

# THE EFFECT OF DEMOGRAPHIC FACTORS ON EMPLOYEE PRODUCTIVITY IN THE OIL AND GAS AS WELL AS CONSTRUCTION INDUSTRIES IN THE NIGER DELTA AREA, NIGERIA

## Abstract

This study aims to examine how demographic factors affect employee productivity in the selected Oil and Gas as well as Construction firms in the Niger Delta, Nigeria. Structured questionnaire was the research instrument administered to 390 employees by random sampling; while the selection of the oil companies as well as construction companies was by purposive sampling. Demographic variables captured in the questionnaire included Gender, Age, Level of education, Marital status and Years of experience. The collated data for this study was analyzed using Statistical Product and Service Solution (IBM SPSS version 26 and Xlstat version 16). Data were analyzed using descriptive statistics including frequencies, percentages, tables and mean showed the distribution of key demographic criteria of the selected firms. The distribution suggests that the majority of workers are in their mid-thirties to late forties, reflecting a more experienced workforce. In terms of marital status, the majority of the respondents were married, with 272 respondents (77.7%). The educational background of the respondents shows that a significant portion had higher education degrees. A total of 166 respondents (47.4%) held a Bachelor's degree. The high level of education is an indicator that education plays a vital role in employee's productivity. The largest group had between 0-8 years of experience, with 169 respondents (48.3%). This indicates that the workforce is predominantly made up of relatively experienced workers with at least 8 years of professional experience. The years of experience significantly improves employee's productivity.

*Keywords: Demographic factors, Employee productivity, oil and gas, construction industries*

## 1. Introduction

Productivity is the ability to turn talents and ideas into tangible outputs, influenced by the relationship between inputs and results. High workplace safety standards reduce accidents and health issues, enhancing productivity. Productivity involves optimizing time, materials, and energy, requiring improvements in work systems and workforce proficiency. Safety is crucial, as healthier employees perform better, contributing to both the quality and quantity of output. Neglecting safety can harm health and productivity, underscoring the importance of the relationship between safety, health, and optimal performance (Mora et al., 2020).

In the context of the Niger Delta area of Nigeria, where industries are diverse and complex, it is essential to evaluate the effectiveness of the demographic factors that affects the employee's productivity. Organizations depend on a productive workforce, yet inadequate safety measures can hinder productivity as underscored by the [European Employee Productivity Institute in 2019](#). Globalization, legal changes, and technological advancements have introduced new safety concerns in workplaces, as noted by Keraka (2020). Obrenovic et al. (2020) and Gupta et al. (2016) highlight that traditional safety programmes may not address these evolving hazards. While Saleem et al. (2021) emphasize the need for comprehensive safety programmes, many organizations remain hesitant due to limited empirical evidence linking safety to productivity (Ndegwa et al., 2022; Mutegi et al., 2023).

Employee productivity is essential for an organization's profitability and competitiveness, directly impacting efficiency, output, and job satisfaction (Tzenios, 2019). High productivity reflects a well-managed workforce, driving both financial success and employee fulfillment. Ergonomic workspace design, including appropriate seating, ventilation, and lighting, is crucial for reducing job stress and enhancing productivity (Zafir et al., 2022).

Productivity comprises three components: efficiency, effectiveness, and quality. Efficiency compares planned input use with actual implementation, while effectiveness measures the extent of targets met in terms of quantity and timeliness. Quality assesses how well consumer expectations are fulfilled. Employee productivity is vital as it directly influences profitability and competitiveness, enabling companies to produce more in less time. High productivity reflects effective management and leads to greater job satisfaction and engagement, fostering employee motivation and ongoing contributions to organizational success (Firman, 2022).

## **2. Materials and Methods**

Structured questionnaire was the main instrument used to obtain responses on the demographic effects on employee's productivity in selected Oil and Gas as well as Construction industries in Niger Delta Area. A total of 390 copies of the structured questionnaire was developed and administered for data collection among Indigenous and Multinational Oil and Gas as well as Indigenous and Multinational Construction companies across Niger Delta Area using Google Forms, an online survey tool. Sample size, 390 was determined using Equation (2.1),

$$N = \frac{Z^2 p(1-p)}{T^2} \quad (2.1)$$

Where  $N$  = Sample size;  $Z$  = the abscissa of the normal curve that cuts off an area  $\alpha$  at the tails,  $(1 - p)$  = the desired confidence level (i.e. 95%);  $T$  = Tolerance error (or the desired level of precision); and  $p$  = Estimated Proportion of an attribute that is present in the population without considering the finite population correction factor (fpc).

Most of the questions were structured using Likert scale (5-Strongly agrees, 4- agreed, 3-Disagree, 2-Strongly Disagree, 1-Undecided), in order to prevent ambiguity and the need for guessing in the analyses of the data. The respondents were assured of the confidentiality of their responses. Out of the 390 questionnaires distributed, 350 were successfully retrieved, representing a retrieval rate of 89.74%. The high retrieval rate is likely due to the ease of digital submission, which allowed respondents to complete and submit their questionnaires online without the need for physical retrieval. However, about 40 questionnaires were not returned, accounting for 10.25% of the total distributed questionnaires. Consequently, 350 questionnaires were considered fit for use in the statistical analysis, resulting in a response rate of 94.59%.

## 2.1 Instrument

This study was carried out as a cross-sectional study given that the data were collected within a specified time frame (Nwaogazie, 2024). Structured questionnaire was the research instrument administered to 390 employees by random sampling; while the selection of the oil companies as well as construction companies was by purposive sampling. Demographic variables captured in the questionnaire included Gender, Age, Level of education, Marital status and Years of experience. The administered questionnaire also includes information on the following: Management Commitment, Safety Participation, Safety Compliance, Safety Promotional Policies, Safety Training, Safety Knowledge, Employee Involvement/Participation and Employee Productivity. There are 7 broad questions on Management Commitment, 6 questions on Safety Participation, 5 questions on Safety Compliance, 6 questions on Safety Promotional Policies, 5 questions on Safety Training, 6 questions on Safety Knowledge, 4 questions on Employee Involvement/Participation and 5 questions on Employee Productivity using Likert Scale.

## **2.2 Data Analysis and Procedures**

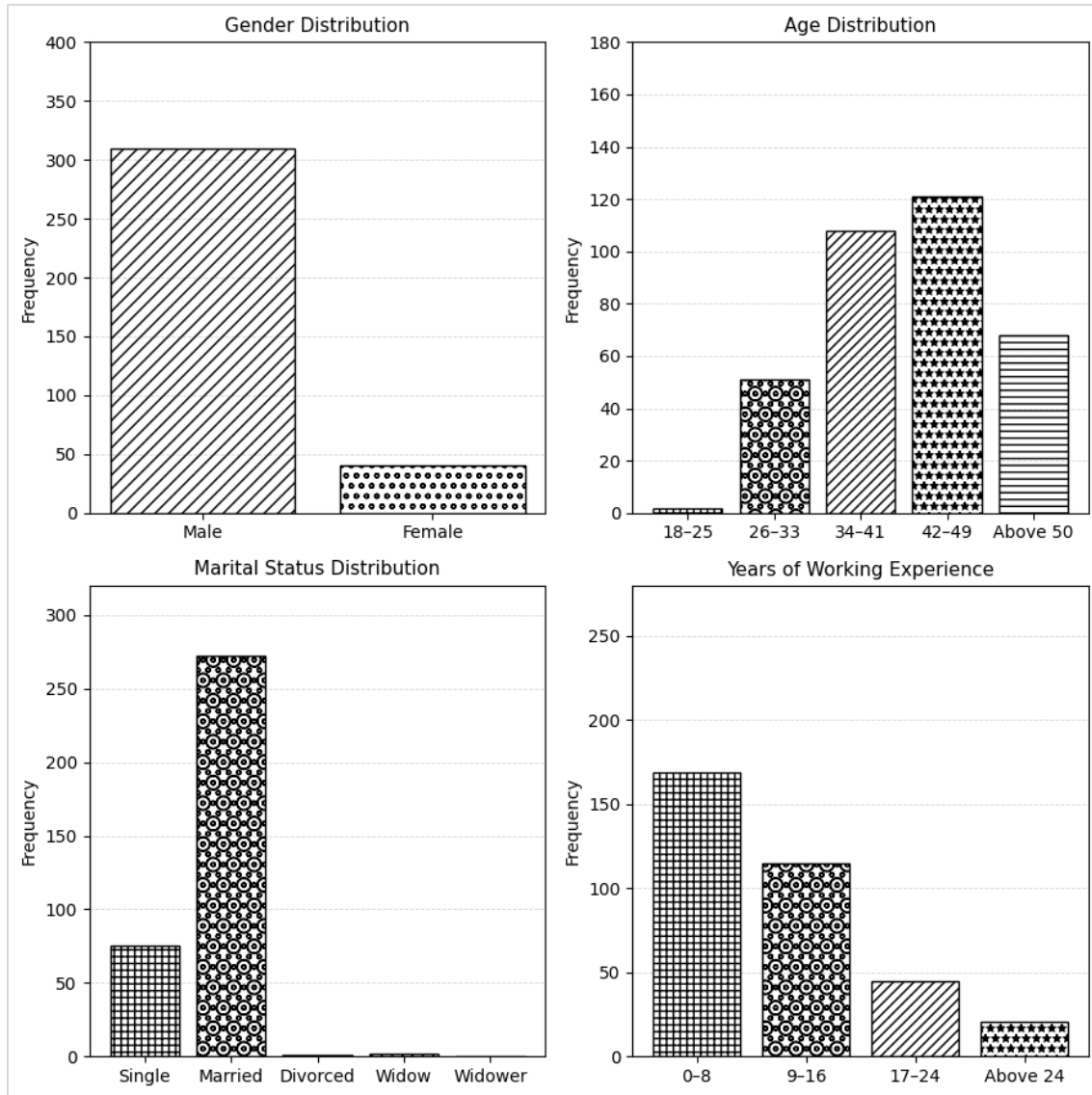
The collated data for this study were analyzed using Statistical Product and Service Solution (IBM SPSS version 26 and Xlstat version 16). Data were summarized using descriptive statistics including frequencies, percentages, tables and mean showed the distribution of key demographic criteria of the multinational and indigenous oil and gas workers as well as construction workers, respectively in the Niger Delta area. The responses to the questionnaire from the respondents were subjected to a reliability test using Cronbach alpha. Interpretation was made on the results achieved based upon which conclusions were drawn on the research objectives.

## **3. Results and Discussion**

### **3.1 Assessment of the demographic variables for productivity**

The demographic analysis of respondents, as presented in the Figure 1 offers crucial insights into the characteristics of the workforce in the selected oil and gas and construction industries in the Niger Delta area. These demographic variables, including gender, age, marital status, educational background, and years of work experience, play a significant role in shaping employee productivity. This study evaluates how these variables influence productivity within the context of these industries, considering the implications of the observed trends.

A total of 390 questionnaires were distributed to workers in selected oil and gas and construction industries, both local and multinational, across Niger Delta Area using Google Forms, an online survey tool. The “required option” for each question was activated making it impossible for respondent to proceed to the next question and subsequently submit the survey without providing answer to each question. This has helped to eliminate the receipt of unusable survey response. Out of the 390 questionnaires distributed, 350 were successfully retrieved, representing a retrieval rate of 89.74%. The high retrieval rate is likely due to the ease of digital submission, which allowed respondents to complete and submit their questionnaires online without the need for physical retrieval. However, about 40 questionnaires were not returned, accounting for 10.25% of the total distributed questionnaires.



**Fig 1: Demographic variable distribution**

### 3.1.1 Gender Distribution and Productivity

The workforce is male-dominated, with 88.6% male and 11.4% female respondents, reflecting the traditional gender imbalance in the oil and gas and construction industries, as noted by Maduka &

Okafor (2014). This disparity may be linked to the physical demands and perceived risks of these roles, which have historically attracted more men. While a male-dominated workforce may enhance productivity in physically demanding tasks, it is crucial to acknowledge that cognitive diversity and varied problem-solving approaches are also vital for overall productivity.

### **3.1.2 Age Distribution and Productivity**

The workforce is predominantly aged between 34 and 49, with the largest groups in the 42-49 (34.6%) and 34-41 (30.9%) age ranges. This mature workforce is often associated with higher productivity due to greater experience and familiarity with industry standards. Older employees bring valuable knowledge, efficiency, and a strong work ethic, contributing to overall productivity. However, the presence of 19.4% of workers aged 50 and above highlights the need for succession planning and knowledge transfer as they approach retirement. Implementing mentorship programs can help bridge the generational gap and maintain productivity. The minimal representation of younger workers (0.6% in the 18-25 age group) suggests challenges in attracting and retaining new talent, which is crucial for long-term productivity and industry sustainability. Developing strategies to appeal to younger workers could address these challenges and support future productivity.

### **3.1.3 Marital Status and Productivity**

The study highlights that marital status significantly influences productivity, as supported by Mallika (2010). With 77.7% of respondents being married, this group often experiences greater personal stability, potentially leading to increased focus and commitment at work. Married employees may have fewer distractions and a higher motivation to maintain stable employment for their families, which can enhance productivity. Conversely, single employees (21.4%) may benefit from greater work flexibility but might face social isolation or lack of support, potentially

impacting their productivity. Providing workplace support and engagement opportunities can help address these challenges and improve productivity for single employees.

#### **3.1.4 Educational Background and Productivity**

The educational background of respondents indicates a highly educated workforce, with 47.4% holding a Bachelor's degree and 38.9% possessing a Postgraduate degree. This high level of education is expected to positively impact productivity, aligning with Ng & Feldman (2009) who found that education is positively related to task performance. Higher education equips employees with critical thinking, problem-solving skills, and industry-specific knowledge, which are essential for high productivity, particularly in the technical fields of oil and gas and construction. The lower percentages of respondents with Diplomas (8.3%) and Secondary School certificates (1.4%) suggest that advanced education is prevalent. However, employees with these lower levels of formal education can also bring valuable practical skills and hands-on experience to their roles. To maximize productivity, organizations should ensure these employees have access to continuous learning and professional development opportunities, which can help them enhance their skills and contribute effectively. The "Others" category (4.0%), likely representing professional certifications or specialized training, underscores the importance of ongoing education and skill development. Investing in training programs for all employees, regardless of their educational background, helps maintain a competitive and productive workforce. This approach is supported by Bhatti & Qureshi (2007), who highlighted the impact of education on job satisfaction and recognition. Overall, a commitment to continuous learning and development is essential for optimizing productivity and ensuring employees remain effective in a dynamic industry landscape.

#### **3.1.5 Years of Work Experience and Productivity**

The distribution of respondents' years of work experience reveals a workforce with a strong foundation of experience, which is likely to positively impact productivity. Specifically, 48.3% of respondents have 0-8 years of experience, and 32.9% have 9-16 years, indicating a mix of relatively new and moderately experienced workers. This substantial experience can enhance proficiency, efficiency, and confidence in job tasks, contributing to higher productivity. Employees with 17-24 years (12.9%) and over 24 years (6.0%) of experience bring additional expertise, crucial for mentoring and organizational stability. The high proportion of employees with 0-8 years of experience underscores the necessity for robust onboarding and training programs. Effective training can help these newer employees rapidly gain the skills needed to contribute to productivity, supporting the findings of Hassan & Ogunkoya (2012) on the importance of continuous investment in human capital. The dynamic nature of the workforce, with continuous inflow of new talent, presents both opportunities for innovation and challenges in training. However, Ng & Feldman (2010) noted a curvilinear relationship between organizational tenure and job performance, suggesting that while experience generally improves productivity, the effect diminishes over time. This highlights the need for ongoing development to maintain productivity levels as employees gain more experience. Overall, a balanced approach to integrating new and experienced employees, along with sustained investment in training and development, is crucial for optimizing productivity in these industries.

### **3.2 Principal Component Analysis**

The principal component analysis (PCA) was applied to assess the relationship between safety program construct and demographic variables. The analysis is presented in Figure 2, focusing on understanding the underlying patterns within the dataset.

The biplot provides a visual representation of the relationship between the safety program constructs and is presented in Figure 2. Oil and Gas (Multinational) sector is located on the right side of the biplot, close to Safety Training (ST), Management commitment, Safety Promotional Policies (SPP), and Employee Involvement (EI). This suggests that these safety constructs are more positively associated with multinational oil and gas companies. Oil and Gas (Indigenous) sector is positioned more centrally in the biplot, implying a more moderate or balanced relationship between the safety constructs. The result from the biplot clearly shows that construction (Indigenous) was on the left side of the biplot farthest away from Safety Training (ST), Management commitment, Safety Promotional Policies (SPP), and Employee Involvement (EI). This indicated that construction indigenous had the lowest level of these four safety program constructs than the other industrial sectors.

Figure 2 shows the result of the biplot for principal components 1 and 3. The result from the biplot shows that construction (multinational) had the highest level of employee productivity due to it been the closest to that construct on the biplot.

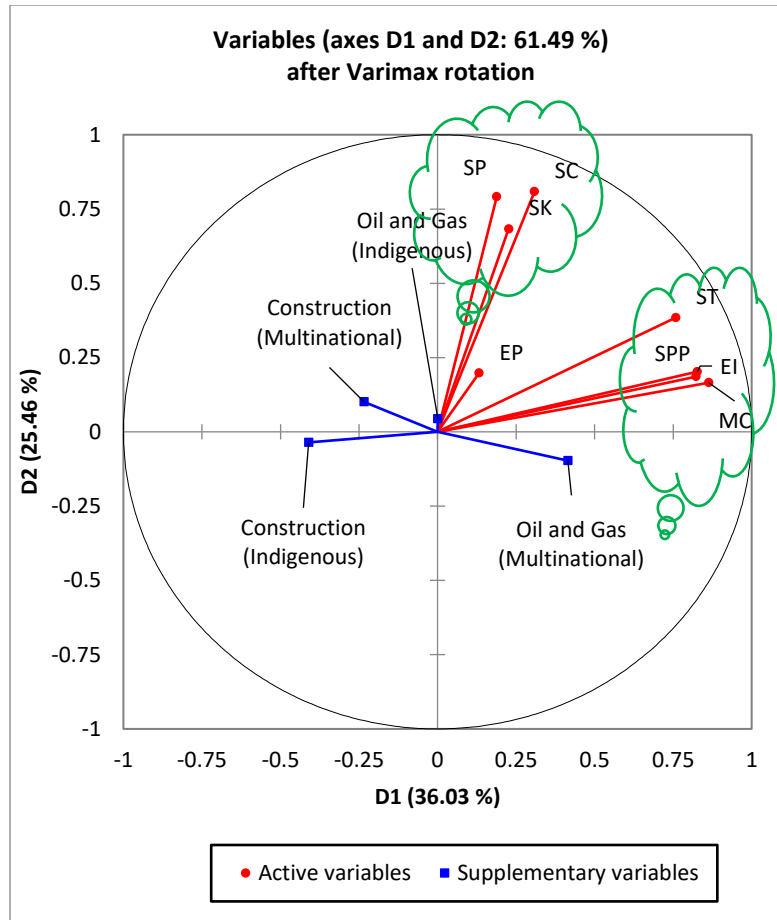


Figure 2: PCA Biplot showing the interaction between the safety program factors and industry type (principal components 1 and 2)

#### 4. CONCLUSION

Regarding age, the largest group of respondents fell into the 42-49 age range, is between with 121 respondents representing 34.6% of the total; while the least age group was 18-25, with only 2 respondents (0.6%). The age distribution suggests that the majority of workers are in their mid-thirties to late forties, reflecting a more experienced workforce.

In terms of marital status, the majority of the respondents were married, with 272 respondents (77.7%). The educational background of the respondents shows that a significant portion had higher education degrees. A total of 166 respondents (47.4%) held a Bachelor's degree. The high

level of education is an indicator that education plays a vital role in employee's productivity. The largest group had between 0-8 years of experience, with 169 respondents (48.3%). This indicates that the workforce is predominantly made up of relatively experienced workers with at least 8 years of professional experience. The years of experience significantly improves employee's productivity.

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