me at xxxxxx@waldenu.edu for all further correspondences.

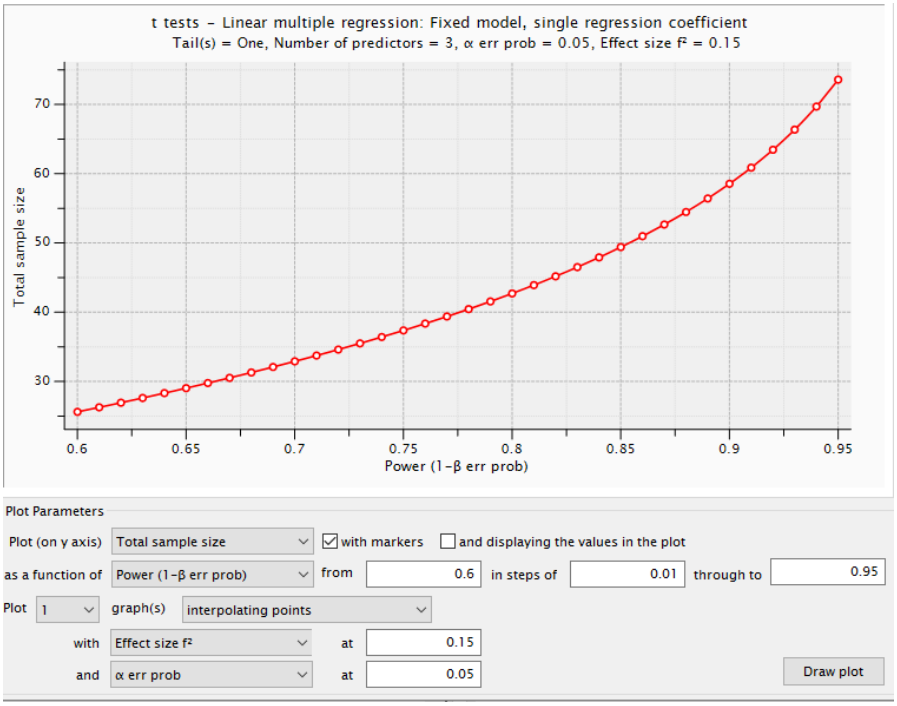
Your participation is HIGHLY appreciated.

Best Regards,

Ijeoma Nwachukwu

Appendix C: Protocol of Power Analyses Using G*Power 3.1.2





Appendix D: National Institute of Health Certification

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Ijeoma Nwachukwu** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 11/05/2015

Certification Number: 1908460

Table D1

Context Value Index (CVI)

Item	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5	Participants in Agreement	Item CVI
1	√	√	√	√	√	5	1
2	√	√	√	√	√	5	1
3	√	√	√	√	√	5	1
4	√	√	√	√	√	5	1
5	√	√	√	√	√	5	1
6	√	√	√	√	√	5	1
7	√	√	√	√	√	5	1
8	√	√	√	√	√	5	1
9	√	√	√	√	√	5	1
10	√	√	√	√	√	5	1
11	√	√	√	√	√	5	1
12	√	√	√	√	√	5	1
13	√	√	√	√	√	5	1
14	√	√	√	√	√	5	1
15	√	√	√	√	√	5	1
16	√	√	√	√	√	5	1
17	√	√	√	√	√	5	1
18	√	√	√	√	√	5	1
19	√	√	√	√	√	5	1
20	0	√	0	√	0	2	0.4
21	√	√	√	√	√	5	1
22	0	√	0	√	√	3	0.6
23	√	0	√	√	√	4	0.8
24	√	√	√	√	√	5	1
25	√	√	√	√	√	5	1
26	√	√	√	√	√	5	1
27	0	√	√	√	√	4	0.8
28	√	√	√	√	√	5	1
29	√	√	√	√	√	5	1
30	√	0	√	0	√	3	0.6
31	√	√	0	√	0	3	0.6
32	√	√	0	0	√	3	0.6
Proportion relevant	0.91	0.94	0.88	0.94	0.94	(AVG = 0.92)	

Appendix E: Survey Instrument

Factors that Affect Company Revenue Questionnaire (FACRQ)
Factors that Affect Company Revenue (FACR)

Demographic Section and qualification criteria

1. Your age: ___ Below 18 years, ___ 18-29, ___ 30-49, ___ >50
2. Are you currently employed? **(Y or N)**
3. Do you currently work in the oil & gas sector? **(Y or N)**
4. How many years of experience do you have? 1-5 __ 5-10__ 10-15__ 15-20__ 20-25___
5. How long has your company been conducting its activities in the Niger Delta?
   5-10 years__ 10-15 years__ 15-20 years__ 20-25 years___ >30years___

(Please check the statement that best describes your level of agreement to the following statements).

Revenue Based Section
Oil theft

6. Oil theft affects the revenue of the oil and gas MNCs operating in the Niger Delta of Nigeria
   (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
7. Oil theft affects the oil and gas industry in Nigeria
   (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
8. Adopting oil theft prevention strategies will reduce MNCs revenue losses
   (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
9. Adopting oil theft prevention strategies will increase MNCs profitability
   (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
10. Adopting oil theft prevention strategies will allow for reduced operational costs
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
11. Oil theft is used to get the government and oil and gas MNCs attention
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
12. Ethnic conflict caused oil theft
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
13. Oil theft is not a threat to oil and gas MNCs financial security
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
14. International intervention is not required to curb oil theft in the Niger Delta
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__

Pipeline Vandalism

15. Pipeline vandalism affects the revenue of the MNCs operating in the Niger Delta of Nigeria
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
16. Pipeline vandalism affects the oil and gas industry in Nigeria
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
17. Adopting pipeline vandalism prevention strategies will reduce oil and gas MNCs revenue losses
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
18. Adopting pipeline vandalism prevention strategies will increase oil and gas MNCs profitability
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
19. Adopting pipeline vandalism prevention strategies will allow for reduced operational costs
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
20. Cost of restoring pipeline integrity affects revenue
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
21. Reduction of easy access to pipelines would not have impact on pipeline vandalism
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
22. Other causes of pipeline vandalism include corrupt leadership and bureaucracy
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__

Security Costs

23. High cost of security affects the revenue of the oil and gas MNCs operating in the Niger Delta of Nigeria
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
24. High cost of security affects the oil and gas industry in Nigeria
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
25. Adopting good security strategies will reduce oil and gas MNCs revenue losses
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
26. Adopting good security strategies will increase oil and gas MNCs profitability
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
27. Adopting good security strategies will allow for reduced operational costs
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
28. Security agencies are not involved in oil theft and pipeline vandalism
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
29. Security agencies have not stemmed the oil theft and vandalism
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__

30. Community settlements and environmental clean-ups have had no effect on revenue of MNCs
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
31. Combination of community and security agencies in securing oil & gas facilities will not produce a better result
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__
32. Stiffer penalties applied by the Federal Government will not impact the perpetuators of illegal activities
    (1) strongly agree__ (2) agree__ (3) uncertain__ (4) disagree__ (5) strongly disagree__