Push-Pull Determinants of Livelihood Diversification among Rural Dwellers in Oil-Polluted Communities in Niger Delta, Nigeria

Onyekachi Chibueze Onuoha[1]

Abstrak

Diversifikasi mata pencaharian memungkinkan rumah tangga untuk berpartisipasi dalam berbagai kegiatan untuk memperluas sumber pendapatan. Penelitian ini mengkaji faktor-faktor penentu (dorongan dan tarikan) diversifikasi mata pencaharian di kalangan masyarakat miskin pedesaan di komunitas Delta Niger yang tercemar minyak. Data primer digunakan untuk penelitian ini dengan menggunakan kuesioner terstruktur dari 320 kepala rumah tangga yang terkena dampak langsung tumpahan minyak di lahan Ogoni. Data yang terkumpul dianalisis menggunakan standar deviasi, mean, dan uji sampel berpasangan. Studi ini mengungkapkan bahwa faktor pendorong merupakan motivasi yang kuat untuk melakukan diversifikasi karena tumpahan minyak di wilayah tersebut cukup menimbulkan tekanan dan memerlukan diversifikasi. Namun, beberapa rumah tangga termotivasi oleh faktor penarik berdasarkan keterampilan yang tersedia untuk mengeksplorasi kegiatan di luar pertanian dan non-pertanian. Direkomendasikan agar inisiatif pelatihan yang bertujuan untuk membekali penduduk pedesaan di daerah yang tercemar minyak dengan keterampilan yang dapat diterapkan pada pekerjaan non-pertanian harus dilaksanakan secara konsisten.

Kata kunci: *Mata Pencaharian, Diversifikasi, Pedesaan, Penentu*

Abstract

Livelihood diversification enables households to participate in multiple activities to widen income sources. This research examined the determinants (push and pull) of livelihood diversification among the rural poor in oil-polluted communities of the Niger Delta. Primary data were used for the study using a well-structured questionnaire from 320 household heads who had a direct impact by the oil spill in Ogoni land. The data collected were analyzed using standard deviation, mean and paired sample tests. The study revealed that the push factors were strong motivation for diversification as the oil spillage in the area was enough distress and necessitated the diversification. However, some households were motivated by pull factors based on available skills to explore off-farm and non-farm activities. It is recommended that training initiatives aimed at equipping rural residents of oil-polluted areas with skills applicable to non-farm occupations should be consistently carried out.

Keywords: *Livelihood, Diversification, Rural, Determinants*

Introduction

Rural dwellers, especially subsistence farmers, are often prone to dropping below subsistence levels due to a range of institutional, environmental, and transitory pressures and shocks (Harvey et al., 2014; Gautam & Andersen, 2016). This is more severe for households that have a single source of livelihood; hence, diversification of sources of income is perceived as an effective strategy for adjusting to environmental and economic shocks and plays a key role in reducing poverty (Gautam & Andersen, 2016). Rural households in many developing countries are making significant efforts to shift from being exclusively agrarian to undertaking diverse economic activities outside the farming sector. Ellis (2000) described livelihood diversification as a strategy employed by individuals and households to enhance and maintain their standard of living by engaging in a variety of economic activities.

The diversification of livelihoods can be driven by various factors. Two broad reasons have been found in research on development economics to be responsible for farm households in emerging nations diversifying into non-farm occupations. These variables can be broadly classified into push and pull variables (Habib et al., 2022; Mulwa & Visser, 2020; Martin & Lorenzen, 2016; Baird & Leslie, 2013). Push factors could be the outcome of a family's desperate attempt to survive under unstable economic conditions. They include the danger of unpredictable agricultural results and the ensuing shocks to consumption, low labor

[1] University of Bedfordshire, United Kingdom (onyekachi.onuoha@beds.ac.uk)

productivity on the farm, and liquidity (Corral & Radchenko, 2017). Owing to initial circumstances such as minimal private endowment, push-driven diversification may take place in enterprises that yield low income with limited to zero entry barriers (Dzanku, 2015).

On the other hand, pull factors describe positive, constructive, and voluntary reasons for diversification (Ayana, Megento, & Kussa 2022). These factors entice and attract farm households to pursue many streams of income to enhance their standards and quality of life. Pull factors incentivize farmers to diversify their income sources beyond farming to increase their returns from non-farm ventures (Kassie, Kim, & Fellizar, 2017).

Niger Delta has experienced extensive ecological impacts due to oil spills ever since Nigerian oil was discovered, which have affected not only the terrestrial, atmospheric, and aquatic habitats but also the lives of the native population (Ukhurebor et al., 2023). Niger Delta is a development paradox characterized by endemic poverty amid abundant natural and financial resources. As a result, the ecosystem in the area has been ranked among the most endangered ecosystems in the world (Anejionu et al., 2015). Farmlands that were formerly productive and promoted sufficient food production to nourish the population have become extremely infertile because of oil spills (Azuazu et al., 2023; Pupovac & Moerman, 2022). The situation worsens further into an increase in poverty, conflicts, and instability in the region that produces crude oil. Fish kills have escalated due to oil films covering creeks and rivers, previously the primary sources of fish protein in human diets (Obida et al., 2021). Farmers have been compelled to vacate their land because of declining agricultural output and increased soil sterility caused by the loss of soil microorganisms (Onyena & Sam, 2020). At the moment, very little is known about the livelihood patterns in the Niger Delta, as not many empirical studies have been carried out on livelihood diversification in the Niger Delta; however, the livelihood strategies in the Niger Delta area of Nigeria are likely to have a different pattern compared to other regions of the country. This is because the region has witnessed oil explorations leading to the destruction of farmland and other environmental degradation, such as oil spillage (Bamidele & Erameh, 2023;

Afolabi & Adesope, 2022, Akinwumiju, Adelodun & Ogundeji, 2020; Albert, Amaratunga & Haigh, 2018). The research sets out to establish the drivers of livelihood diversification in this region.

There is significant empirical evidence that livelihood diversification is a useful strategy used by rural households in developing countries to improve their living standards and reduce vulnerability to shocks (Nguyen et al., 2023; Habib et al., 2023; Anang et al., 2022; Roscher et al., 2022). There is also an abundance of empirical research on the determinants of livelihood diversification, which are driven by socio-economic and institutional factors such as household age, gender of household head, education, membership of cooperative groups, accessibility of credit, and social linkages, among others (Ayana et al., 2022; Habib at al., 2022; Memon et al., 2020; Avila-Foucat & Rodríguez-Robayo, 2018). However, there is a dearth of empirical evidence exploring the push and pull determinants of livelihood diversification, which could explain the factors determining the extent of livelihood diversification, especially in oil-polluted regions. Niger Delta was selected for this study as it mirrors dwellers who have a strong disadvantage as their primary sources of livelihood, which are usually crop farming and fishing displaced by oil spillage in farms and water bodies (Ukhurebor et al., 2023; Pupovac & Moerman, 2022; Onyena & Sam, 2020). Ignoring the peculiarity of displaced households in communities polluted by oil may cause estimates of the effects of push and pull factors of diversification of livelihood to be inconsistent, as the situation of the households will differ from other households whose primary sources of livelihood are unaffected. Ignoring spatial linkages might also result in estimates of the effects related to different observed factors of diversification choices that are skewed or inconsistent. Hence, the broad objective of this research is to examine the determinants of livelihood diversification among displaced rural dwellers of oil-polluted communities. Specifically, the study investigates the attributes of the relationship between push factors and the diversification of livelihood and identifies the extent of influence of the pull factors on the diversification of livelihood.

Theoritical Framework

The theories underpinning this research are the theory of agricultural households and rational choice theory. The theory of agricultural

households is derived from the writings of economists from the 1960s, such as Mellor (1963). This theory regards a rural household as serving as both a unit of production and consumption. In this instance, the choice made by a rural household or individual to provide labor to the rural non-farm sector can be understood as an instance of the behavioral models of labor supply in general and factor supply in a particular class. It is presumed that a household seeks to minimize risk while maximizing income, subject to the limitations imposed by its finite resources (Reardon et al., 2007). The amount and fluctuation of incomes and prices in both agricultural and non-farm activities, as well as the relative risks associated with engaging in certain activities, such as those related to the weather, the market, or other factors, are examples of incentives. The ability of a household to diversify into non-farm activities is limited by several factors, including individual and household characteristics such as age, gender, education level, household size, assets, and credit availability (Reardon et al., 2007). Capacity variables have the potential to influence incentives. For example, disparities in human capital, asset endowments, and market accessibility can affect prices among rural households.

A welfare model approaches the dynamics of the demand-pull and distress-push processes, explaining that wage and income incentives are the primary drivers of labor allocation. The model also demonstrates that benefits accrue not only to demand-pull shifters who accept higher-paying non-farm employment but also to distress-push shifters who, despite engaging in low-paid activities, gain increased aggregate household income. The theory of agricultural households enables the understanding of rural households on their choice of utilizing any of the labor and capital resources in engagement into livelihood activities that vary among on-farm, off-farm, and non-farm livelihood diversification. It also looks at asset endowment, as it affects the choice of diversification.

Rational choice theory posits that when faced with a choice, a person or group of people chooses or decides between alternative courses of action or acts from among their available options that are both clearly defined and practical (Burns & Roszkowska, 2016). The theory posits that a person assesses the impact of the possible results of each choice to decide what to do. Individuals are assumed to be cautious of the real effect of their choices (Alamneh et al., 2023). In situations where people are confronted with the options to make a decision, a review of the options available is usually considered. For each option, the consequences are assessed, and options are evaluated based on their perceived value. The options are prioritized based on their values and consequences. Ultimately, the best option is sieved out among the competing and alternate options. (Alamneh et al; 2023; Burns & Roszkowska, 2016). Rational choice theory has been applied to explain decision-making within the confines of businesses relative to savings and consumption, outputs, productivity, and spending, among others. Therefore, the examination of livelihoods is predicated on the idea that people's current livelihoods are the result of rational choices. It emphasizes the resiliency of marginalized people and develops based on their initiatives. Therefore, it aims to identify the asset basis, means of subsistence, and intended goals to establish a setting that can maintain them (Ayana et al., 2022).

Determinants of Livelihood Diversification

Livelihood strategies refer to a person's or household's choices and a combination of decisions and actions taken to achieve their livelihood goals (Ayana et al., 2022; Dai et al., 2019; Kassa, 2019). Livelihood diversification is typical and generally expected for households whose primary source of income is agriculture, as the agricultural sector is susceptible to climatic fluctuations and outputs are usually unstable. This helps them reduce vulnerability and economic shocks and improve their resilience and income (Danso-Abbeam, Dagunga, & Ehiakpor, 2020; UNCTAD, 2015). This entails diversifying sources of income and livelihood, instead of relying on a single source (Sekunmade & Osundare, 2014). Diversification of livelihoods is encouraged by the Food and Agriculture Organization (FAO) policy, which views it as a potentially effective method to combat poverty and food and nutrition insecurity (FAO, 2012).

The pursuit of livelihood diversification is driven by a variety of factors, which change depending on the situation: the need to distribute risk, sustain income, build wealth, invest, or both. Alternatively, it may be necessary to adapt to survive adverse conditions (Ayana, Megento, &

Kussa, 2021). Households diversify their sources of income for two reasons: first, to disperse risk, which is forced diversification; second, families diversify voluntarily for various reasons, which may not always be forced upon them (Ellis, 2000). Generally, the two main motivations for pursuing livelihood diversification as a livelihood strategy are choice and necessity (Seera 2014; Igwe 2013; Ellis, 2000). Necessity refers to desperate and involuntary (push) reasons for diversification. Examples include a tenant family losing their land; farm holdings becoming fragmented due to inheritance; environmental degradation that leads to reduced agricultural productivity; the occurrence of natural or man-made catastrophes such as floods, droughts, or civil conflicts that result in the abandonment and displacement of previous assets; or the inability to perform physically taxing agricultural tasks due to illness or accident. Choice, by contrast, refers to voluntary and proactive reasons for diversification. For instance, seeking opportunities to earn a seasonal living, undertaking labor-related journeys to locate employment in remote regions, mentoring children to improve their prospects of securing non-agricultural employment, amassing funds for investment in non-agricultural ventures such as trading, or utilizing farm revenue to acquire capital equipment or fertilizers for the farm enterprise (Kusters, 2010; Ellis, 2000). Additionally, there is speculation that economically disadvantaged households and individuals participate in non-agricultural endeavors as a means of survival rather than as a pursuit of opportunity (Kusters, 2010).

Primarily, capacity factors or a variety of incentives, classified as push or pull factors, determine livelihood diversification (Loison 2015). Capacity factors comprise various types of assets. Push and pull factors, on the other hand, are associated with either opportunity- or distress-led diversification or accumulation- or survival-led diversification (Loison, 2015). Negative variables called push factors (including seasonality, climate uncertainty, land limits, missing or incomplete factor markets, and issues with market access) may compel households to diversify their income sources. It is thought of as a livelihood strategy that spreads risk to lessen susceptibility to unforeseen shocks and crises, such as floods, droughts, disease, or seasonal variations in natural resource availability (Martin & Lorenzen, 2016).

Dimova and Sen (2010) noted that a significant body of research has explored the question if household income diversification serves as a strategy for accumulation or survival, with the results remaining inconclusive thus far. Therefore, without considering the context, it is impossible to determine the extent to which rural people's use of diversification of livelihood strategies is a symptom of poor livelihoods or improved prospects for rural populations. It is only contextually discernible if diversification is motivated by accumulation goals or an effort to deal with external shocks.

Distress-Push Factors

Push determinants are adverse factors that may force farm households to seek extra income sources from farming, from outside the industry, or from both. Some examples include land constraints brought on by population pressure and fragmented land holdings, economic land concessions, seasonality, risk, loss of land, incomplete or missing factor markets (capital, land, labour), and high transaction costs (Jiao et al, 2017; Barrett, et al. 2001; Ellis 2000). It has been hypothesized that these characteristics are generally more prevalent in high-risk, low-potential agricultural areas that are susceptible to environmental degradation, flooding, and drought (Haggblade, Hazell, & Reardon, 2010). Push factors are related to the survival-led form of diversification, in which lower-class rural farm households are compelled to labour in low-paying jobs to make ends meet, reduce their vulnerability, or prevent themselves from falling into even deeper poverty (Hagblade & associates, 2010). In other words, push factors can be referred to as "survival-led" while pull factors are "opportunity-led" (Ellis, 2000). Push drivers are also known as necessity or distress push factors. According to Obi (2011), a household can diversify if it possesses the requisite skills, can obtain credit, can meet the investment requirements required to launch a profitable non-farm business, and can fully capitalize on the opportunities for higher returns on labour provided by non-farm sources of income in rural areas. Similarly, Helmy (2020) identified push factors of livelihood diversification to include income seasonality, liquidity constraints, and credit market failure. Seifu et al. (2023) also identified excess labour in the household, insufficient agricultural income,

risk minimization, and seasonality of agriculture as the push drivers of livelihood diversification into non-farm activities. In this study, the focus was on areas with environmental degradation, especially oil spillage.

Demand-pull Factors

Pull determinants are positive factors that provide incentives for people to expand their livelihood activities within and/or outside farming. For example, better infrastructure, commercialization of agriculture, proximity to a metropolitan region, creation of labor markets, easier access to markets, expansion of rural towns, and advancements in technology and education. These pull factors are more common in agricultural areas that are dynamic and less hazardous (Haggblade et al., 2010). They are related to the opportunity-led kind of diversification that exists when richer rural households engage in profitable non-farm activities to build up improved earnings and maximize asset returns (Haggblade et al., 2010). The pull factors are the choice and demand-pull factors (Hilson, 2016; Ellis, 2000). Helmy (2020) theoretically identified some examples of livelihood diversification to include improvement in education, technology, labor markets, infrastructure, or market access. Extant literature suggests that there are several pull factors of livelihood diversification including improved education and technologies, improved living standards, higher wage/income rates and access to other basic amenities for income growth, Improve infrastructure/assets, growth of urban labor markets, higher earnings in non-farm employment and desire to increase income (Borku et al., 2024; Pace at al., 2022; Alobo & Bignebat, 2017; Pérez et al., 2015)

Methods

The study was conducted in the rural area of Ogoniland in the state of rivers. The choice of Ogoniland stems from displacements caused by over a decade of oil pollution from oil spills, purportedly by the Trans-Niger Pipeline operated by Shell. This is a famous case that has received international attention with wide court cases. Oil is mainly extracted in the Niger Delta region, and Ogoniland is one of the major areas where oil pills have been massively reported over the years, which has significantly affected the ecosystem in the area and impacted the livelihood of the residents (Uduji et al., 2021; Idemudia, 2014). The livelihood strategies in this distressed community are likely to have a different pattern compared to other areas that have not witnessed such an emergency. Ogoniland is located in the southeastern part
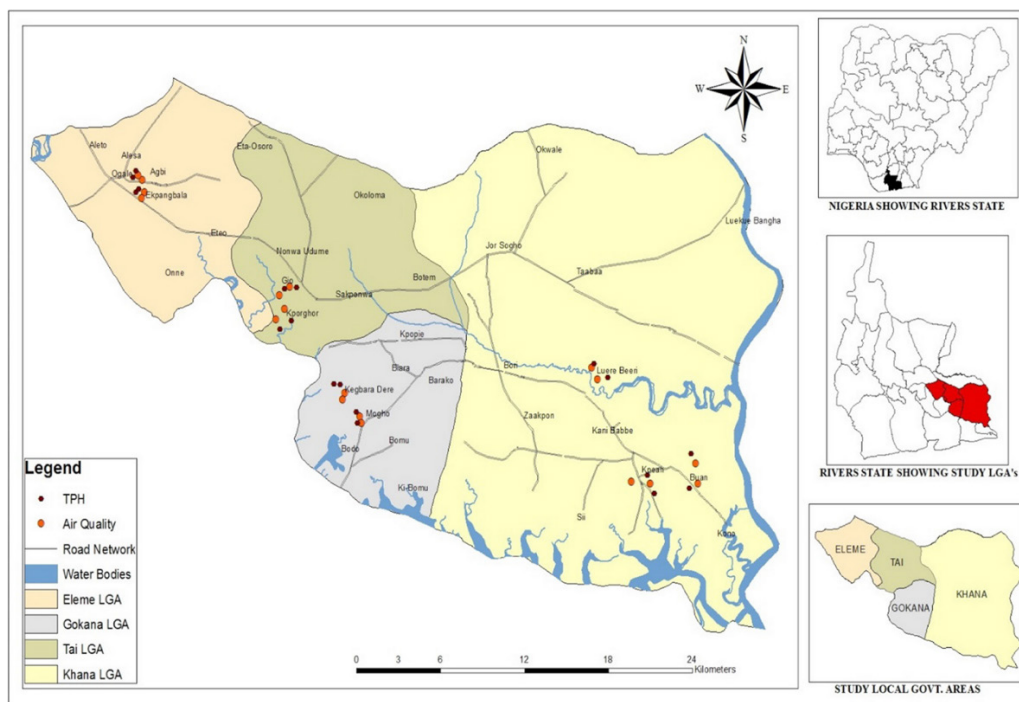

Figure 1. Map of Ogoniland, the Study Area
Source: Sam et al (2024)

of the Niger Delta Basin, with an estimated population of 832,000 and a landmass of 1000 km^2 (Uduji et al., 2021). Ogoniland is situated at 4° 40′ 5″ North and 4° 43′ 19.5″ North and longitude 7° 22′ 53.7″ East and 7° 27′ 9.8″ East, south of the state of the river (Nkpaa et al., 2017). There are four local governments in Ogoniland: Khana, Eleme, Tai, and Gokana (Ezugwu et al., 2023; Genovese et al., 2014). The predominant occupations of residents on which their livelihoods are structured are crop farming and fishing (Sam et al., 2024).

The research design for the study was the survey design method. Randomized household surveys were used for the collection of the research data. Structured questionnaires and interviews were used for data generation. A multistage sampling technique was used for data collection. The four local government areas (LGAs) in Ogoniland comprising Gokana, Khana, Eleme, and Tai were all selected for the study. In each LGAs, two communities that had been impacted by oil pollution were randomly selected. In each community, several households were randomly selected, making a total of 320 households, as shown in Table 1. With the assistance of a carefully designed questionnaire, data were gathered from these heads of households by the researcher and trained enumerators.

S/N	Local Government Areas	Communities	Number of Households
1	Gokana	Goi	46
2		Bodo	31
3	Khana	Buan	42
4		Kpean	39
5	Eleme	Ekpangbala	45
6		Okerewa	48
7	Tai	Kporghor	43
8		Gio	26
Total			320

Table 1. Distribution of Household Heads for the Study
Source: Field Survey (2023)

The data collected were analyzed using descriptive and inferential statistics including mean, standard deviation, paired sample correlations, and paired sample tests using the Statistical Package for Social Science (SPSS) version 23. Inferences on existing relationships were drawn from the data obtained using the Paired Samples T-Test. The dependent variable is livelihood diversification, which is the attribute or trait that is influenced by the independent variables (Livelihood diversification index - Simpson Index). The independent variables, also referred to as explanatory or predictor variables for the push, include income risk, declining or fluctuating return on productive assets over time, constraints in the long run, or diminishing household consumption, while the independent variables for the pull factors are greater labor and capital returns, investment's lower level of risk, desire to upgrade housing, educate children, accumulate assets or otherwise improve the household labor standard of living, and desire to increase income to become more food secure.

This research therefore seeks to address the research questions of how push factors such as the management of income risk, coping strategies, and diminishing or time-dependent returns to valuable assets are associated with livelihood diversification, as well as how pull factors such as higher labor and capital returns, less risky investments, a need to raise income to improve food security, and upgraded housing have an impact on livelihood diversification. Therefore, the following hypotheses are to be tested.

H_{01}: The Push factors of mechanisms of coping, management of income risk, declining or fluctuating return on productive assets over time, constraints in the long run, or diminishing household consumption do not have a significant influence on the livelihood diversification of the rural poor.

H_{02}: The pull factors of greater labor and capital returns, investment's lower level of risk, desire to upgrade housing, educate children, accumulate assets or otherwise improve the household's standard of living, and desire to increase income to become more food secure do not have a significant influence on the livelihood diversification of the rural poor in the study area.

Result

This section presents the results of the pull and push determinants. The demographic distribution of the respondents is presented in Table 2, which provides insight into the socio-economic features of the household heads

(respondents) with regard to sex, age, marital status, educational level, farm size owned by the household, occupation, and monthly household income.

Characteristics	Frequency	Percentage
Sex		
Male	228	71
Female	92	29
Age		
Less than 18	-	-
18yrs-35yrs	9	3
36yrs-60yrs	287	90
61yrs and above	24	7
Marital Status		
Married	232	73
Single	3	1
Widowed/Divorced	85	26
Educational Level		
No formal Education	12	4
Primary Education	19	6
Secondary Education	223	70
Higher Education Qualification	66	20
Farm Size		
I hectare	21	6
2 hectares	198	62
3 hectares	45	15
4 and more hectares	56	17
Livelihood Activities		
On-Farm only (crop farming, fishing aquaculture, and livestock)	105	33
Off-Farm only (wage or labor exchange on other farms within agricultural)	73	23
Non-farm only (jobs, rural self-employment, property income, remittances)	17	5
More than one livelihood areas	125	39
Monthly Household Income (Naira)		
Less than N50,000 per month	84	46
N50,001-N100,000 per month	279	28
N100,001 – 150,000 per month	106	26
N150,001 and above per month		

Table 2. Distribution of Respondents (Household Heads) on their Demographic Characteristics
Source: Field Survey (2023)

Table 2 shows the demographic features of the respondents who are household heads across 320 households in eight communities in Ogoniland. The respondents were largely male (71 %). The respondents were mainly aged between 36 and 60 years, as represented by 90%, with 73% of them married. A majority of the respondents have secondary education as their highest qualification (70%). On the farm size of the respondents, 62% of the respondents indicated that they had 2 hectares of land, only 6% had just one hectare, 15% had 3 hectares, and 17% had at least 4 hectares of farmland. In terms of livelihood strategies adopted by the households, it was evidenced that 39% engage in more than one area of livelihood activities (on-farm, off-farm, and on-farm), 33% focus on on-farm activities, which have been significantly affected by oil pollution, 23% of the respondents engage in off-farm activities only, while only 5% are employed outside the agricultural sector. On the household income of the respondents, 46% earn less than N50,000 per month, 28% earn between N30,000 and N60,000 per month, and 26% earn N61,000 and above in a month.

Push Determinants of Diversification of Livelihood
The push factors identified conceptually by extant literature were reviewed and added to the survey, and the result was analyzed using mean and standard deviation, as in Table 3.

Table 3 shows the distribution of respondents on the livelihood diversification push factors with mean scores presented on a 5-point scale, standard deviation, and standard error mean. Among all the push factors surveyed, based on the extant literature's conceptualization, the findings show that the key push factors that motivated the dwellers in the area to diversify their livelihood activities were coping strategies, declining income, and declining productive assets, with mean scores of 4.20, 3.98, and 3.84, respectively. Coping mechanisms must have been the most crucial necessity for the Niger Delta communities whose source of livelihood has been displaced by oil spills. Household heads and family members must find a means of survival so that the family can cope with the economic shock; otherwise, the family members could die of starvation.

Test of Hypothesis One
Tables 4, 5, and 6 are the outputs of the hypothesis test (Paired Sample Test). The

S/N	Push Factors	Mean	Standard Deviation	Decision
1	Declining income	3.98	0.908	High
2	Coping Mechanism	4.20	0.893	High
3	Declining or fluctuating return on productive assets over time	3.84	0.936	High
4	Constraints in the long run or diminishing household consumption	2.92	1.390	Low

Table 3. Distribution of Respondents on the Push Factors of Livelihood Diversification
Source: Field Survey, 2023

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Livelihood Diversification	3.45	320	1.246	.062
	Push Factors	3.34	320	1.013	.051

Table 4. Paired Samples Statistics output for the Push factors and Livelihood Diversification
Source: Author's computation (2023)

		N	Correlation	Sig.
Pair 1	Livelihood Diversification & Push Factors	320	.603	.000

Table 5. Paired Samples Correlations output for the Push factors and Livelihood Diversification
Source: Author's computation (2023)

		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Livelihood Diversification - Push Factors	.118	1.028	.051	.016	.219	2.286	399	.023

Table 6. Paired Samples Test output for the Push factors and Livelihood Diversification
Source: Author's computation (2023)

mean for livelihood diversification was 3.45, while the grand mean for pull factors was 3.34, with a correlation of 0.63. The Paired Samples Test revealed that the t-value was 2.286 and is significant at the 0.05 level. Consequently, the alternative hypothesis was accepted and the null hypothesis was rejected, leading to the conclusion that the push factors—mechanisms of coping, management of income risk, declining or fluctuating return on productive assets over time, constraints in the long run, or diminishing household consumption—have a major impact on the rural poor's ability to diversify their sources of income.

Pull Determinants of Livelihood Diversification

The pull factors identified conceptually by extant literature were reviewed and added to the survey, and the result was analyzed using mean and standard deviation, as in Table 7. It was clear that all the factors were considered major

pull factors, except the less risky nature of the investment. The topmost pull factors include a desire to increase income and the need to be food secure and improve the standard of living, with mean scores of 4.63, 4.21, and 4.13, respectively. This could be explained by the situation of the respondents, who were in a precarious condition and were pulled to diversify by factors very similar to the distress push. They were driven by the need to increase income, to become food secure, and to enhance their living standard.

Test of Hypothesis Two

Tables 8, 9, and 10 are the outputs of the Paired Sample Test, which was used to test hypothesis four. The mean for livelihood diversification was 3.45, while the grand mean for pull factors was 3.67, with a correlation of 0.681. The Paired Samples Test revealed that the t-value was 2.146 significant at 0.05 level. Therefore, the null hypothesis was rejected, and

S/N	Pull Factors	Mean	Standard Deviation	Decision
1	Greater labor and capital returns	3.45	0.894	High
2	investment's lower level of risk	2.89	0.789	Low
3	Desire to increase income	4.63	0.892	High
4	Need to be food secure	4.21	1.093	High
5	Desire to upgrade housing	3.98	0.839	High
6	Need to educate children	3.78	0.719	High
7	The quest to accumulate assets	3.42	0.801	High
8	Improvement of standard of living	4.13	0.672	High

Table 7. Distribution of Respondents on the Pull Factors of Livelihood Diversification
Source: Author's computation (2023)

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Livelihood Diversification	3.45	320	1.246	.062
	Pull factors	3.67	320	1.105	.046

Table 8. Paired Samples Statistics output for the Pull factors and Livelihood Diversification
Source: Author's computation (2023)

		N	Correlation	Sig.
Pair 1	Livelihood Diversification & Pull factors	320	.681	.000

Table 9. Paired Samples Correlations Output for the Pull Factors and Livelihood Diversification
Source: Author's computation (2023)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Livelihood Diversification - Pull factors	.106	1.036	.062	.024	.224	2.146	399	.034

Table 10. Paired Samples Test output for the Pull factors and Livelihood Diversification
Source: Author's computation (2023)

the alternate hypothesis was accepted with the conclusion that the pull factors of greater labor and capital returns, investment's lower level of risk, desire to upgrade housing, educate children, accumulate assets, or otherwise improve the household's standard of living, and desire to increase income to become more food-secure do not have a significant influence on the livelihood diversification of the rural poor in the study area.

Discussion

Empirical research on the determinants of livelihood diversification has concentrated on socio-economic and institutional factors such as age, gender of the household head, educational qualifications, household income, membership of cooperative groups, and access to credit facilities, among others. The dimensions of pull and pull determinants are relatively unexplored

areas of research on the determinants of livelihood diversification, especially in distress-push communities such as the Niger Delta. The livelihood choices of households in the Delta of Nigeria are constrained, especially those in areas polluted by oil spills. Relative to the push factors, the coping mechanism appeared as the most compelling push factor for diversifying household livelihood sources.

However, all the push factors, including mechanisms of coping, management of income risk, declining or fluctuating return on productive assets over time, constraints in the long run, and diminishing household consumption, independently and jointly significantly motivated the dwellers to diversify, with a correlation of 0.603. The households in these areas polluted by oil are significantly distressed by their conditions to explore other sources of livelihood; otherwise,

their livelihoods are threatened. Perhaps some of the dwellers might have explored options such as moving from fish and crop farming, which was the predominant occupation before, during, and after the oil pollution, to other on-farm activities such as poultry farming, which does not need any fertile land to do, and other animal rearing activities with limited need for grazing. Some of the dwellers would have also ventured into some off-farm activities like food processing activities and transportation of agro-products across many other communities to city centers where they are sold at higher prices. Those with higher educational qualifications may seek non-farm jobs, while others may engage in retail services and general merchandise. This is in agreement with the findings of Sallawu et al. (2016), whose findings in a study on determinants of income diversification among farm households in Niger State, Nigeria, established a positive relationship between non-farm diversification and education.

This aligns with the findings of Danso-Abbeam et al. (2020), who collected primary data from agricultural households in Ghana to study how household welfare and adoption of agro-technology are affected by rural non-farm income diversification using Inverse-Probability-weighted Regression Adjustment (IPWRA) techniques and Propensity Score Matching (PSM). Their findings affirm that the household head's educational level is a critical factor in diversification. However, in their study, contrary to expectations, households with lower levels of education tended to seek further diversification into non-farm activities. Their findings suggest that those who do not study up to the secondary level start early in their career to engage in business outside the agricultural sector. While this may be the reality for the upper east region of Ghana, the peculiarity of the Niger Delta may be significantly different considering that the communities are vested in crop farming and fishing with limited commercial ventures.

This finding is in tandem with the outcome of the research of Seifu et al. (2023), whose study provided evidence that non-farm diversification of livelihood is mainly induced by push elements in their research study in Southwestern Ethiopia. More precisely, Teweldebrihan et al. (2023) found that living expenses and the need for income diversification were the key push factors for livelihood diversification in Ethiopia. Although the geographical scope and sample context are different, the commonality is significant. Outside Africa, Avila-Foucat and Rodríguez-Robayo (2018) conducted research in Mexico on the determinants of livelihood diversification with a focus on wildlife watching. They found that several factors influence livelihood diversification from the dimensions of socio-economic and institutional factors; however, access to social capital and characteristics of the land are among the push determinants identified. In a study carried out by Johny et al. (2017) in India, exploring the effect of social networks on income diversification using an econometrics model, the findings reveal that rural diversification is significantly influenced by social networks. Similarly, Ahmad and Afzal (2024) confirmed in their study on the determinants of livelihood diversification strategies in Pakistan that the waterlogged duration and ecosystem of the area were push factors that significantly affected livelihood diversification. The research of Ahmad and Afzal (2024) is closely related to the current study, as the Bait areas of Punjab are flood-prone, which suggests that households here are distress-pushed.

Concerning the pull factors, the results reveal that the pull factors of greater labor and capital returns, investment's lower level of risk, desire to upgrade housing, educate children, accumulate assets or otherwise improve the household's standard of living, and desire to increase income to become more food-secure have a significant influence on the livelihood diversification of the rural poor in the Niger Delta. This suggests that households are also motivated to diversify by choice, not just the distress orchestrated, considering a fairly high correlation coefficient of 0.681 for livelihood diversification and the aggregated score of the pull factors. Most of them were driven to diversify by the desire to increase income, improve the standard of living, and be food secure. These results are slightly different from the findings of Teweldebrihan et al. (2023), who studied the role of push and pull determinants as they affect the expansion of agricultural land using primary and secondary data in Adaba and Adiyo districts in Ethiopia. They found that the market attraction of timber and recent economic returns pulled the people. The variation in the findings could have been because their research was not focused on oil-polluted areas, and the study was conducted in the eastern part of Africa (Ethiopia).

Conclusion

The push factors that affect livelihood diversification include mechanisms of coping, management of income risk, declining or fluctuating returns on productive assets over time, constraints in the long run, and diminishing household consumption. The pull factors that affect livelihood diversification include greater labor and capital returns, investment's lower level of risk, desire to upgrade housing, educate children, accumulate assets or otherwise improve the household's standard of living, and desire to increase income to become more food-secure. While both push and pull factors motivated the dwellers in the oil-polluted region of Nigeria to diversify, the distress Push factors were stronger and the pull factors that significantly motivated diversification were quite similar to the goals of the push factors.

Based on the findings of this study, two key recommendations were made. Firstly, in order to guarantee the sustainability of the environment and livelihoods, it is imperative to tackle the problem of alternative livelihoods. These would strike a balance between environmental and economic goals, all while aiding in the sustained reduction of poverty. Therefore, it is imperative to promote shared accountability among stakeholders for sustainable resources and environmental management. Secondly, improvements in infrastructure, education, and financial markets should be made as they are directly related to the pull factors, as should training initiatives aimed at equipping rural residents of oil-polluted areas with skills applicable to off-farm occupations nearby. Interventions that raise the potential for non-farm activities by making investments that boost wages and create jobs are needed to entice rural households to diversify their income sources. Thus, in addition to emphasizing raising agricultural productivity, the rural development plan should focus on encouraging these kinds of enterprises in rural regions.

References

Afolabi, O. & Adesope, O. (2022). Ecotoxicological risk assessment of heavy metals from remediated oil spill site in Niger Delta region, Nigeria, *Environmental Chemistry and Ecotoxicology*, 4(1), 186-193, https://doi.org/10.1016/j.enceco.2022.10.001

Ahmad, D., & Afzal, M. (2024). Livelihood diversification strategies adaption determinants in flood-prone Bait areas of Punjab, Pakistan. *Environment, Development and Sustainability: A Multidisciplinary Approach to the Theory and Practice of Sustainable Development*, 1–38. https://doi.org/10.1007/s10668-023-04435-y

Akinwumiju, A., Adelodun, A., & Ogundeji, S. (2020). Geospatial assessment of oil spill pollution in the Niger Delta of Nigeria: An evidence-based evaluation of causes and potential remedies, *Environmental Pollution*, 267 (1), 115545, https://doi.org/10.1016/j.envpol.2020.115545

Alamneh, T., Mada, M. & Abebe. T. (2023). The choices of livelihood diversification strategies and determinant factors among the peri-urban households in Amhara Regional State, Ethiopia*. Cogent Social Sciences, 9* (2). https://doi.org/10.1080/23311886.2023.2281047

Albert, O., Amaratunga, D. & Haigh, R. (2018). Evaluation of the impacts of oil spill disaster on communities and its influence on restiveness in Niger Delta, Nigeria*, Procedia Engineering*, 212 (1), 1054-1061, https://doi.org/10.1016/j.proeng.2018.01.136

Alobo, S., & Bignebat, C. (2017). Patterns and determinants of household income diversification in rural Senegal and Kenya. *Journal of Poverty Alleviation and International Development, 8*(1), 93-126. https://hal.science/hal-01608295

Anang, S. A., Tarkoh, B., Mensah, O. N & Nakuja, T. (2022). Effect of diversification on smallholder cocoa farmers' livelihood: Evidence from Atwima Mponua District in the Ashanti Region, Ghana. *Quarterly Research Journal of Plant & Animal Sciences / Bhartiya Krishi Anusandhan Patrika*, 37 (1), 50–55. https://doi.org/10.18805/BKAP379

Anejionu, O., & Ahiarammunnah, P. & Nri-ezedi, C. (2015). "Hydrocarbon pollution in the Niger Delta: Geographies of impacts and appraisal of lapses in extant legal framework," *Resources Policy*, 45(3), 65-77. https://doi.org/10.1016/j.resourpol.2015.03.012

Avila-Foucat, V.S. & Rodríguez-Robayo, K.J. (2018). Determinants of livelihood diversification: The case wildlife tourism in four coastal communities in Oaxaca, Mexico,

Tourism Management, 69, 223-231, https://doi.org/10.1016/j.tourman.2018.06.021

Ayana, G.F., Megento, T.L. & Kussa, F.G. (2022). The extent of livelihood diversification on the determinants of livelihood diversification in Assosa Wereda, Western Ethiopia. *GeoJournal,* 87(1), 2525–2549. https://doi.org/10.1007/s10708-021-10379-5

Azuazu, I., Sam, K., Campo, P. & Coulon, F. (2023). Challenges and opportunities for low-carbon remediation in the Niger Delta: Towards sustainable environmental management, *Science of the Total Environment*, 900 (1), 1-16. https://doi.org/10.1016/j.scitotenv.2023.165739

Baird, T. & Leslie, P. (2013). Conservation as disturbance: Upheaval and livelihood diversification near Tarangire National Park, northern Tanzania, *Global Environmental Change*, 23(5), 1131-1141, https://doi.org/10.1016/j.gloenvcha.2013.05.002

Bamidele, S., & Erameh, N. (2023). Environmental degradation and sustainable peace dialogue in the Niger Delta region of Nigeria, *Resources Policy*, 80 (1). https://doi.org/10.1016/j.resourpol.2022.103274

Borku, A.W., Utallo, A.U. & Tora, T.T. (2024). Determinants of urban households in the diversification
of livelihood activities: The case of Wolaita zone in southern Ethiopia, Journal of Agriculture and Food Research, 16, 101193, https://doi.org/10.1016/j.jafr.2024.101193

Burns, T., & Roszkowska, E. (2016). Rational choice theory: Toward a psychological, social, and material contextualization of human choice behaviour. *Theoretical Economics Letters*, *6*(02), 195–207. https://doi.org/10.4236/tel.2016.62022

Corral, P. & Radchenko, N. (2017), What's So Spatial about diversification in Nigeria? *World Development*, 95 (1), 231-253, https://doi.org/10.1016/j.worlddev.2017.02.028

Dagunga, G., Sedem Ehiakpor, D., Kwabena Parry, I., & Danso-Abbeam, G. (2018). Determinants of income diversification among maize farm households in the garu-tempane district, Ghana. *Review of Agricultural and Applied Economics (RAAE),* 21(1340-2018-5168), 55- 63. https://doi.org/10.22004/ag.econ.281185

Dai, X., Wu, Z., Fan, Y., Li, B., Yang, Z., Nan, B., & Bi, X. (2019). Characteristics and determinants of livelihood diversification of different household types in far Northwestern China. *Sustainability*, *12*(1), 64. https://doi.org/10.3390/su12010064

Danso-Abbeam, G., Dagunga, G., & Ehiakpor, D.S. (2020). Rural non-farm income diversification: implications on smallholder farmers' welfare and agricultural technology adoption in Ghana, *Heliyon*, 6 (11), 1-11. https://doi.org/10.1016/j.heliyon.2020.e05393

Dimova, R., & Sen, K. (2010). Is household income diversification a means of survival or a means
of accumulation? Panel data evidence from Tanzania. Brooks World Poverty Institute Working Paper Series.

Dzanku, M. F. (2015). Transient rural livelihoods and poverty in Ghana, *Journal of Rural Studies*, 30(1), 102-110. https://doi.org/10.1016/j.jrurstud.2015.06.009

Ezugwu, B. U., Bala, J.D., Abioye, O.P., & Oyewole, O.A. (2023). Phycoremediation of crude oil polluted water from selected water sources in Ogoniland, Rivers State, Nigeria. *Environmental Science and Pollution Research*, 3 (52) 111916–111935. https://doi.org/10.1007/s11356-023-29004-8

Ellis, F., (2000). Rural livelihoods and diversity in developing countries. Oxford University Press

FAO (2012). The state of food and agriculture, investing in agriculture for a better Future. Rome.
https://www.fao.org/3/i3028e/i3028e00.htm

Gautam, Y. & Andersen, P. (2016). Rural livelihood diversification and household well-being: Insights from Humla, Nepal, *Journal of Rural Studies*, 44 (1), 239-249. https://doi.org/10.1016/j.jrurstud.2016.02.001

Genovese M, Crisaf F, Denaro R et al (2014) Effective bioremediation strategy for rapid in situ cleanup of anoxic marine sediments in mesocosm oil spill simulation. *Frontiers in Microbiology*, 5, 162. https://doi.org/10.3389/fmicb.2014.00162

Habib, N., Alauddin, M., Cramb, R. & Rankin, P. (2022). A differential analysis for men and women's
determinants of livelihood diversification in rural rain-fed region of Pakistan: An ordered logit model (OLOGIT) approach,

Social Sciences & Humanities Open, 5 (1), 100257. https://doi.org/10.1016/j.ssaho.2022.100257

Habib, N.; Ariyawardana, A.; Aziz, A. A. (2023). The influence and impact of livelihood capitals on livelihood diversification strategies in developing countries: a systematic literature review. Environmental Science and Pollution Research, 30, 69882–69898 1–17, https://doi.org/10.1007/s11356-023-27638-2

Haggblade S, Hazell P, & Reardon T. (2010) The rural non-farm economy: prospects for growth and poverty reduction. *World Development*, 38 (10), 1429-1441 https://doi.org/10.1016/j.worlddev.2009.06.008

Harvey, C. A., Rakotobe, Z. L., Rao, N. S., Dave, R., Razafimahatratra, H., Rabarijohn, R. H., ... & MacKinnon, J. L. (2014). Extreme vulnerability of smallholder farmers to agricultural risks and climate change in Madagascar. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 369(1639), 20130089. https://doi.org/10.1098/rstb.2013.0089

Helmy, I. (2020) : Livelihood diversification strategies: resisting vulnerability in Egypt, GLO Discussion Paper, No. 441, Global Labor Organization (GLO), Essen. https://hdl.handle.net/10419/210455

Hilson, G. (2016). Farming, small-scale mining and rural livelihoods in Sub-Saharan Africa: A critical overview. *The Extractive Industries and Society*, 3 (1), 547–563.
https://doi.org/10.1016/j.exis.2016.02.003

Johny, J., Wichmann, B. & Swallow, B.M. (2017). Characterizing social networks and their effects on income diversification in rural Kerala, India, World Development, 94, 375-392, https://doi.org/10.1016/j.worlddev.2017.02.002.

Kassa, W. A. (2019). Determinants and challenges of rural livelihood diversification in Ethiopia: Qualitative review. *Journal of Agricultural Extension and Rural Development,* 11(2), 17-24. https://doi.org/10.5897/JAERD2018.0979

Kusters, K. (2010). Which role for the non-farm sector in a forested landscape? Lessons From Krui, Indonesia, University of Amsterdam and Centre for International Forestry Research.

Igwe A. P. (2013). Rural Non-farm livelihood diversification and poverty reduction in Nigeria. A thesis submitted to the University of Plymouth for the award of the degree of Doctor of Philosophy (PhD) in Business with Management. School of Management (Plymouth Business School), University of Plymouth, United Kingdom.

Idemudia, U. (2014). Corporate-community engagement strategies in the Niger Delta: Some critical reflections. *The Extractive Industries and Society*, 1 (2), 154-162. http://dx.doi.org/10.1016/j.exis.2014.07.005

Jiao, X., Pouliot, M., & Walelign, S. (2017). Livelihood strategies and dynamics in rural Cambodia, *World Development*, 97 (1), 266-278, https://doi.org/10.1016/j.worlddev.2017.04.019

Kassie, G., Kim, S., & Fellizar, F. (2017) Determinant factors of livelihood diversification: Evidence from Ethiopia*, Cogent Social Sciences*, 3(1), 1-16. https://doi.org/10.1080/23311886.2017.1369490

Loison, S.A. (2015) Rural livelihood diversification in sub-saharan Africa: A literature review, The *Journal of Development Studies*, *51*:9, 1125-1138. https://doi.org/10.1080/00220388.2015.1046445

Martin, S. & Lorenzen, K. (2016). Livelihood diversification in rural Laos, *World Development*, *83* (1), 231-243, https://doi.org/10.1016/j.worlddev.2016.01.018

Mellor, J.W. (1963). The use and productivity of farm family labor in early stages of agricultural development, *American Journal of Agricultural Economics, Agricultural and Applied Economics Association*, 45(3), 517-534. https://ideas.repec.org/a/oup/ajagec/v45y1963i3p517-534..html

Memon, M.H., Ali, M. & Khalil, S. (2020). Determinants of income diversification in flood-prone rural Pakistan, *International Journal of Disaster Risk Reduction*, *50*, 101914, https://doi.org/10.1016/j.ijdrr.2020.101914

Mulwa, C. & Visser, M. (2020). Farm diversification as an adaptation strategy to climatic shocks and implications for food security in northern Namibia, *World Development*, 129 (1) https://doi.org/10.1016/j.worlddev.2020.104906

Nguyen, D. L.; Nguyen, T. T.; Grote, U. (2023). Shocks, household consumption, and livelihood diversification: a comparative evidence from panel data in rural Thailand and Vietnam. *Economic Change*

and Restructuring: Empirical and Policy Research on the Transitional and Emerging Economies,* 56 (5), 3223–3255, https://doi.org/10.1007/s10644-022-09400-9

Nkpaa KW, Onyeso GI, Achugasim O (2017) Heavy metals levels in shellfish from Bodo City and B-Dere, Ogoniland, Rivers State, Nigeria, and evaluation of possible health risks to consumers. *Sustainable Water Resources Management*, 3, 83–91. https://doi.org/10.1007/s40899-017-0096-5

Obida, C., Blackburn, G., Whyatt, J. & Semple, K. (2021). Counting the cost of the Niger Delta's largest oil spills: Satellite remote sensing reveals extensive environmental damage with >1million people in the impact zone, *Science of the Total Environment*, 775, https://doi.org/10.1016/j.scitotenv.2021.145854

Onyena, A. & Sam, K. (2020). A review of the threat of oil exploitation to mangrove ecosystem: Insights from Niger Delta, Nigeria, *Global Ecology and Conservation*, 22 (1), 1-13. https://doi.org/10.1016/j.gecco.2020.e00961

Pace, N., Sebastian, A., Daidone, S., Campos, A.P., Prifti, E. & Davis, B. (2022). Cash transfers' role in improving livelihood diversification strategies and well-being: short- and medium-term evidence from Zimbabwe, *World Development, 154*, 105874, https://doi.org/10.1016/j.worlddev.2022.105874

Pérez, C.V., Bilsborrow, R. & Torres, B. (2015). Income diversification of migrant colonists vs. indigenous populations: Contrasting strategies in the Amazon, *Journal of Rural Studies*, 42, 1-10, https://doi.org/10.1016/j.jrurstud.2015.09.003

Pupovac, S., & Moerman, L. (2022). Bringing Shell and Friends of the Earth on stage: A one-act spectacle of oil spills in the Niger Delta, *Critical Perspectives on Accounting*, 85 (1), https://doi.org/10.1016/j.cpa.2020.102264

Reardon, T., Berdegué, J., Barrett, C. B., & Stamoulis, K. (2007). Household income diversification into rural non-farm activities. In Haggblade, S. Hazell, P. & Reardon. T. (Eds.), Transforming the rural non-farm economy: opportunities and threats in the developing world, 115-140. Johns Hopkins University Press

Roscher, M. B., Mills, D.J., Eriksson, H., Hellebrandt, D. & Andrew N.L. (2022) Sustainable development outcomes of livelihood diversification in small-scale fisheries. *Fish & Fisheries, 23* (4), 910–925. https://doi.org/10.1111/faf.12662

Sallawu, H., Tanko, L., Nmadu, J. N., & Ndanitsa, A. M. (2016). Determinants of income diversification among farm households in Niger State, Nigeria. *Russian Journal of Agricultural and Socio-Economic Sciences, 50*(2), 55-65.

Sam, K., Zabbey, N., Vincent-Akpu, I.F. Komi, G., Onyagbodor, P.O. & Babatunde B.B. (2024). Socio-economic baseline for oil-impacted communities in Ogoniland: towards a restoration framework in Niger Delta, Nigeria. *Environmental Science Pollution Resources*, 31, 25671–25687. https://doi.org/10.1007/s11356-024-32805-0

Sekunmade, A. & Osundare, F. (2014). Determinants and Effect of Livelihood Diversification on Farm Households in Ekiti State, Nigeria. *Journal of Economics and Sustainable Development*, *5*(5), 104-110. https://www.iiste.org/Journals/index.php/JEDS/article/viewFile/11562/11905

Seera S. (2014). Determinants of participation in livelihood diversification among peasant farmers in rural Uganda: A dissertation submitted in partial fulfilment of the requirement for the award of degree of masters of Art in population and development of Makere University, Uganda.

Seifu, M., Haji, J., Keno, T. & Diriba, D. (2023). Determinants of non-farm livelihood diversification: evidence from farmers in Ilu Abba Bora zone, Southwestern Ethiopia. *SN Business & Economics*, 3 (8). https://doi.org/10.1007/s43546-023-00520-6

Teweldebrihan, M.D., Gebehiwot, T., Teklewold, H., Dinka, M.O., Abera,W. & Tamene, L. (2023),
Understanding the role of push and pull factors on agricultural land expansion: A case study of Adaba and Adiyo district, Ethiopia, *Environmental Challenges*, 11, https://doi.org/10.1016/j.envc.2023.100714

Uduji, J.I., Okolo-Obasi, E.N., Asongu, S.A. (2021). Oil extraction in Nigeria's Ogoniland: The role of corporate social responsibility in averting a resurgence of violence, *Resources Policy*, 70(1). https://doi.org/10.1016/j.resourpol.2020.101927

Ukhurebor, K., Ngonso, B., Egielewa, P., Cirella, G., Akinsehinde, B., & Balogune, V. (2023).

Petroleum spills and the communicative response from petroleum agencies and companies: Impact assessment from the Niger Delta Region of Nigeria, *The Extractive Industries and Society*, 15 (1), https://doi.org/10.1016/j.exis.2023.101331

UNCTAD. (2015). The Least Developed Countries: Report 2015: Transforming Rural Economies. UN.

Vroom, V. H. (1964). Work and motivation. San Francisco: Jossey-Bass.