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ARAŞTIRMA MAKALESİ **RESEARCH ARTICLE**

Impact of National Fadama Development Project III on Wellbeing of Farming Households in Delta State, Nigeria

Ogheneakpobor OYIBO[1*], Florence Amara UZOKA[2], Festus Udoka UCHEGBU[3]

Abstract

National *fadama* development project (NFDP) III has been implemented by the World Bank, Federal and states Governments of Nigeria to resolve, among others, issues relating to wellbeing. However, NFDP III extent of contribution to farming households' wellbeing has not been sufficiently researched. Thus, this research looked into NFDP III impact on wellbeing of farming households in Delta State, Nigeria. Multi-stage sampling procedure was used to select 108 respondents (NFDP III beneficiaries). Interview schedule was used to obtain data on respondents demographic and enterprise characteristics, participation status in NFDP III, food security, reduced vulnerability to poverty, livelihood outcome and wellbeing. Data were analyzed with descriptive statistics, Chi-square, Pearson Product Moment Correlation, independent samples t-test, and multiple linear regression at $\alpha_{0.05}$. Majority were females (54.6%), married (75.9%) and non-members of social groups (52.8%). Crop farming/production (59.3%) was the predominant` non-NFDP III enterprise. The mean extension contact per year, farm size, farming experience, income from NFDP III enterprises and income from Non-NFDP III enterprises were 3.0 ± 4.0 yearly, 2.8 ± 4.3 ha, 27.0 ± 14.0 years, ₦2,442,022.00 ± 1,897,935.00 yearly, and ₦2,257,828.00 ± 3,925,102.00 yearly, respectively. Approximately 58.0% of the beneficiaries had inadequate participation in NFDP III, 54.6% were food secure, 53.7% had less vulnerability to poverty and 52.8% had high livelihood outcome. Over 56.0% had high wellbeing. The food security of farming households with high (34.4 ± 9.0) and low (29.3 ± 8.6) participation in NFDP III differed significantly (t=-2.96). Farming households with high participation (-2.9 ± 9.4) in NFDP III had less vulnerability to poverty than those with low participation (-7.3 ± 12.9). Farming households with high participation (34.3 ± 12.5) in NFDP III had high livelihood outcome than those with low participation (26.9 ± 14.1). Membership of social group (χ^2 = 7.48), reduced vulnerability to poverty (r = 0.18), and income from non-NFDP III enterprises (r = 0.18) were all positively correlated with NFDP III beneficiaries wellbeing. Wellbeing of farming households with high (89.8±19.48) and low (81.2±20.86) participation in NFDP III differed significantly (t=-2.18). Predictors of wellbeing were mostly food security (β=-4.79), vulnerability to poverty (β=-2.75), livelihood outcome (β=4.65) and participation status (β=0.43). Farming households with high participation in NFDP III had better wellbeing than those with low participation. NFDP III improved the wellbeing of farming households in Delta State, Nigeria.

Keywords: Food security, Household wellbeing, Livelihood outcome, Participation, Vulnerability to poverty, *Fadama*

[1]***Sorumlu Yazar/Corresponding Author:** Ogheneakpobor Oyibo, Department of Agricultural Extension, Delta State University, Abraka, Nigeria. E-mail: oyibo3176@stu.ui.edu.ng, o_ogheneakpobor@delsu.edu.ng OrcID: 0000-0002-5719-3486

[2]Florence Amara Uzoka, Department of Home Economics, Federal College of Education (Technical), Asaba, Nigeria. E-mail: oyiboakpos@yahoo.com OrcID: 0009-0001-7034-6555

[3]Festus Udoka Uchegbu, Department of Agricultural Education, Federal College of Education (Technical), Asaba, Nigeria. E-mail: scorpionachiever05@gmail.com OrcID: 0009-0004-6024-3976

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1. Introduction

In the world today, poverty is one of the gravest challenges facing mankind, as it threatens survival. A staggering 40 per cent of the world's population lives with the reality and/or threat of extreme poverty (Khan, 2020), with one in five persons living in a state of abject poverty. In developing countries, it is the major challenge facing the citizen. This is evident in more than a billion people in rural areas of developing countries, including Nigeria, living on less than a dollar per day (Banerjee and Duflo, 2011) with approximately 186 million living in sub-Saharan Africa-SSA. In Nigeria, poverty is widespread and severe (World Bank, 2015). In the country, there is protracted state and rate of increasing poverty status over time (Akinsola et al., 2025; Adewale et al., 2024). This is evident in about two-thirds of the Nigerian people being poor (National Planning Commission, 2017). Globally, the country rank 158 out of 189 countries on the United Nations Development Programme-UNDP Human Development Index-HDI (Khan, 2020), thus, the country is among the 26 poorest countries in the world.

In Nigeria, empirical data has established that low productivity in agriculture is the cause of high incidence of poverty (World Bank, 1996). Hence, in order to deal with the challenges of high poverty incidence among the rural poor, it is imperative that agriculture and/or agricultural productivity should be focused on (Khan, 2020). This is because agriculture is the principal source of livelihood in the rural areas of the country, thus rendering it an essential part of initiatives aimed at eradicating poverty. The World Bank (2010) reported that in spite of agricultural relegation as the mainstay of the Nigeria economy in terms of export and trade, between 2000 and 2009, the country's agricultural sector continued to employ a sizable percentage of the labor force and generate an average of 40% of Gross Domestic Product-GDP annually.

In view of the usefulness of agriculture in poverty reduction, the Nigeria's Federal Government since independence has made a number of actions to utilize it as a means of reducing poverty. For the purpose of agricultural and rural development as well as poverty reduction, Nigeria's government introduced several programmes and/or projects to enhance the performance of the agricultural sector (Oyibo and Ovharhe, 2016; Zanna, 2000). The Federal Government of Nigeria-FGN took steps to ensure that the farming community through the improvement of agriculture and agricultural technologies can be empowered through relevant policies, programs, projects and even financial aids (kainga et al., 2018). These steps include, among others, the National *Fadama* Development Project (NFDP) introduced in the early 1990s.

The NFDP is a World Bank funded programme, to promote affordable irrigation methods and support year-round crop cultivation and/or production. It is an intervention for development of agriculture that primarily aims to improve rural livelihood by providing smaller-holder agriculturalist with the resources, assets and inputs, they need to increase crop cultivation and production of food. The intervention began in 1993 with the use of inexpensive gasoline-powered pumps to extract water from the shallow ground for irrigation in the *Fadama*. *Fadama* is a *Hausa* term that implies "irrigable land and low-lying flood plains along Nigeria's major river systems" (Khan, 2020). It also refers to "a seasonally flooded area used for farming during the dry season". It, although a *Hausa* term, has gained so much acceptance in Nigerian agriculture terminology that donor organizations now utilize it as the title of interventions that deal with artificial water supplies for farming, particularly during the dry season. Phases of *Fadama* interventions are referred to by their respective names, *Fadama* I, II, and III. *Fadama* I, 1993-1999; *Fadama* II, 2003-2007; and *Fadama* III, 2008-2014.

The NFDP phase III has been implemented by the World Bank and Nigeria's Federal *vis a vis* states Governments. The Federal Ministry of Agriculture and Water Resources in close coordination with the Federal Ministry of Environment as well as other Federal and State government ministries, local governments and important stakeholders (donors, private operators, nongovernmental organizations-NGOs) developed the extensive five-year action program known as the *Fadama* III Project (Esheya, 2024). The NFDP III is a tripartite funded intervention by the World Bank, FGN and participating states with objectives targeted towards better wellbeing and poverty reduction (Ike, 2012). It is channeled to the improvement of the living standard of farmers and to a great extent alleviates their poverty (Kainga et al., 2018; Esu and Adesope, 2012). It aimed at poverty reduction by improving the poor rural dwellers living standards with emphasis on their participation and increase access to rural infrastructure (Bala and Murtala, 2020). It also aimed at sustainably increasing the income of beneficiaries by efficiently and effectively delivering resources to the rural communities of participants, and empowering them to collectively decide how resources are allocated and managed for their livelihood activities *vis a vis* participate

in the design and execution of their subprojects (World Bank, 2011). Its goal is to: ensure all-year-round production of food through enhanced use of production technologies, and improve agricultural productivity through *Fadama* irrigation farming along with the use of improved seeds, fertilizer and other relevant inputs (Koyenikan and Ikharea, 2014). Its aims and goals, according to Kolapo et al. (2020) and Osondu et al. (2014), are achieved by directly delivering resources to various interest groups, empowering them through skills and capacity building in order to take collective decision on how to allocate and manage resources effectively for their livelihood activities. The project targets the rural poor, disadvantaged groups, service providers, public and private operators and professional associations operating in the project area. Its components include capacity building, communication and information support, small-scale community-owned infrastructure, advisory service and input support, support to the ADPs, sponsored research, and on farm demonstration, assets acquisition for individual *fadama* users' groups-FUGs and EIGs, project management, monitoring and evaluation.

Issues with livelihood, food security, poverty alleviation, income production, and wellbeing are among the things that *Fadama* III posed to address (NFDP, 2009). However, considering what NFDP (2009), Olaolu (2011), and other researchers have noted about phases I and II *Fadama* initiatives, there are concerns that phase III *Fadama* might fall short of its goals and/or objectives. Many scholars and professionals even believe the program will not be helpful as it will not transmute to wealth, prosperity, and increased output for the rural families. This scenario has left many researchers and policymakers perplexed. Scholars and experts have so far made some attempts to investigate and disseminate pertinent data regarding the NFDP III's success, as detailed in the midterm evaluation report of phase III *Fadama* intervention. There are certain identified knowledge gaps that need to be investigated, namely: beneficiaries' participation level in NFDP III, status of food security and reduced vulnerability to poverty, livelihood outcome, and level of wellbeing. Furthermore, when evaluating the Nigeria's NFDP III, many researchers focused on the financial gains from higher agricultural output and lower production costs, ignoring other aspects like the degree of beneficiaries' participation (Esheya, 2024). Hence, to investigate the concerns that researchers have raised about *Fadama* III and fill the knowledge gap identified, there is need to carry out an assessment study on the NFDP III, particularly as the project has come to an end. In addition, there is dearth of information ascertaining how well met are the goals/objectives of NFDP III.

Wellbeing is viewed generally as a description of the state and/or condition of an individual life situation (Samuel, 2020). It has been found to have an impact on many aspects of people's lives such as social, work and health relationships. The foregoing relationships also have been found to impact on people's wellbeing. According to Saari (2011), there are different conceptualizations of wellbeing, however all these definitions and/or concepts are related to the idea of how good life is or how satisfied any person is with his or her own life. Alloh (2021) noted that as varied as the multiplicity of conceptual considerations for wellbeing, they all arrive at the same primary meaning and/or definition: the quality of life. Wellbeing is conceptually defined by the Organization for Economic Cooperation and Development (OECD, 2011) within the scope of sustainability of the natural/environmental and socioeconomic systems in which people work and live, as well as the people's material living conditions and quality of life. According to the OECD (2011), there has been a focus on using wellbeing as a modern measure of an individual's level of happiness and prosperity. This, according to Alloh (2021), is because wellbeing is becoming more widely accepted as an extensive indicator of how development initiatives affect a person. Wellbeing concept as a gauge of progress or development, is a holistic approach that considers a person's emotional, spiritual, social, physical, material, and economic development (King, 2007). The aforementioned generally provides a comprehensive image and balanced assessment of a person's wellbeing.

Several studies have been carried out on Nigeria's NFDP III. For example, Sanusi et al. (2021) carried out a comparative analysis of *fadama* III beneficiaries and non-beneficiaries poverty status in Kwara State, Nigeria. Adeyemi et al. (2020) assessed the effects of *fadama* III user group participation on food security of rural households in Benue State, Nigeria. Kainga et al. (2018) carried out an assessment of the rate of adoption of improved crop technology in the *fadama* III project in Bayelsa State, Nigeria. However, there is dearth of information on impact of NFDP III on wellbeing of farming households in Delta State, Nigeria. In this light, this study is designed to investigate the impact of NFDP III on wellbeing of farming households. The general objective of the study was to assess the impact of NFDP III on wellbeıng of farmıng households in Delta State, Nıgerıa. The specific objectives were to: describe and examine the demographic and enterprise characteristics of NFDP III beneficiaries, respectively; determine the level of participation in NFDP III; ascertain beneficiaries' farming

household food security status; assess beneficiaries' reduced vulnerability to poverty, and livelihood outcome; and ascertain the level of wellbeing of NFDP III beneficiaries.

Based on the outlined objectives, the following hypotheses stated in the null form were tested in course of the study: there is no significant relationship between NFDP III beneficiaries selected demographic characteristics and their level of wellbeing; selected enterprise features of NFDP III beneficiaries do not significantly correlate with their wellbeing; there is no significant difference between the food security status of beneficiaries with high and low participation in NFDP III; beneficiaries with high and low NFDP III participation levels do not significantly differ in their decreased susceptibility to poverty; there is no significant difference between the livelihood outcome of beneficiaries with high and low participation in NFDP III; there is no significant relationship between food security of NFDP III beneficiaries and wellbeing; NFDP III beneficiaries' decreased susceptibility to poverty and their level of wellbeing do not significantly correlate; there is no significant relationship between livelihood outcome of NFDP III beneficiaries and wellbeing; wellbeing status of beneficiaries with high and low NFDP III participation does not differ significantly; and selected independent variables have no significant impact on the wellbeing status of NFDP III beneficiaries.

2. Materials and Methods

On February 02, 2023, the Ethics Committee of the Department of Agricultural Extension and Rural Development at the University of Ibadan approved the conduct of this study.

2.1. Study area

Nigeria's Delta State served as the study's location. It is located between latitudes 5°00' and 6°30' North of the equator and longitudes 5°00' and 6°45' East of the Greenwich Meridian. Three agro-ecological zones-Delta South, Delta Central, and Delta North-make up the area.

2.2. Population, sampling procedure and sample size

The study population comprised of all farming (cassava, poultry and fish farming) households that participated in NFDP III in Delta State. The study's respondents were selected using the multi-stage sampling procedure. In stage 1, one agro-ecological zone (Delta-North zone) out of the three in the study area was purposively selected based on high predominance of cassava, poultry and fishery enterprises, *Fadama* Community Associations-FCAs and *Fadama* Users Groups-FUGs. In stage 2, from the selected zone, two (2) Local Government Areas-LGAs (*Ukwuani* and *Ndokwa*-West LGAs) that have the highest combination of at least two out of cassava, poultry and fishery enterprises in their FCAs were purposively sampled. In stage 3, FCAs that have the highest combination of at least two each out of cassava, poultry and fishery enterprises and FUGs in the selected LGAs were purposively sampled. The selected FCAs were *Obinomba* and *Umuebu* from *Ukwuani* LGA; and *Otuoma*, *Out-Ofuobi*, *Emu-Uno* progressive, and *Emusadege* from *Ndokwa*-West LGA. The fourth stage involved random sampling of 50% of the FUGs for each of the enterprise under the FCAs initially sampled, using proportionate sampling technique. The final stage involved random sampling of 50% of the group members from their respective FUGs for each of the enterprise. In all 108 farmers were sampled, making a total of 108 respondents (NFDP III beneficiaries).

2.3. Instrument for data collection

Gathering of data took place between January and August 2023. Data in this study were collected from the respondents (NFDP III beneficiaries) by the use of quantitative research methods, which involved the use of pre-tested structured interview schedule. The NFDP III beneficiaries' demographic characteristics, enterprise characteristics, livelihood outcome and wellbeing were captured in the interview schedule. In addition, respondents' level of participation in NFDP III, food security status and reduced vulnerability to poverty were also captured in the interview schedule.

2.4. Measurement of variables

Participation in NFDP III was measured at interval level. Respondents were presented with 32 NFDP III activities, which include, decision making, formulation of FCA and FUG, and taking part in planning of NFDP III activities. From the foregoing mentioned NFDP III activities, respondents were asked to indicate how often and/or frequently they participated in NFDP III activities. This was rated on a 4-point rating scale with scores of 0, 1, 2

and 3 assigned to not at all, to a small extent/ (about 1- 30% of the time), to a moderate extent (about 31 – 69% of the time) and to a large extent (≥ 70% of the time), respectively. For each respondent the scores were added to give an index of participation in NFDP III. The minimum and maximum scores were obtained from the participation index. The mean score was obtained from the participation index and used to categorize beneficiaries into: low participation in NFDP III, scores below the mean; and high NFDP III participation, scores ranging from mean to maximum. Also, the mean score of each participated NFDP III activities item ratings was computed and used to rank the participated NFDP III activities from the most participated to the least participated.

The NFDP III beneficiaries' food security was measured by adapting the FANTA'S Household Food Insecurity Access Scale-HFIAS (of United State Agency for International Development-USAID, 2012). This was measured by providing respondents with a list of 15 food insecurity statements, which was based on fluctuation in the quality (nutrition) and quantity of food for adults and children, and anxiety over food in terms of availability, accessibility and utilization/consumption. The food insecurity statements include go without food for an entire day and night, suffer any illness as a result of the lack of food, unavailability of food to eat due to absence of resources, and sleep at night without food. Response options was rated on a 4-point rating scale with 0, 1, 2 and 3 allocated for always, occasionally, rarely, and never, respectively. The sum score was calculated for the food security score of each respondent. The maximum and minimum scores were obtained. The mean of the composite score was used as a benchmark to categorize the NFDP III beneficiaries' food security into: food secure, scores between mean and above, and food insecure, scores below the mean.

Reduced vulnerability to poverty was operationalized by adapting the reduced vulnerability to poverty of the: reduced vulnerability to poverty index of Adedamola (2016); and reduced vulnerability to poverty scale of Oduntan (2021). Respondents were asked to indicate the effect changes in experiences/factors which can dispose/prevent poverty have had on them and/or their households. This was operationalized by given respondents a list of 18 experiences/circumstances that dispose and/or prevent poverty, which include family connectedness, household unity, farm harvest (output), income from agricultural enterprise, and commodity prices. Respondent were provided with the response options of no changes/not experienced, negative effects, no effects, and positive effects with scores of 0, -2, 1 and 2 allocated, accordingly. Each respondent's scores were added to give a composite reduced vulnerability to poverty index score. The maximum and minimum scores were obtained from the reduced vulnerability to poverty index. The mean of the composite reduced vulnerability index score was obtained and used as a benchmark to categorize respondents into: more vulnerable to poverty, scores below the mean; and less vulnerable to poverty, scores between the mean and maximum.

The study measured food security and reduced vulnerability to poverty domains of livelihood outcome by adapting the two disjointed indicators of livelihood outcome index (as used by Olonibua, 2023), and three-disjointed dimensional framework of livelihood outcome (as used by Oduntan, 2021). The livelihood outcome of each NFDP III beneficiary was obtained by summing the standardized scores of the beneficiary's food security and reduced vulnerability to poverty, to give a composite livelihood outcome index score. The maximum and minimum scores were obtained from the livelihood outcome index. The mean score was obtained from the livelihood outcome index and used to categorize the respondents into: low livelihood outcome category, scores below the mean; and high livelihood outcome category, scores between mean and maximum.

Wellbeing of NFDP III beneficiaries is the study's dependent variable. Several literatures (Eurostat, 2012; Samuel, 2020; Organization for Economic Co-operation and Development-OECD, 2013) have established that wellbeing is multi-dimensional and it deals with several aspects/domains of human life. Hence, several domains/aspects of human life should be taken into consideration when measuring and/or covering wellbeing. However, although the foregoing authors recommended that both objective and subjective dimensions should be taken into account when measuring wellbeing, this study measured subjective wellbeing which place emphasis on respondents' self-evaluation. This study subjectively measured emotional, vitality and health, resilience and self-esteem, positive functioning, environment and security, satisfying life, and social domains of wellbeing by adapting wellbeing framework (of OECD, 2011, 2013 and 2015), multidimensional approach of wellbeing measurement (of Etuk, 2017), and subjective wellbeing measurement approach (of Alloh, 2021). Respondents were asked to respond to a list of 43 statements covering subjective wellbeing dimension and seven wellbeing domains. Always True (AT), Most Times True (MTT), Some Times True (STT) and Never True (NT) were the

response options with corresponding scores of 3, 2, 1 and 0, respectively awarded to positive statements and the reverse for negative statements. The scores were summed for each respondent to give an index of wellbeing. The minimum and maximum scores were obtained from the wellbeing index. The mean score was obtained from the wellbeing index and used as the benchmark to categorize respondents into: low wellbeing, scores below the mean; and high wellbeing, score between the mean and maximum.

2.5. Method of data analysis

Statistical analysis was carried out with the use of Statistical Packages for Social Sciences (SPSS). Data were analyzed using descriptive statistics such as frequency counts, percentages, and mean as well as inferential statistics like multiple linear regression, Pearson Product Moment Correlation-PPMC, Chi square and independent samples t-test. The significant contributors to wellbeing status of NFDP III beneficiaries were determined using multiple linear regression. The model is expressed as:

$$Y = a + b_1X_1 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots + b_n X_n + e \quad \text{(Eq.1).}$$

Where: e = error; X_1, X_2……X_n = regression parameters (independent variables); b_1, b_2…b_n = regression coefficient; a = constant term; and Y = Dependent variable (wellbeing scores).

The model contained the subsequent regression parameters: X_1 = respondents' sex (Male=1, Otherwise=0), X_2 = food security, X_3 = reduced vulnerability to poverty, X_4 = livelihood outcome, X_5 = participation status in NFDP III, X_6 = income from NFDP III enterprises, X_7 = income from non-NFDP III enterprises

3. Results and Discussion

3.1. Demographic characteristics of respondents

The result in *Table 1* shows that majority (54.6%) of the respondents were female. This indicates that in the study area, more female than male participated in and/or were beneficiaries of NFDP III. The meaning is that there was dominance of female over male amongst NFDP III beneficiaries. The finding contradicts that of Ovharhe (2016), who found that the sex distribution of NFDP III beneficiaries is skewed towards male in Nigeria's Niger Delta. Fairly large percentage (75.9%) of the respondents were married (*Table 1*), implying that NFDP III beneficiaries were mature and responsible as marriage suggests maturity and responsibility. The indication is that NFDP III beneficiaries in the research area could live a responsible lifestyle and willingly partake in activities that increase wellbeing as well as take good decisions and make rational choice that will predispose them to improved wellbeing. The result aligns with the result of Sulaiman et al. (2021) that majority (89.3%) of beneficiaries of NFDP III in Kano Sate were married. Also, the result corroborates Adejo et al. (2025) and Oyibo (2020) who found that farmers in Nigeria's Kogi and Delta states were predominantly married, respectively.

According to *Table 1*, 52.8% of respondents were not members of any association or social group, indicating that the majority had no membership. This indicates low level of membership in associations or social groups amongst NFDP III beneficiaries in Delta State. The implication is that NFDP III beneficiaries do not belong to social groups that may posit them for receiving information that is likely to enhance their income generating activities and wellbeing. The average yearly extension contact of NFDP III beneficiaries was 3.0 ± 4.0 yearly. Majority (58.3%) of the respondents had extension contact. NFDP III beneficiaries in Delta State had limited contact with extension personnel, making them less likely to receive essential information on modern production techniques. The result corroborates the finding of Ojile et al. (2024), who, in a study on level of participation in the *Fadama* III additional financing development project, reported that nearly all (96.0%) of farmers cultivating rice had a relatively low level of extension contact with a mean contact with extension agents of 4 yearly. However, the result is not consistent with Oyibo and Odebode (2023) who reported that most farming households (94.5%) had contact with extension agents. *Table 1* reveals that crop farming/production (59.3%), trading (25.0%), animal rearing (14.8%) and artisan (11.1%) were the non-NFDP III enterprises commonly engaged by respondents. This shows that apart from NFDP III enterprises, crop and non-crop livelihood activities were the major livelihood engaged by beneficiaries of NFDP III in the study area. It could also be inferred that crop farming/production, trading and animal rearing were the predominant crop and non-crop livelihood activities engaged by the NFDP III beneficiaries in the study area. The implication is that agricultural and non-agricultural activities were the major non-NFDP III enterprise income activities engaged in by beneficiaries of NFDP III intervention in the study area.

Table 1. Respondents' demographic characteristics

Characteristics	Category	F	%	Mean± SD
Sex	Male	49	45.4	
	Female	59	54.6	
Marital status	Single	3	2.8	
	Married	82	75.9	
	Divorced	4	3.7	
	Widow/widower	19	17.6	
Membership of association/ social group	Non-member	57	52.8	
	Member	51	47.2	
Extension contact per year	No contact	45	41.7	
	1 – 2	48	44.4	3.0 ± 4.0 contacts
	3 – 4	12	11.1	
	> 4	3	2.8	
Non-NFDP III enterprises livelihood activities engaged	Crop farming/production	64	59.3	
	Animal rearing	16	14.8	
	Trading	27	25.0	
	Processing agricultural produce	5	4.6	
	Operating a grinding machine	4	3.7	
	Artisan	12	11.1	
	Teaching	2	1.9	
	House work	1	0.9	
	Civil servant	1	0.9	
	Business	3	2.8	

Source: ***Field Survey, January to June 2023***

3.2. Characteristics of respondents' enterprise

Table 2 reveals that most (36.1%) of the respondents had a total farm size that was greater than 2 ha with a mean of 2.8 ± 4.3 ha. This implies that NFDP III beneficiaries in the study area were small scale farmers, irrespective of the NFDP III enterprises and non-NFDP III crop and animal farming enterprises that the respondents engaged in. Majority (57.4%) of the respondents surveyed had total years of farming experience that was greater than 20 years with a mean of 27.0 ± 14.0 years (*Table 2*). It could be deduced that the NFDP III beneficiaries had high number of years of experience in farming, which could have broadened their experience, skills and knowledge in their NFDP III enterprise and non-NFDP III crop and animal farming enterprises, thereby resulting in increased production and income. Thus, respondents were highly experience in rearing and cultivation of animal and arable crop, respectively. The implication is that the NFDP III beneficiaries likely had higher productivity, risk mitigating and constraints facing abilities, as well as better efficiency in managing time, costs and other factors of agricultural production. Earlier study by Oyibo and Odebode (2024) found that the average farming experience was 17 ± 12 years among farming households in Nigeria's Niger-Delta area.

The result in *Table 2* reveals that majority (50.6.5%) of the respondents realized/earned greater than ₦1,600,000 per annum from NFDP III enterprises with a mean of ₦2,442,022.00 ± 1,897,935.00 yearly. The mean annual income realized translates to ₦203,502.00 ± 158, 161.00 income made by the respondents per month from NFDP III enterprises. This amount is far higher than the current monthly minimum wage being paid by Nigerian civil service and the average private sector employer of labour for people with OND/NCE and HND/B.Sc (Oyibo, 2021). It could be inferred that most of the beneficiaries earn, from their NFDP III enterprises, above the monthly minimum wage of ₦70,000 for Nigeria's civil and public servants as well as the average private sector employees. The annual average income from NFDP III enterprises is considerably appreciable and high when compared with what is obtainable among other NFDP III farming households within Nigeria. Yohanna et al. (2021) and Kainga et al. (2018) found the average yearly income from *Fadama* beneficiaries in Nigeria's Kaduna and Bayelsa states to be ₦1,226,646 and ₦1,347,210.79, respectively. This implies that the beneficiaries had considerably high and appreciable income from NFDP III enterprises. The implication is that in NFDP III intervention, both the cassava, poultry and fish farmers had increased income. The distribution of the respondents by yearly income from non-NFDP III enterprises reveals that 47.3% of the respondents realized more than ₦800,000.00 yearly, while 19.4% of the respondents did not engaged in any non-NFDP III enterprise activities (*Table 2*). The respondents had the mean yearly income of ₦2,257,828.00 ± 3,925,102.00 from non-NFDP III enterprises. This suggests that most of the NFDP III beneficiaries may have the capacity to supplement their households' income with regard to income realized from non-NFDP III livelihood activities. This suggests that NFDP III beneficiaries may earn enough income to cater for households, hence may have high wellbeing.

Table 2. Characteristics of respondents' enterprise

Characteristics	Category	F	%	Mean ± SD
Total farm size (hectares)	≤ 1	33	30.6	
	1.01 – 2.00	36	33.3	2.8 ± 4.3
	2.01 – 3.00	16	14.8	
	> 3	23	21.3	
Total farming experience (years)	1 – 10	18	16.7	
	11 – 20	20	25.9	27.0 ± 14.0
	> 20	62	57.4	
Annual income from NFDP III enterprises (₦)	≤ 800000	11	10.2	
	800001 – 1600000	36	33.3	2,442,022.00 ± 1,897,935.00
	1600001 – 2400000	22	20.4	
	> 2400000	39	36.1	
Annual income from non-NFDP III enterprises (₦)	None	21	19.4	
	≤ 800000	36	33,3	
	800001 – 1600000	16	14.8	2,257,828.00 ± 3,925,102.00
	1600001 – 2400000	15	13.9	
	> 2400000	20	18.5	

Note: ₦ = **Naira. Source:** Field Survey, January to June 2023

3.3. Participation in NFDP III

Table 3 reveals result of respondents' participation in NFDP III activities. The results reveal that most (42.6%) of the beneficiaries agreed that they always took part in decision making, while 36.1% of them occasionally took part. Taking part in making decisions (2.08±1.02) ranked highest on the list of NFDP III activities. The result reflects the fair status of beneficiaries of NFDP III in terms of participation in decision making activity. This finding is consistent with Olusegun (2021) results, who in a study on effectiveness of cassava outgrower scheme, found that 73.8% of the beneficiaries agreed to have participated in making decisions about the scheme. The results further reveal that most (43.5%) of the beneficiaries indicated that they occasionally participated in formulation of FCA and FUG, while 32.4% of them participated always. Participation in formulation of FCA and FUG ranked second (1.99±0.92) amongst all the NFDP III activities. This result suggests that respondents' participation in formulation of FCA and FUG was relatively low. This result contradicts Esheya (2024), who reported that farmers, in *Fadama* III additional financing project, actively participated in formation of farmers group.

Table 3. Distribution of respondents by participation in NFDP III

Participation in NFDP III activities	LE	ME	SE	NA	Mean	R
Decision making/taking	46 (42.6)	39 (36.1)	9 (8.3)	14 (13.0)	2.08±1.02	1
Formulation of FCA and FUG	35 (32.4)	47 (43.5)	16 (14.8)	10 (9.3)	1.99±0.92	2
FUG/Economic interest groups	32 (29.6)	46 (42.6)	12 (11.1)	18 (16.7)	1.85±1.03	3
Taking part in planning of NFDP III activities	33 (30.6)	43 (39.8)	10 (9.3)	22 (20.4)	1.81±1.09	4
Training of *Fadama* users' group	32 (29.6	38 (35.2)	14 (13.0)	24 (22.2)	1.72±1.12	5
Needs assessment/farmers needs identification (local consultation meetings to identify and select the needed infrastructure to be funded by the project)	29 (26.9)	34 (31.5)	22 (20.4)	23 (21.3)	1.64±1.10	6
Training (skills building)	12 (11.1)	51 (47.2)	18 (16.7)	27 (25.0)	1.44±0.99	7
On farm demonstrations	20 (18.5)	41 (38.0)	14 (13.0)	33 (30.6)	1.44±1.11	7
Training of *Fadama* community association	18 (16.7)	17 (15.7)	18 (16.7)	43 (39.8)	1.42±1.03	9
Advisory services	8 (7.4)	51 (47.2)	21 (19.4)	28 (25.9)	1.36±0.95	10
Collective decision on how resources are allocated and managed	10 (9.3)	18 (16.7)	10 (9.3)	70 (64.8)	1.34±1.24	11
Acquisition of productive assets for members	7 (6.5)	19 (17.6)	18 (16.7)	64 (59.3)	1.30±1.11	12
Leadership	18 (16.7)	37 (34.3)	11 (10.2)	42 (38.9)	1.29±1.15	13
Advisory services (Fadama advisory services)	11 (10.2)	30 (27.8)	9 (8.3)	58 (53.7)	1.23±1.13	14
Implementation of FCAs and FUGs subprojects	32 (29.6)	46 (42.6)	12 (11.1)	18 (16.7)	1.11±1.22	15
Marketing information (Prices, production and harvesting)	16 (14.8)	26 (24.1)	18 (16.7)	48 (44.4)	1.09±1.13	16
Advisory service and input support	16 (14.8)	26 (24.1)	18 (16.7)	48 (44.4)	1.08±1.19	17
Training to identify the needed infrastructure	20 (18.5)	41 (38.0)	14 (13.0)	33 (30.6)	1.05±1.20	18
Agri-business management	9 (8.3)	37 (34.3)	10 (9.3)	52 (48.1)	1.03±1.08	19
Workshop	6 (5.6)	35 (32.4)	20 (18.5)	47 (43.5)	1.00±1.00	20
Training to execute and manage small-scale development project in the community	10 (9.3)	19 (17.6)	14 (13.0)	65 (60.2)	1.00±1.09	20
Implementation/execution of project and/or sub-project	11 (10.2)	20 (18.5)	9 (8.3)	68 (63.0)	0.98±1.15	22
Project implementation	20 (18.5)	26 (24.1)	8 (7.4)	54 (50.0)	0.94±1.06	23
Small scale community-owned infrastructure	11 (10.2)	30 (27.8)	9 (8.3)	58 (53.7)	0.94±1.11	23
Agricultural produce processing and management	12 (11.1)	25 (23.1)	14 (13.0)	57 (52.80	0.93±1.10	25
Monitoring visits to FCA and FUG sub-projects	4 (3.7)	19 (17.6)	33 (30.6)	52 (48.1)	0.85±1.10	26
Project commissioning/launch	6 (5.6)	27 (25.0)	12 (11.1)	63 (58.3)	0.78±1.01	27
Providing seed money to acquire productive assets	4 (3.7)	19 (17.6)	33 (30.6)	52 (48.1)	0.77±0.87	28
Project management, monitoring and evaluation	10 (9.3)	19 (17.6)	14 (13.0)	65 (60.2)	0.76±1.05	29
Human, material and environmental resources management	11 (10.2)	20 (18.5)	9 (8.3)	68 (63.0)	0.76±1.08	30
Design of project and/or sub-project	9 (8.3)	37 (34.3)	10 (9.3)	52 (48.1)	0.71±0.98	31
Identify new or improved marketing opportunities	10 (9.3)	18 (16.7)	10 (9.3)	70 (64.8)	0.70±1.05	32

Note: LE= Large extent, ME = Moderate extent, SE = Small extent, NA = Not at all. R= Rank. Values in parentheses are percentage scores.

Regarding FUG/economic interest groups, the results in *Table 3* reveal that more (42.6%) of the beneficiaries indicated to occasionally participated in FUG/economic interest groups, while a little above one-fourth (29.6%) of the beneficiaries always participated. Participation in FUG/economic interest groups (1.85±1.03) rank third on the list of NFDP III intervention activities. The results reflect the relatively low status of NFDP III beneficiaries with respect to participation in FUG/economic interest groups. In terms of taking part in planning of NFDP III activities, 39.8% of the beneficiaries indicated they occasionally took part in planning of NFDP III activities, while a little above one-quarter (30.6%) of them always took part. Taking part in planning NFDP III activities (1.81±1.09) ranked fourth amongst NFDP III activities. It could be deduced that the NFDP III beneficiaries did not highly participate in planning of NFDP III activities. This result agreed with Koyenikan and Ikharea (2018) who reported that NFDP III beneficiaries participated in preparation of local development plans, however, they highly participated with a mean score of 2.79 ± 0.44.

Furthermore, more (35.2%) beneficiaries were occasionally involved in training of *Fadama* users' group, 29.6% of them involved always. Training of *Fadama* users' group ranked 5th (1.72±1.12) on the list of NFDP III activities participated. This result disagreed with Esheya (2024), who found that farmers, in Fadama III additional financing project, actively participated in training/workshop. Participation in needs assessment/identification ranked sixth (1.64±1.10) on the list, with 31.5% and 26.9% of the respondents indicating that they occasionally and always participated in needs assessment/identification, respectively. These results show that NFDP III beneficiaries had a marginally fair participation in needs assessment/identification and training of *Fadama* users' group. This contradicts Koyenikan and Ikharea (2018) who reported that NFDP III beneficiaries highly participated in needs assessment in Nigeria's Edo State; participation in needs assessment ($\bar{x}$=2.95) ranked highest on the list of NFDP III activities.

3.4. Categorization of respondents based on participation in NFDP III

Table 4 shows that fairly large percentage (58.3%) of respondents had low participation in NFDP III. This implies that there was inadequate participation of respondents in NFDP III in the study area, which is suggestive that the beneficiaries did not fully participated in the NFDP III intervention. The implication is that the beneficiaries channeled relatively low time, energy, efforts, attention and resources into the NFDP III intervention. This result contradicts Olusegun (2021) who reported high participation in cassava outgrower scheme. The low participation in NFDP III is expected to affect respondents' food security, reduced vulnerability to poverty, livelihood outcome and subsequently wellbeing.

Table 4. Categorization of respondents based on participation in NFDP III

Participation in NFDP III	Frequency	Percentage	Minimum	Maximum	Mean	SD
Low (12.00 – 38.40)	63	58.3	12.00	81.00	38.41	16.38
High (38.41 – 81.00)	45	41.7				

Note: SD = Standard deviation. **Source:** Field Survey, January to June 2023

3.5. Food security

Table 5 present the NFDP III beneficiaries' household food security. The results reveal that 98.1% of the respondents agreed that they and their households had never gone a whole day and/night without eating due to lack of food. Never go without food for an entire day and night (2.94±0.41) ranked highest amongst all the food security statements. The finding shows that most of the respondents had the means and/or ability to provide/obtain daily household food. The implication is that the most/greatest aspect of household food security among NFDP III participants related to daily food availability and affordability; that is, households having food to eat daily. This is quite good, because of the importance of eating daily to the health and wellbeing of households. This result is in tandem with the findings of Eforuoku (2018), who, in a study on dietary intake, found that 61.9% of farming household agreed to have never gone a whole day and night without eating because of not having enough food, that is food unavailability. The results also reveal that never suffered any illness in recent times due to no enough food (2.52 ± 0.67) ranked second on the list of food insecurity, with the majority (82.4%) of the respondents agreeing they had never suffered any illness in recent times due to no enough food. This finding reveals that most of the respondents not only had accessibility but availability of enough food. This result also suggests that being healthy due to adequate food consumption, which is a very basic essential for humans, is not a problem for NFDP III beneficiaries. The implication is that one of the greatest aspect of household food security among NFDP III

beneficiaries related to food availability, accessibility and consumption; that is, having enough food. In addition, the result implies that respondents were mostly food secured in terms of access to sufficient quantity of food. This result agrees with the finding of Olonibua (2023), who, in a study on livelihood outcome, reported that 52.3% agreed they and/or their households had never suffered any illness because of the lack of food.

Table 5. Distribution of respondents by food security

Categories	A	O	R	N	Mean	R
Go without food for an entire day and night	2 (1.9)	0 (0.0)	0 (0.0)	106 (98.1)	2.94±0.41	1
Suffer any illness because of the lack of food	1 (0.9)	5 (4.6)	13 (12.0)	89 (82.4)	2.76±0.58	2
No food to eat because of lack of resources	1 (0.9)	6 (5.6)	12 (11.1)	89 (82.4)	2.75±0.60	3
Sleep at night without food	2 (1.9)	11 (10.2)	16 (14.8)	79 (73.1)	2.59±0.75	4
Do anything would not like to do to get food	4 (3.7)	26 (24.1)	12 (11.1)	66 (61.1)	2.30±0.96	5
Fear about not having enough food supply	13 (12.0)	23 (21.3)	6 (5.6)	66 (61.1)	2.16±1.14	6
Able to afford food that would like to eat	37 (34.3)	50 (46.3)	9 (8.3)	12 (11.1)	2.04±0.94	7
Worry about not being able to afford food items needed	12 (11.1)	36 (33.3)	6 (5.6)	54 (50.0)	1.94±1.13	8
Eat some foods that really didn't want to eat due to lack of resources	3 (2.8)	49 (45.4)	13 (12.0)	43 (39.8)	1.89±0.98	9
Consume smaller meals	18 (16.7)	29 (26.9)	9 (8.3)	52 (48.1)	1.88±1.19	10
Eat fewer meals in a day because of lack of resources	3 (2.8)	53 (49.1)	10 (9.3)	42 (38.9)	1.84±0.99	11
Eat food that really do not like to eat	14 (13.0)	41 (38.0)	9 (8.3)	44 (40.7)	1.77±1.12	12
Worry that household would not have food	16 (14.8)	42 (38.9)	7 (6.5)	43 (39.8)	1.71±1.14	13
Unable to eat preferred kind of foods because of lack of resources	19 (17.6)	49 (45.4)	9 (8.3)	31 (28.7)	1.48±1.09	14
Eat limited variety of foods due to lack of resources	18 (16.7)	53 (49.1)	14 (13.0)	23 (21.3)	1.39±1.00	15

Note: A= Always, O= Occasionally, R = Rarely, N = Never. R= Rank. Values in parentheses are percentage scores. **Source:** Field Survey, 2023

3.6. Categorization of respondents based on food security

Table 6 reveals that of the respondents, slightly more than half (54.6%) were food secure. It could be inferred that NFDP III beneficiaries in the study area had food security. The indication is that most respondents did not experienced periods when quantity of households' food were unavailable, and there was not enough money to buy the quantity of needed food. The food security may be due to the NFDP III intervention in terms of participation, as beneficiaries' exposure to NFDP III might have enhanced their agricultural and/or food production, income and ultimately food security. The food security is expected to affect respondents' livelihood outcome and subsequently wellbeing. The result disagreed with Yusuf and Olagunju (2025) who found that majority (53.6%) of *Fadama* III beneficiaries' household in Tsafe local government of Zamfara State were marginally food secure. However, the result is in line with Olaitan et al. (2024) who reported that 59.0% of participants in *Fadama* III development project were food secure. This also corroborates the study of and Adeyemi et al (2020) who found food secure among majority of *Fadama* III beneficiaries.

Table 6. Categorization of respondents based on food security

Food security	Frequency	Percentage	Minimum	Maximum	Mean	SD
Food insecure (11.00 – 31.43)	49	45.4	11.00	45.00	31.44	9.07
Food secure (31.44 – 45.00)	59	54.6				

Note: SD = Standard deviation. **Source:** Field Survey, January to June 2023

3.7. Reduced vulnerability to poverty

Table 7 reveals that majority (52.8%) of the respondents experience change in family connectedness; 46.3% reported that change in family connectedness had positive effects, while 6.5% reported negative effects. Change in family connectedness (0.80±1.22) rated highest amongst all the factors that predispose to reduced vulnerability to poverty. The results further show that more than half (54.6%) of the respondents experience changes in household unity; 29.6% and 13.9% of the respondents reported positive effects and no effects of changes in household unity, respectively. Household unity ranked second on the list of experience changes that predispose to reduced vulnerability to poverty with a mean score of 0.51±1.23. In addition, the results reveal that changes in farm harvest and/or output ($\bar{x}$=0.39±1.88) ranked third amongst the listed experience changes that reduce vulnerability to poverty. Fairly large percentage (87.0%) of the respondents indicated they had changes in farm harvest/output; 49.1% reported positive effects of changes in farm harvest/output, while 5.6% had no effects from changes in farm harvest/output. In terms of income from agricultural enterprise, 91.7% of the respondents agreed that they had experience changes in income from agricultural enterprise; 46.3% and 4.6% reported positive effects and no effects of changes in income from agricultural enterprise, respectively. Income from agricultural enterprise ranked fourth (with a mean score of 2.49 ± 0.67) on the list of experience changes that predispose to reduced vulnerability to poverty. The result suggests that beneficiaries of NFDP III have a fair positive effect of changes

in income from agricultural enterprises. This could be because earnings from NFDP III agricultural enterprises were able to prevent their inclination to poverty. This result agreed with Kwon-Ndung et al. (2018) who found that NFDP III beneficiaries had increase in per capital agricultural income, which consequently had a highly significant impact on reduction in poverty. Commodity prices (0.11±1.95) ranked fifth on the list of experience changes that predispose to reduced vulnerability to poverty, with the majority (99.1%) of the respondents agreeing they had experience changes in commodity prices; 48.1% and 5.6% reported that the foregoing had positive effects and no effects of changes, respectively.

Table 7. Distribution of respondents by vulnerability to poverty

Experience changes	PE	NE	NE	NC	Mean	R
Family connectedness	50 (46.3)	0 (0.0)	7 (6.5)	51 (47.2)	0.80±1.22	1
Household unity	32 (29.6)	15 (13.9)	12 (11.1)	49 (45.4)	0.51±1.23	2
Farm harvest (output)	53 (49.1)	6 (5.6)	35 (32.4)	14 (13.0)	0.39±1.88	3
Income from agricultural enterprise	50 (46.3)	5 (4.6)	44 (40.7)	9 (8.3)	0.16±1.88	4
Commodity prices	52 (48.1)	6 (5.6)	49 (45.4)	1 (0.9)	0.11±1.95	5
Access to inputs (e.g. seeds and fertilizer)	24 (22.2)	4 (3.7)	24 (22.2)	56 (51.9)	0.04±1.35	6
Technical skills (access to training)	26 (24.1)	5 (4.6)	46 (42.6)	31 (28.7)	-0.05±1.47	7
Market access	25 (23.1)	6 (5.6)	44 (40.7)	33 (30.6)	-0.30±1.60	8
Indebtedness	11 (10.2)	3 (2.8)	30 (27.8)	64 (59.3)	-0.32±1.21	9
Access to food resources	32 (29.6)	0 (0.0)	54 (50.0)	22 (20.4)	-0.41±1.74	10
Household health/access to healthcare facilities	26 (24.1)	1 (0.9)	50 (46.3)	31 (28.7)	-0.44±1.63	11
Labour affordability	29 (26.9)	0 (0.0)	54 (50.0)	25 (23.1)	-0.46±1.70	12
Crop/livestock health	27 (25.0)	8 (7.4)	63 (58.3)	10 (9.3)	-0.59±1.76	13
Labour unavailability	13 (12.0)	12 (11.1)	51 (47.2)	32 (29.6)	-0.59±1.47	13
Changes in weather parameters (e.g. rainfall, sunshine)	28 (25.9)	9 (8.3)	66 (61.1)	5 (4.6)	-0.62±1.79	15
Post-harvest loss	12 (11.1)	8 (7.4)	63 (58.3)	25 (23.1)	-0.87±1.45	16
Cost of transportation	4 (3.7)	2 (1.9)	97 (89.8)	5 (4.6)	-1.70±0.93	17
Communal clashes	7 (6.5)	4 (3.7)	63 (58.3)	34 (31.5)	-1.00±1.28	18

Note: PE = Positive Effects NE = No Effects, NE = Negative Effects, NC = No Changes, R = Rank. Values in parentheses are percentage scores.

3.8. Categorization of respondents based on reduced vulnerability to poverty

Result in *Table 8* reveals that of the respondents, over half (53.7%) were less vulnerable to poverty. The result implies that NFDP III beneficiaries had relatively less vulnerability to poverty, which invariably might positively influence livelihood outcome and consequently wellbeing. This result is dissimilar to Oduntan (2021) who found that in rural households of Southwestern Nigeria over half were more susceptible to poverty. This result is dissimilar to Edoumiekumo et al. (2013) and Adepoju and Yusuf (2012) who found that 59.73% and 55.7% of households in Nigeria's Bayelsa State and rural South-West were vulnerable to poverty, respectively. The marginally less vulnerability to poverty implies that several NFDP III beneficiaries were not highly and/or more vulnerable to poverty as they experienced changes that positively affected them. The implication is that NFDP III beneficiaries were less predisposed to poverty. The relatively less and/or reduced vulnerability to poverty may be due to the level of participation in NFDP III. In an earlier study in Nigeria's Kaduna State, Yohanna et al. (2021) reported that *Fadama* was able to lift beneficiaries' poverty status up to the poverty line as well as lift those closest to the poverty line out of poverty.

Table 8. Categorization of respondents based on vulnerability to poverty

Vulnerability to poverty	Frequency	Percentage	Minimum	Maximum	Mean	SD
More vulnerable (-32.00 – -5.36)	50	46.3	-32.00	32.00	-5.35	11.72
Less vulnerable (-5.35 – 32.00)	58	53.7				

Note: SD = Standard deviation. **Source:** Field Survey, January to June 2023

3.9. Livelihood outcome of respondents

Table 9 reveals that a little over half (52.8%) of the respondents had high livelihood outcome. It could be deduced that many or more NFDP III beneficiaries were relatively high in their livelihood outcome. This implies that livelihood outcome was marginally high among NFDP III beneficiaries in the study area, which suggests relatively adequate food security and reduced vulnerability to poverty by respondents. The result is in tandem with Olonibua (2023) who reported that most (47.7%) of youth rice farmers of IFAD/VCDP had high livelihood outcome. The implication is that the NFDP III beneficiaries in the Nigeria's Delta State had substantial and appreciable livelihood outcome through the NFDP III intervention. The high livelihood outcome is expected to positively influence and/or affect respondents' wellbeing. The level of participation in NFDP III may have something to do with the relatively high livelihood outcome.

Table 9. Categorization of respondents based on livelihood outcome

Livelihood outcome	Frequency	Percentage	Minimum	Maximum	Mean	SD
Low (0.03 – 29.99)	51	47.2	0.03	66.63	30.00	13.85
High (30.00 – 66.63)	58	52.8				

Note: SD = Standard deviation. **Source:** Field Survey, January to June 2023

3.10. Wellbeing

This section presents the wellbeing of NFDP III beneficiaries in Delta State of Nigeria. *Table 10* show results of respondents' wellbeing with respect to satisfaction with the different aspect of their lives.

3.10.1. Emotional wellbeing

This aspect and/or domain of the respondent's subjective wellbeing is very important as it affects and/or has to do with their state of fear, anger and happiness. Result in *Table 10* reveals that majority of the respondents (65.7%) agreed that they always make other people happy. Making other people happy ranked third (2.49±0.77) amongst all the self-evaluation of satisfaction with various life aspects. As for good feeling toward people around, 64.8% of the respondents agreed they always had a good feeling toward people around them. Good feeling toward people around ranked fourth (2.41±0.93) on the list. Results for these variables suggest that beneficiaries of NFDP III have a fair state of good feeling toward people around as well as making other people happy. This could be because income generation and livelihood outcome due to effectiveness of NFDP III were able to influence their state of good feeling toward people around and making them happy. This is therefore expected to influence their wellbeing. The results are in tandem with the findings of Alloh (2021), who, in a study on wellbeing of rural households, found that 64.7% and most (58.3%) of the respondents indicated that they always liked making others happy and felt positively about those around, respectively. Income generation and livelihood outcome due to effectiveness of NFDP III can help farming households in dealing with emotional wellbeing, particularly making others happy and good feelings towards people around, related emotional state.

3.10.2. Satisfying life (Life satisfaction)

Table 10 shows that respondents' satisfaction with their accommodation (2.19±0.99) ranked fourteenth amongst other items rated, with the majority (57.4%) of the respondents agreeing they always had satisfaction with their accommodation. Result for this variable suggests that farming households who participated in NFDP III have a fair satisfaction with their accommodation. This could be because income generation due to effectiveness of NFDP III were able to attend their accommodation needs. This is therefore expected to impact their wellbeing. The results contradicts the findings of Alloh (2021), who, in a study on wellbeing, found that only 45.7% of farming households were always satisfied with accommodation. Satisfied with life overall ranked nineteenth (2.03 ± 1.02) on the list, with a little below average of respondents (47.1%) agreeing they were always contented with their lives generally, while 13.9% were satisfied most times. This result suggests that satisfied with life overall, which is a very basic satisfying life wellbeing essential for rural dwellers, is relatively not a problem to farming household who are participants of NFDP III. Accommodation and satisfied with life overall is very important to the wellbeing of rural farming households.

3.10.3. Vitality and health

This aspect of the beneficiaries' wellbeing is very important as it affects their health and physical strength. The results in *Table 10* reveal that a little above average (50.9%) of the respondents agreed that they always felt well-rested and healthy, and 13.0% most times felt well-rested and healthy. Feeling well-rested and healthy ranked eighteenth on the list of the forty-two life situations self-evaluation rating with a mean score of 2.14±0.94. In terms of sufficient energy, a little below average (47.4%) of the respondents agreed they always had sufficient energy, and 10.0% sometimes had sufficient energy. Having sufficient energy ranked nineteenth on the list of life situations self-evaluation with a mean of 2.03±0.98. The results imply a fair state of health and physical strength. The implication is that the health status of NFDP III beneficiaries were relatively better off as they did not have adverse health. The result is in tandem with the finding of Samuel (2020), who, in a study on wellbeing, found that 54.9% of youths were satisfied with their physical health.

3.10.4. Resilience and self-esteem

The results in *Table 10* reveal that 75.9% of the respondents agreed that they always felt optimistic about their future. Feeling optimistic about future (2.59±0.77) ranked highest amongst all the listed wellbeing items. This

finding shows that most respondents had positive feelings of resilience. The implication is that NFDP III can help farming households in dealing with resilience related issue.

3.10.5. Positive functioning

This aspect of the beneficiaries' wellbeing relates to feeling accomplished and fulfilled in relation to livelihood activities. Results in *Table 10* reveal that satisfied that respondents' livelihood activities are valued by others (2.54 ± 0.78) ranked second on the list of wellbeing, with the majority (70.4%) of the respondents agreeing they always had satisfaction that what they do is valued by others. In terms of being satisfied that respondents were free to do what they want to do for living, and what they do is valuable and worthwhile to them, 63.9% and 60.2% of the respondents agreed to always satisfied they were free to do their intended livelihood, and their livelihood are valuable and worthwhile to them, respectively. Satisfied with being free to do intended livelihood, and that livelihoods are valuable and worthwhile ranked fifth on the list of self-assessment wellbeing with average values of 2.37 ± 0.90 and 2.37 ± 0.85, accordingly. These findings show that majority of respondents felt satisfied and achieved in regards to accomplishment, ability, attention, self-worthiness and others people's admiration. The implication is that farming households who participated in NFDP III have improved livelihood.

Table 10. Distribution of wellbeing of respondents

Positive functioning wellbeing domain	AT	MTT	STT	NT	Mean	R
Emotional wellbeing domain						
A very joyful individual	60 (55.6)	12 (11.1)	36 (33.3)	0 (0.0)	2.22±0.92	13
Like to bring joy to others	71 (65.7)	19 (17.6)	18 (16.7)	0 (0.0)	2.49±0.77	3
Feel positive about those around me	70 (64.8)	19 (17.6)	12 (11.1)	7 (6.5)	2.41±0.93	4
Feel unhappy occasionally	25 (23.1)	25 (23.1)	50 (46.3)	8 (7.4)	1.62±0.92	34
More of the time, feel sad	14 (13.0)	7 (6.5)	49 (45.4)	38 (35.2)	2.03±0.97	19
Usually afraid	11 (10.2)	7 (6.5)	45 (41.7)	45 (41.7)	2.15±0.94	17
Usually upset	7 (6.5)	11 (10.2)	47 (43.5)	43 (39.8)	2.17±0.86	16
Satisfying life wellbeing domain						
Contented with my life in general	51 (47.2)	15 (13.9)	36 (33.3)	6 (5.6)	2.03±1.02	19
Contented with living and working conditions and the rural setting	46 (42.6)	15 (13.9)	35 (32.4)	12 (11.1)	1.88±1.09	26
Contented with the amount and caliber of meals I consume	40 (37.0)	17 (15.7)	47 (43.5)	4 (3.7)	1.86±0.97	27
Contented with my accommodation	62 (57.4)	8 (7.4)	35 (32.4)	3 (2.8)	2.19±0.99	14
Contented with having communication access	40 (37.0)	14 (13.0)	26 (24.1)	28 (25.9)	1.61±1.23	35
Contented with money I earn from my primary income source	44 (40.7)	13 (12.0)	34 (31.5)	17 (15.7)	1.78±1.15	30
Contented with material, monetary, and human resources	30 (27.8)	29 (26.9)	31 (28.7)	18 (16.7)	1.66±1.06	33
Contented my health is being taken care of and there are medical facilities available.	27 (25.0)	9 (8.3)	56 (51.9)	16 (14.8)	1.44±1.03	38
Contented with the educational attainment of my family	45 (41.7)	10 (9.3)	35 (32.4)	18 (16.7)	1.76±1.17	31
Health and vitality wellbeing domain						
Possessing enough vitality/energy	51 (47.2)	11 (10.2)	44 (40.7)	2 (1.9)	2.03±0.98	19
Feeling refreshed and well	55 (50.9)	14 (13.0)	38 (35.2)	1 (0.9)	2.14±0.94	18
Feeling physically active	47 (43.5)	18 (16.7)	43 (39.8)	0 (0.0)	2.04±0.92	22
Self-esteem and resilience wellbeing domain						
Pleased with myself and Fadama III activities participation.	33 (30.6)	24 (22.2)	37 (34.3)	14 (13.0)	1.70±1.04	32
Having hope for the future	82 (75.9)	9 (8.3)	16 (14.8)	1 (0.9)	2.59±0.77	1
Being capable to handle the challenges of life	35 (32.4)	21 (19.4)	51 (47.2)	1(0.9)	1.83±0.90	28
Positive functioning wellbeing domain						
Contented that I can pursue my career as I see fit	65 (60.2)	19 (17.6)	23 (21.3)	1 (0.9)	2.37±0.85	5
Satisfied that I have time to pursue my career goal	58 (53.7)	18 (16.7)	32 (29.6)	0 (0.0)	2.24±0.88	11
Contented with what I have achieved from my career or income source	43 (39.8)	21 (19.4)	34 (31.5)	10 (9.3)	1.90±1.04	25
Satisfied that I can utilize my skills and potentials to engage in livelihood activities	65 (60.2)	12 (11.1)	22 (20.4)	9 (8.3)	2.23±1.05	12
Contented that I am completely focused on my work	61 (56.5)	13 (12.0)	29 (26.9)	5 (4.6)	2.20±0.99	13
Contented with the chances I have to gain knowledge from my tourism activities involvement.	35 (32.4)	19 (17.6)	22 (20.4)	32 (29.6)	1.53±1.23	36
Contented that my work is important and valuable to me	69 (63.9)	12 (11.1)	25 (23.1)	2 (1.9)	2.37±0.90	5
Contented that others/people value what I do	76 (70.4)	15 (13.9)	16 (14.8)	1 (0.9)	2.54±0.78	2
Social wellbeing domain						
Contented that I vote during elections and pay taxes	50 (46.3)	18 (16.7)	23 (21.3)	17 (15.7)	1.94±1.15	23
Contented with how much and well I interact in family and social groups	60 (55.6)	24 (22.2)	23 (21.3)	1 (0.9)	2.32±0.84	7
Contented with the help that friends and others give me when I need it	42 (38.9)	30 (27.8)	23 (21.3)	13 (12.0)	1.94±1.04	23
Contented with my degree of trust in other individual	29 (26.0)	19 (17.6)	36 (33.3)	24 (22.2)	1.49±1.11	37
Satisfied with the amount of fair treatment and respect I receive from others	31 (28.7)	32 (29.6)	39 (36.1)	6 (5.6)	1.81±0.92	29
Satisfied with my sense of belonging to my community and good rapport with people in my community	62 (57.4)	27 (25.0)	19 (17.6)	0 (0.0)	2.40±0.77	4
Satisfied that I participate actively in my community meetings and activities	54 (50.0)	28 (25.9)	26 (24.1)	0 (0.0)	2.26±0.83	10
Environment and security wellbeing domain						
Satisfied with the physical environment in terms of roads, and other physical structures	29 (26.9)	21 (19.4)	24 (22.2)	34 (31.5)	1.42±1.19	40
Satisfied that the environment is friendly and accommodating	60 (55.6)	22 (20.4)	23 (21.3)	3 (2.8)	2.29±0.90	9
Satisfied that the environment is clean and healthy	60 (55.6)	12 (11.1)	31 (28.7)	5 (4.6)	2.18±1.00	15
Satisfied with the level of policing and crime rate (I feel safe)	40 (37.0)	10 (9.3)	16 (14.8)	42 (38.9)	1.44±1.33	38
Contented that our productive endeavours are supported by the environment	59 (54.6)	23 (21.3)	25 (23.1)	1 (0.9)	2.30±0.86	8

Note: NT = Never True, STT = Some Times True, MTT = Most Times True, AT = Always True, R = Rank. Values in parentheses are percentage scores. **Source:** Field Survey, January to June 2023

3.10.6. Social wellbeing

This aspect of the *Fadama* III beneficiaries' wellbeing is very important as it affects and/or deals with relationship in community and meeting up with social responsibilities. The results in *Table 10* reveal that fairly large proportion (57.4%) of the respondents agreed that they were always satisfied with their sense of community belonging and strong relationship with community members. Contented with sense of community belonging and good rapport with people in community (2.40 ± 0.77) ranked fourth amongst all the wellbeing statements. Contented with volume and caliber of interactions within families and social groups ranked seventh (2.32 ± 0.84) on the list, with most (60.4%) of the respondents agreed they were always contented with extent and caliber of interactions within families and social groups. These findings show that most of the responders enjoyed healthy/harmonious and happy relationship within their community and family as well as belonged social groups. The implication is that farming households who participated in NFDP III can comfortably relate with members of their community and associations. The results contradict the finding of Samuel (2020), who, in a study on wellbeing, found that few (42.2%) of youths satisfied with their physical environment.

3.10.7. Environment and security wellbeing

The results in *Table 10* reveal that satisfied the environment supports productive activities (2.30 ± 0.86) ranked eighth amongst listed items. A more than half (54.6%) of the respondents agreed that they were always satisfied the environment supports their productive activities. As for satisfied that environment is friendly and accommodating, 55.6% of the respondents agreed they were always satisfied their environment is friendly and accommodating. Satisfied that environment is friendly and accommodating ranked 9th (2.29 ± 0.90) on the list. Results for these variables suggest that farming households who participated in NFDP III have a fair satisfaction of their environment. This could be because income generation from enterprises due to effectiveness of NFDP III were able to influence their state of environment. The implication is that issues relating to friendly and accommodating environment as well as productive activities supporting environment are not a problem for NFDP III beneficiaries. The results align with the finding of Samuel (2020), who, in a study on wellbeing, found that 69.3% of youths were satisfied with their physical environment.

3.11. Categorization of respondents' wellbeing

Slightly more than half of the responders' (56.5%) had high wellbeing (*Table 11*). It could be inferred that in the study area, there was relatively high wellbeing among NFDP III beneficiaries. The implication is that beneficiaries' of NFDP III in Delta State, Nigeria were relatively better off in their wellbeing. The result is similar to Samuel (2020) and Alloh (2021) who found relatively high wellbeing among youth and rural household in Southwestern Nigeria, respectively. However, the result is contrary to Adeyemo and Oni (2013), who found that rural households had low wellbeing in Southwestern Nigeria. The relatively high wellbeing could be due to the NFDP III beneficiaries' livelihood activities. This is in consonance with the position of Olutegbe et al. (2021) that livelihood activities contribute to wellbeing.

Table 11. Categorization of respondents' wellbeing

Wellbeing	Frequency	Percentage	Minimum	Maximum	Mean	SD
Low (43.00 – 84.77)	47	43.5	43.00	118.00	84.78	20.66
High (84.78 – 118.00)	61	56.5				

Note: SD = Standard deviation. **Source:** Field Survey, January to June 2023

3.12. Difference between food security status of respondents with high and low participation in NFDP III

The result in *Table 12* reveals that there is a significant difference between food security status of respondents with high (34.4 ± 9.0) and low (29.3 ± 8.6) participation in NFDP III ($t = -2.96$, $p < 0.05$). This implies that NFDP III beneficiaries with high participation were more food secured than those with low participation. This suggests that the higher the participation in NFDP III, the more food secured the beneficiaries. Hence, it could be deduced that participation in NFDP III influence food security status of farming households. This conforms with the *apriori* expectation. The implication is that the participation in NFDP III have a positive impact on the food security of beneficiaries.

The implication is also that NFDP III have a positive impact on the food security of beneficiaries. Furthermore, the result is an indication that NFDP III is a successful intervention, hence, NFDP III has a positive impact on farmers' not experiencing periods when quantity of household's food is unavailable, and not having enough money

to buy the quantity of needed food. This corroborates the findings of Olaitan et al (2024) that *Fadama* III development project has significant positive influence on food security of beneficiaries.

Table 12. Difference in food security status of respondents with high and low participation in NFDP III

Variable	Participation in NFDP III	N	Mean	SD	Mean difference	t-value	df	p-value
Food security	Low	63	29.3	8.6	-5.07	-2.96***	106	0.00
	High	45	34.4	9.0				

Note: ***Significant at p≤0.01. **Source:** Field Survey, January to June 2023

3.13. Difference between reduced vulnerability to poverty of respondents with high and low participation in NFDP III

The result in *Table 13* reveals that there is a significant difference between reduced vulnerability to poverty of respondents with high (-2.9 ± 9.4) and low (-7.3 ± 12.9) participation in NFDP III (t= -2.04, $p < 0.05$). This implies that respondents with high participation in NFDP III were less vulnerable to poverty than those with low participation. This suggests that the higher the participation in NFDP III, the less vulnerable to poverty the beneficiaries. Hence, it could be deduced that participation in NFDP III affects vulnerability to poverty of beneficiaries. This conforms with the *apriori* expectation. The implication is that the participation in NFDP III have positive impact on the beneficiaries being less vulnerable to poverty.

The implication is also that NFDP III have a positive impact on the vulnerability to poverty of beneficiaries. In addition, the result is an indication that NFDP III is a successful intervention, hence, NFDP III has a positive impact on reducing poverty. Earlier study of Kwon-Ndung et al. (2018) established that NFDP III has a highly significant impact on reduction of poverty among beneficiaries.

Table 13. Difference in reduced vulnerability to poverty of respondents with high and low level of participation in NFDP III

Variable	Participation in NFDP III	N	Mean	SD	Mean difference	t-value	df	p-value
Reduced vulnerability to poverty	Low	63	-7.3	12.9	-4.60	-2.04*	106	0.04
	High	45	-2.9	9.4				

Note: **Significant at p≤0.05. **Source:** Field Survey, January to June 2023

3.14. Difference between livelihood outcomes of respondents with high and low participation in NFDP III

The result in *Table 14* reveals that there is a significant difference between livelihood outcome of respondents with high (34.3 ± 12.5) and low (26.9 ± 14.1) participation in NFDP III (t = -7.38, $p < 0.05$). This implies that respondents with high participation in NFDP III were high in their livelihood outcome than those with low participation. This suggests that the higher the participation in NFDP III, the higher the livelihood outcome of the beneficiaries. Hence, it could be deduced that participation of respondents in NFDP III influence their livelihood outcome. The implication is that the participation in NFDP III have positive impact on the farmers achieving a higher outcome from their livelihood activities. This conforms with the *apriori* expectation.

The implication is also that NFDP III have a positive impact on the livelihood outcome of beneficiaries. Furthermore, the result is an indication that NFDP III is a successful intervention, hence, NFDP III has a positive impact on farmers having higher outcome from their livelihood and/or livelihood activities.

Table 14. Difference in livelihood outcome of respondents with high and low level of participation in NFDP III

Variable	Participation in NFDP III	N	Mean	SD	Mean difference	t-value	df	p-value
Reduced vulnerability to poverty	Low	63	-7.3	12.9	-4.60	-2.04*	106	0.04
	High	45	-2.9	9.4				

Note: **Significant at p≤0.05. **Source:** Field Survey, January to June 2023

3.15. Relationship and correlation analyses between demographic characteristics and wellbeing of respondents

Results in *Table 15* reveal that respondent membership of farmers association ($\chi^2 = 7.48$) was significantly ($p < 0.05$) related to wellbeing. This implies that membership of farmers association had significant relationship with wellbeing status of NFDP III beneficiaries.

The relationship between respondent's membership of farmers association and wellbeing status implies that NFDP III beneficiaries membership of farmers association influence their wellbeing status. *Table 15.1* shows that

most (59.6%) of the beneficiaries that are members of farmers groups had high wellbeing, while the beneficiaries who are non-members of farmers association (66.7%) had low wellbeing, which implies that beneficiaries that are members of farmers groups were better off in wellbeing than the non-members of farmers association. This is in line with Alloh (2021) who found that non-members of social groups were worse off in wellbeing compared with their counterparts who belonged to social groups among rural households in Southwestern Nigeria. He further established that membership of social group had a favourable effect on rural household's wellbeing.

The reasons beneficiaries that belonged to farmers groups were better off in wellbeing than beneficiaries who are non-members of association could be that majority of the beneficiaries that belonged to farmers association had high access to marketing information source than the non-members as it might have exposed beneficiaries that belonged to farmers association to better method of marketing that improved their income from NFDP III enterprises production which invariably would improve the beneficiaries wellbeing status; hence, beneficiaries who are non-members of farmers association could not have had better off wellbeing than the beneficiaries that belonged to farmers association. Earlier study by Kodua et al. (2018) established that farmers that belonged to farmers association or groups interact among themselves to gain knowledge of the market and negotiate prices of farm produce to increase profits in contrast to their non-members of farmer's association/groups who have no such information from association and/or groups. Etuk (2017) established that amongst all the livelihood resources (physical, financial, human, natural and social resources), access to social resource contributes highest to the rural households' wellbeing status in Niger Delta, Nigeria.

Table 15. Chi-square and PPMC analyses of respondents' demographic features and their wellbeing

Variables	Df	χ^2	r-value	p-value
Sex	1	1.22	-	0.27
Marital status	3	4.11	-	0.25
Farmers association membership	1	7.48**	-	0.01
Extension contact	-	-	-0.17	0.20

Note: DF = Degree of Freedom, χ^2 = Chi-square Coefficient, r = Correlation coefficient, ** Significant at p≤ 0.01. **Source:** Field Survey, January to June 2023

Table 15.1. Crosstab analysis of selected demographic characteristic and wellbeing

Variables	Categories	Wellbeing		Total
		Low	High	
Membership of farmers association	No (Non-member)	34 (66.7)	23 (40.4)	154 (42.3)
	Yes (Member)	17 (33.3)	34 (59.6	210 (57.7)

Note: Values in parentheses are percentage scores. **Source:** Field Survey, January to June 2023

3.16. Correlation analysis between enterprise features (characteristics) and wellbeing of respondents

Table 16's Pearson Product Moment Correlation result reveals that income from non-NFDP III enterprises (r = 0.18) was significantly ($p \leq 0.05$) related to wellbeing of the beneficiaries. This implies that income from non-NFDP III enterprises had significant relationship with wellbeing.

The positive correlation of income from non-NFDP III enterprises with wellbeing status implies that the wellbeing status of NFDP III beneficiaries increases with their increase in income from non-NFDP III enterprises. This indicates that a rise in income would lead to an improvement in wellbeing. This is in line with Samuel (2020) who found a positive and significant contribution of income from fish and other sources of occupation to wellbeing of youth in Southwestern Nigeria. Earlier study of Alloh (2021) reported that an increase of one per cent in monthly income from main occupation led to increased wellbeing by approximately twenty-three per cent.

Table 16. Pearson Product Moment Correlation analysis of demographic characteristics of respondents' and their wellbeing

Variables	r-value	p-value
Total farm size	-0.06	0.53
Farming experience	-0.03	0.76
Income from NFDP III enterprises	0.12	0.23
Income from non-NFDP III enterprises	0.18*	0.05

Note: r = Correlation coefficient, * Significant at p≤ 0.05. **Source:** Field Survey, January to June 2023

3.17. Correlation analysis between food security of NFDP III beneficiaries and wellbeing

Table 17's results show that food security and wellbeing of respondents did not significantly correlate (r=0.08, p>0.05). This implies that food security of NFDP III beneficiaries does not necessarily translate into high wellbeing. The fact that NFDP III beneficiaries have enough food to eat does not guarantee high wellbeing. Wellbeing could be influenced by reduced vulnerability to poverty and livelihood outcome.

Table 17. Correlation between respondent' food security and wellbeing

Variables	r-value	p-value
Food security	0.08	0.43

Note: r = Correlation coefficient. **Source:** Field Survey, January to June 2023

3.18. Correlation analysis between NFDP III beneficiaries reduced vulnerability to poverty and wellbeing

Table 18 reveals a significant correlation between respondents reduced vulnerability to poverty and wellbeing (r=0.18, p<0.05). It can be deduced that the NFDP III beneficiaries reduced vulnerability to poverty determined their wellbeing. Hence, high reduced vulnerability to poverty will enhance high wellbeing.

It was reported earlier that participation in NFDP III have a positive impact on the NFDP III beneficiaries being less vulnerable to poverty (*Table 12*). Hence, this result also implies that the reduced vulnerability to poverty due to participation in NFDP III have positive impact on the respondents wellbeing. The implication is that NFDP III have a positive impact on the wellbeing of beneficiaries. This conforms with the *apriori* expectation.

Table 18. Correlation between respondents reduced vulnerability to poverty and wellbeing

Variables	r-value	p-value
Reduced vulnerability to poverty	0.18*	0.05

Note: r = Correlation coefficient. *Significant at p≤0.05. **Source:** Field Survey, January to June 2023

3.19. Correlation analysis between livelihood outcome of NFDP III beneficiaries and wellbeing

Table 19 shows that no significant (p>0.05) correlation existed between livelihood outcome and wellbeing of NFDP III beneficiaries (r=0.17). One could deduce that livelihood outcome of respondents was not significantly related to their wellbeing. The result implies that respondents' livelihood outcome does not influence their wellbeing.

Table 19. Correlation between livelihood outcome of NFDP III beneficiaries and wellbeing

Variables	r-value	P-value
Livelihood outcome	0.17	0.07

Note: r = Correlation coefficient. **Source:** Field Survey, January to June 2023

3.20. Difference between wellbeing status of respondents with high and low participation in NFDP III

Table 20 indicates that the wellbeing of respondents with high (89.8 ± 19.48) and low (81.2 ± 20.86) participation in NFDP III differs significantly (t = -2.18, p < 0.05). This implies that NFDP III beneficiaries with high participation in NFDP III were high in their wellbeing than those with low participation. This suggests that the higher the participation in NFDP III, the higher the wellbeing of the NFDP III beneficiaries. Hence, it could be deduced that participation of respondents in NFDP III influence their wellbeing. The implication is that the participation in NFDP III have positive impact on the beneficiaries' wellbeing. This conforms with the *apriori* expectation.

The implication of the foregoing result is that NFDP III have a positive impact on the wellbeing of beneficiaries. Furthermore, the result is an indication that NFDP III is a successful intervention, hence, NFDP III has a positive impact on beneficiaries' having higher wellbeing.

Table 20. Difference in wellbeing status of beneficiaries with high and low participation in NFDP III

Variable	Participation in NFDP III	N	Mean	SD	Mean difference	t-value	Df	p-value
Wellbeing status	Low	63	81.2	20.86	-8.65	-2.18**	106	0.03
	High	45	89.8	19.48				

Note: **Significant at p≤0.05. **Source:** Field Survey, January to June 2023

3.21. Contributors to wellbeing status of NFDP III beneficiaries

Table 21 reveals that the R^2 value was 0.20. This indicates that 20.0% of the respondents' wellbeing status was explained by the selected independent variables. It also shows that the F-vale of 3.60 was significant at 0.05 level. This implies that the model predicts the outcome variable significantly well. The result in *Table 21* further shows that the following selected independent variables significantly contributed to wellbeing status: male sex ($\beta = 7.75$, $p < 0.05$), food security ($\beta = -4.79$, $p < 0.05$), reduced vulnerability to poverty ($\beta = -2.75$, $p < 0.05$), livelihood outcome ($\beta = 4.65$, $p < 0.05$) and participation in NFDP III ($\beta = 0.43$, $p < 0.05$). This implies that sex, food security, reduced vulnerability to poverty, livelihood outcome and participation in NFDP III were major contributors to respondents' wellbeing status.

The significance of sex implies that it contributed significantly to wellbeing as being male seemed to have a beneficial impact on wellbeing. The negative and significant contribution of food security to wellbeing status establish that with increase in the food security of the NFDP III beneficiaries, there is decrease in wellbeing status. This result can be attributed to the fact that respondents with food security might have sold and/or used a greater proportion of their enterprise output to generate income for food expenditure *vis a vis* to purchase household food, hence, suggesting that food secured beneficiaries tend to channel less farm income to non-food items procurement. It is plausible to state that as the NFDP III beneficiaries become food secure, they will not have the drive and/or challenge to take initiative that will enable them improve their wellbeing. The significant but negative contribution of vulnerability to poverty on wellbeing status imply that less vulnerability to poverty have impact in enhancing wellbeing. This establish that with increase in the vulnerability to poverty, there is decrease in wellbeing. It could be inferred that less vulnerability to poverty did primary translate to poverty reduction. Hence, increased reduced vulnerability to poverty was felt on wellbeing. The result conforms to the study of Olutegbe (2021) who found a negative and significant effect of vulnerability on wellbeing.

Table 21. Regression analysis on selected independent variables contribution to wellbeing of NFDP III beneficiaries

Variables	β- value	t- value	p- value
Sex (Male)	7.75**	1.98	0.05
Food security	-4.79***	-3.37	0.00
Vulnerability to poverty	-2.75***	-3.03	0.00
Livelihood outcome	4.65***	3.31	0.00
Participation status in NFDP III	0.43***	3.46	0.00
Income from NFDP III enterprises	-5.00	-0.48	0.63
Income from non-NFDP III enterprises	-2.169	-0.41	0.68
Summary			
F-value	3.60*		
P-value	0.00		
R-value	0.45		
R^2	0.20		
Adjusted R^2	0.15		
Standard error of estimate	19.10		

Note: ** and *** Significant at $p \leq 0.05$ and 0.01, respectively. **Source:** Field Survey, January to June 2023

The positive and significant contribution of livelihood outcome to wellbeing establish that with increase in the livelihood outcome of the NFDP III beneficiaries, there is increase in wellbeing status. Respondents with high livelihood outcome are likely to possess improved food security and reduced vulnerability to poverty, which can enhance and/or improve their wellbeing. This is suggestive that increased livelihood outcome from NFDP III enterprises will result in high level of wellbeing. The result is a further indication that in the study area, NFDP III enterprises livelihood outcome especially increased reduced vulnerability to poverty is responsible and/or contribute to the wellbeing and sustenance of respondents' households. The implication is that wellbeing level of NFDP III beneficiaries is a function of their livelihood outcome from NFDP III enterprises. This conforms with the *apriori* expectation. The implication is that NFDP III have a positive impact on the wellbeing of beneficiaries. Furthermore, the result is an indication that NFDP III is a successful intervention, hence, NFDP III has a positive impact on beneficiaries' having higher wellbeing.

The significance of participation in NFDP III implies that with increased participation in NFDP III, wellbeing status increases. It could be deduced that participation in NFDP III influences wellbeing of respondents and with

high participation in NFDP III, there is significant increase in wellbeing status. This is suggestive that improved and/or increased participation in NFDP III will enhance high level of wellbeing. The result is a further indication that NFDP III intervention especially increased and/or high participation in NFDP III leads to a high level of wellbeing and bring about better wellbeing among farming households in the study area. This conforms with the *apriori* expectation. The implication is that NFDP III have a positive impact on the wellbeing of beneficiaries. Furthermore, the result is an indication that NFDP III is a successful intervention, hence, NFDP III has a positive impact on beneficiaries' having higher wellbeing.

4. Conclusions

NFDP III not only influenced wellbeing of farming households in Delta State, Nigeria but also impacted food security, reduced vulnerability to poverty, and livelihood outcome. Membership of farmers' associations/groups, level of participation and livelihood outcome enhanced wellbeing of the NFDP III beneficiaries.

Farming households did not fully participate in the NFDP III intervention; beneficiaries channeled relatively low time, energy, efforts, attention and resources into the NFDP III intervention. However, they did not experienced periods when quantity of households' food was unavailable and there was not enough money to buy the quantity of needed food. In addition, they were less predisposed to poverty; they were not highly vulnerable to poverty as they experienced changes that positively affected them. Beneficiaries had substantial and appreciable livelihood outcome through the NFDP III intervention. They were relatively better off in their wellbeing or quality of life. Finally, NFDP III achieved its objectives on food security, poverty reduction, livelihood outcome and wellbeing.

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Ethical Statement

The Ethics Committee of the Department of Agricultural Extension and Rural Development at the University of Ibadan granted approval for this study to be prepared under the number AERD/01-2023/0018, dated 10/01/2017.

Conflicts of Interest

The authors of the article affirm that they have no conflict of interest.

Authorship Contribution Statement

Concept: Oyibo, O.; Design: Oyibo, O.; Data Collection or Processing: Oyibo, O.; Statistical Analyses: Oyibo, O.; Literature Search: Oyibo, O., Uzoka, F. A., Uchegbu, F. U.; Writing, Review and Editing: Oyibo, O.

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