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THE DISABILITY GAP IN EMPLOYMENT IN DEVELOPING ECONOMIES: EVIDENCE FROM THE NIGERIAN LABOUR MARKET

ABSTRACT: *A viable and functional labour market is a sin qua non for economic development. This study thus examines the evidence of disability-related employment discrimination in Nigeria. Utilising the Fairlie decomposition technique in analysing households' data elicited from wave 4 of the General Household Survey, the study found that the disability gap in employment was plausibly existent in Nigeria. The study therefore suggested, among other viable options, that policies aimed at promoting the elimination of physical obstacles in workplaces while also ensuring equitable training opportunities for individuals with disabilities should be rigorously pursued. There is a need to enact more stringent anti-discriminatory policies in Nigeria, with individuals having functional difficulties being the focal target.*

KEY WORDS: *discrimination; employment; disability; Fairlie decomposition; labour*

JEL CLASSIFICATION: I11, J01

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1. INTRODUCTION

The labour force of any economy is the fulcrum of economic growth and development, given that it comprises essential human capital, which ensures productivity in any economy. Accordingly, a healthy labour force is a prerequisite to enhanced productivity (Efayena & Buzugbe, 2016; Efayena et al., 2018; Ichoku, 2015; Ichoku et al., 2014). This has resulted in countries investing immensely in healthcare infrastructure to ensure a sound and healthy labour force, which will potentially drive development by determining the level of labour force participation rate (Nwosu, 2018; Nwosu & Wooland, 2017), since individuals with fewer functional difficulties tend to participate more in the labour market.

However, there has been a lingering debate on the issue of discrimination against individuals experiencing disabilities in the employment process. Discrimination often takes place during the hiring process, leading to the elimination of some individuals from the process. Although employers of labour might express justifiable reasons to streamline individuals with functional difficulties from the employment process or even stigmatise these in the job, discrimination occurs when an employee is biased against despite having the same or more capability or productivity than another individual participating in an economic activity.

Globally, the OECD (2022) reported that the disability gap in employment remains large. Collectively, individuals with disabilities experienced a 27-percentage-point lower employment rate compared to those without disabilities. This trend also exists in developing economies. For instance, in Nigeria, prior to the COVID-19 health pandemic, the employment disability gap stood at 28.1 per cent. This suggests that the employment rate of individuals with disabilities in the working-age population was 54.1 per cent, compared to 82.2 per cent for those without disabilities (Olusola, 2021). Even if individuals manage to secure employment, they often face the predicament of being typecast into specific tasks or employed merely as symbolic gestures (Eleweke & Ebenso, 2016), with the argument that such individuals require greater supervision to perform, and may result in increased health insurance premiums, more sick leave, and increased hospital expenses that may burden the employers. This has a long-term effect on health expenditure decisions (Efayena & Olele, 2020; Olele & Efayena, 2023) as well as labour decisions, such as the 2018 *Discrimination Against Persons with Disabilities (Prohibition) Act*.

In spite of prevailing disability-related discrimination in the Nigerian labour market, the majority of labour market-related studies focus on the effects of education, gender, and religion on the labour market (Adeyem et al., 2016; Olowa & Adeoti, 2014). Some other studies focus on the effect of disability on labour force participation (see Machio, 2014; Nwosu, 2018). The paucity of studies on the disability gap in employment has far-reaching implications for productivity in Nigeria and other developing economies. This constitutes the crux of this study.

Overall, this study contributes to the existing health and labour literature by closely examining the nexus between functional difficulties and employment discrimination in Nigeria. Our study makes a two-fold contribution to existing knowledge. First, it investigates the empirical evidence of a disability gap in employment in Nigeria utilising households' dataset derived from the General Household Survey (National Bureau of Statistics, 2019). The study employs the Fairlie decomposition method to identify whether there is a potential disability gap in employment or not. Second, the study proffers possible policy implications and inferences on improving labour market outcomes in Nigeria. From an empirical perspective, the findings of the study highlight the importance of propagating viable labour market policies to ensure productivity. Following the introductory section, Section 2 presents relevant previous studies on labour market discrimination across economies as well as identifying gaps in these studies. Sections 3 and 4 of the study outline the methodology employed and present the empirical findings. Section 5 concludes the study.

2. A BRIEF REVIEW OF THE LITERATURE

In both developed and developing countries, the emphasis has been on the premise that good health exerts a substantial positive impact on labour market outcomes (Chinara, 2018; Jones & Wildman, 2008; Karlsdotter & Martín, 2012). However, an important perspective that requires equal attention is the discrimination of individuals with disabilities in employment or in the process of gaining entry into the labour market. In spite of various governments' legislation on non-discrimination against individuals suffering from functional difficulties and the fact that individuals who have a disability that does not limit their abilities should not face discrimination, as they are as equally productive as their peers,

several cases of such discrimination have been observed in several countries, including Nigeria (Imam & Abdulraheem-Mustapha, 2016).

Discrimination arises when two individuals of equal productivity receive unequal earnings (Becker, 1957). For instance, researchers attribute the unexplained portion of the wage gap between individuals without functional difficulties and those with functional difficulties to discrimination, despite the possibility of unobservable productivity differences (Deleire, 2001; Gannon & Munley, 2009; Jones, 2006; Madden, 2004). Discrimination against workers with disabilities may stem from prejudice or a misguided perception of their productivity. Since individuals with disabilities may have impairments that impact their productivity, it becomes challenging to distinguish between wage effects resulting from functional difficulties and those stemming from discrimination. If wage discrimination does exist, it can potentially discourage individuals with disabilities from actively engaging in the labour market.

It is imperative to state that the majority of disability-related labour market discrimination studies have focused on wages and earnings as an outcome (Aleksandrova et al., 2020; Averett, 2019; Baldwin & Choe, 2014; Bright, 2021; Flores & Kalwij, 2019; Gao et al., 2018; Halima & Rococo, 2014; Jeon, 2017; Kioko et al., 2013; Vaalavuo, 2021). However, there are several empirical studies that have investigated disability-related employment discrimination (Bajorek & Bevan, 2019; Baldwin & Johnson, 1995; Kungu et al., 2019; Reavley et al., 2017; Stuart, 2006; Vallejo-Torres et al., 2018; Yearby, 2019), with studies carried out in most developing countries showing lower employment rates among those with functional difficulties relative to individuals with disabilities (Hoogeveen, 2005; Palmer et al., 2012; Trani & Loeb, 2012).

An overview of the empirical studies shows that the disability-related discrimination debate is largely inconclusive. While some studies asserted that disability does not result in substantial discrimination, other studies showed that there is obvious discrimination against individuals with functional difficulties, even if their productivity level is the same as that of employees without functional difficulties. For instance, Keramat et al. (2021) investigated the nexus between obesity, disability, and employment discrimination in Australia, utilising four waves of household surveys. Their findings indicated that over one in ten (12.68

per cent) Australians encountered employment discrimination. Specifically, adults with disabilities had 1.89 times higher odds of facing discrimination compared to their peers without disabilities.

In the same vein, Enemchukwu (2018) examined the effects of physical disabilities on the labour market in Tanzania, using data from the 2010–2011 Tanzania National Panel Survey (TZNPS). The study found employment differentials between disabled and non-disabled labour market participants. The study also found that the unexplained gap was indicative of employment discrimination due to disabilities. A similar conclusion was reached by Maroto and Pettinicchio (2014), who utilised data from the 2011 American Community Survey and found that individuals with disabilities who are employed encounter employment discrimination that restricts their potential earnings.

Caliendo and Lee (2013) found that despite more job applications and training programmes in Germany, there are indications suggesting that women who are obese face more unfavorable employment outcomes compared to women of normal weight. Additionally, obese women who manage to secure employment tend to receive significantly lower wages compared to women of normal weight.

A comparative study by Trani and Loeb (2012) among households in Afghanistan and Zambia employing the logistic regression technique found evidence of lower access to the labour market for individuals with functional difficulties. A household survey study by Arlette (2012) in Cameroon revealed a significant employment gap between non-disabled and disabled individuals, regardless of gender or the institutional sector being considered, thus prompting the study to conclude that the gap is due to discrimination arising from functional difficulties.

Drydakis (2010) carried out a study in Greece to investigate the correlation between variations in productivity and/or discrimination and the disparities in earnings among male workers with disabilities. The study found discrimination against individuals with disabilities, regardless of their productivity level.

Baldwin and Johnson (1994) conducted a study to estimate disabled men's level of market discrimination. The study revealed a significant disparity in employment rates between men with disabilities and those without disabilities, with the former being slightly lower than the latter. The same conclusion was

reached by Jones (2006), Madden (2004), and Kidd et al. (2000) in the UK, as well as Échevin (2013) in Cape Verde.

There are several empirical studies on employment and disability using functional measures. For instance, Maia and Garcia (2019) investigated the relationship in Brazil in the 2000–2010 period. The study divided disability status into two categories: (i) severely disabled individuals [high levels of sensorial, physical, or cognitive limitations] and (ii) mildly disabled individuals [mild levels of functional difficulties]. The study found that the employment level of individuals with high levels of functional difficulties was more severely affected. Henly et al. (2023) examined the usefulness of evaluating physical and mental abilities in relation to self-reported job tasks to determine which aspects of worker functioning are most likely to hinder the fulfilment of certain occupational needs. The study adapts six measures and quantitatively analyses both physical and mental function to investigate the correlation between functioning and job responsibilities. The study revealed that individuals with functional challenges encounter obstacles in their capacity to sustain employment in specific occupations that require such abilities.

Using survey data from 2004 to 2006, Carr and Namkung (2021) found that functional difficulties adversely limit employment levels in the United States. The study employed functional difficulties including lifting or carrying objects; bathing or grooming oneself; climbing stairs; stooping, kneeling, or bending; walking; vigorous activities; and moderate activities. The response categories include the following: *a lot*, *some*, *a little*, and *not a little*. Umucu (2021) investigated whether higher levels of functional difficulties are associated with employment opportunities for individuals with chronic and disability-related conditions. The hierarchical logistic regression technique used showed that functional difficulties had a negative impact on employment outcomes.

Mitra (2018) used longitudinal data from Malawi, Uganda, Ethiopia, and Tanzania to investigate disability and some selected economic variables. The study categorised the disability variable into functional difficulties using the following classifications: severe, moderate, and none. The study found that functional difficulties severely and significantly limit the possibility of returning to employment or securing employment opportunities. Mizunoya et al. (2016)

employed a binary disability variable in which the variable assumed a value of 1 if an individual was experiencing at least one functional difficulty, and 0 otherwise. Their study adapted a non-linear Blinder-Oaxaca decomposition technique and found that functional difficulties adversely contribute to the employment gap.

The above review reveals that disability-related employment discrimination is highly plausible. In other words, individuals may experience discrimination either at entry level or during the employment stage due to the disabilities that they suffer from. This study aims to formally investigate this. With reference to empirical studies in Nigeria, the emphasis in the past has largely been on the disability–labour force participation nexus (Agu, 2016; Ahuru & Akpojubar, 2020; Mohammed et al., 2020). Employment discrimination has received minimal attention, particularly in studies that use decompositions. This is the motivation behind this study. By employing data from fourth wave of the General Household Survey, the study will utilise the rich longitudinal dataset to investigate the existentiality of disability-related discrimination in the Nigerian labour market.

3. METHODOLOGY

3.1. Model Specification

3.1.1. Fairlie Decomposition (Non-Linear) Technique

In most previous studies, the Blinder-Oaxaca (B-O) decomposition method has been utilised to identify and measure the distinct contributions of group disparities in quantifiable attributes such as marital status, experience, geographical variations, and education to the gaps in outcomes based on race and gender (Enemchukwu, 2018; Machio, 2014; Nwosu, 2015). However, in relation to this study, given that the outcome is binary and the estimates are derived from a logistic model, the direct application of the B-O decomposition method is not feasible. Thus, to decompose the dichotomous employment variable, this study used the Fairlie (1999, 2006) model, which employs logistic models, for decomposing indicator variables. The standard B-O decomposition can be expressed as follows when analysing the gap in the average value of the dependent variable, *Y*:

$$\bar{Y}^H - \bar{Y}^S = \left[(\bar{X}^H - \bar{X}^S)\hat{\beta}^S\right] + [\bar{X}^H(\bar{X}^H - \bar{X}^S)], \quad (1)$$

where $\bar{Y}^j$ is the average probability to be employed for group j [j = without functional difficulties (H) and with functional difficulties (S)], N^j is the sample size of population j, β^{H} and β^{S} are, respectively, the estimated coefficients from the binary regressions among H and S, and X_i^{H} and X_i^{S} represent the observed characteristics in each group, respectively. X^j represents the average values of the independent variables' row vector, and $\hat{\beta}^j$ is the coefficient estimates vector for disability category j. Following Fairlie (1999), the nonlinear equation decomposition for $Y = F(X\hat{\beta})$, is given as:

$$\bar{Y}^H - \bar{Y}^S = \left[\sum_{i=1}^{N^H} \frac{F(X_i^H\hat{\beta}^H)}{N^H} - \sum_{i=1}^{N^S} \frac{F(X_i^S\hat{\beta}^H)}{N^S}\right] + \left[\sum_{i=1}^{N^S} \frac{F(X_i^S\hat{\beta}^H)}{N^S} - \sum_{i=1}^{N^S} \frac{F(X_i^S\hat{\beta}^S)}{N^S}\right]. \quad (2)$$

This alternative expression for the decomposition is used because $\bar{Y}$ does not necessarily equal $F(\bar{X}\hat{\beta})$. If the logit model incorporates a constant term, Equation (2) will accurately hold due to the requirement that the average value of the dependent variable matches the average value of the predicted probabilities within the sample. In this equation, F represents the cumulative distribution function derived from the logistic distribution. In both equations (1) and (2), the first term in brackets represents the part of employment participation (work) that is influenced by group differences in the X distributions. The second term in brackets encompasses the part showing the differentials in the group processes determining levels of Y. The second term also encompasses the portion of the employment gap that can be attributed to group distinctions in unmeasurable or unobserved characteristics or attributes.

Explicitly, $\sum_{i=1}^{N^S} \frac{F(X_i^S\hat{\beta}^H)}{N^S}$ is an average of counterfactual predicted probability that would be observed if the individuals with functional difficulties had the coefficient vector of individuals without functional difficulties. The first bracket in equation (2) pertains to the portion of the gap that can be ascribed to disparities between types in the distribution of X. This portion can be labelled as the *explained part*. This portion quantifies the potential reduction in the observed difference if the between-type differences in the distribution of circumstance

variables were eliminated. On the other hand, the second bracket represents the term attributable to the between-type differences in the function determining levels of *Y*. This part is termed the *unexplained part*. The unexplained part denotes the remaining portion of the observed difference that cannot be accounted for by the between-type difference in the distribution of *X*.

Furthermore, the initial term in equation (2) offers an estimation of the impact of ability across the complete set of independent variables on the disability gap observed in the dependent variable. Assessing the overall contribution is relatively straightforward, requiring the calculation of two sets of predicted probabilities and determining the difference between their average values. However, identifying the contribution of group differences in specific variables to the disability-related employment gap is a more complex task.

It is important to acknowledge that the contribution of each variable to the gap is determined by the change in the average predicted probability resulting from replacing the distribution of the sick or individuals with functional difficulties with the distribution of the individuals without functional difficulties for that specific variable, while keeping the distributions of other variables constant. Unlike in the linear case, the independent contributions of a variable are contingent upon the values of other variables. This implies that selecting a variable is potentially significant when calculating its contribution to the gap. The Fairlie decomposition technique offers an advantage in that the total contribution from all variables evaluated using the complete sample will equal the sum of contributions from individual variables.

3.2. Data Sources and Variable Description

Data for the analysis were elicited from the fourth wave of the General Household Survey. Table 1 presents a description of the variables. The study employs a different disability variable compared to previous studies (Arlette, 2012; Nwosu, 2018; Nwosu & Woolard, 2017). In this study, the selection of the disability variable was based on the understanding that in countries such as Nigeria, where a significant number of people lack access to healthcare, using morbidity as a measure of disability may not be reliable. This is because many individuals may not be aware of their symptoms or health concerns (Case & Deaton, 2005). In addition, functional difficulties can arise from birth (e.g., low vision) and do not

necessarily imply poor health. They could be due to a variety of reasons beyond illness, such as accidents.

As a result of the above, this study implemented a functional status assessment. Functional status refers to the ability of people in optimal physical health to execute a variety of tasks. Due to the complex nature of the utilised dataset, the study adopted the recommendation of Hanass-Hancock et al. (2023). Hanass-Hancock et al. (2023) proposed that when the sample sizes of individuals with varying levels of difficulty are too small for further disaggregation or breakdown by functional domain, it is more suitable to categorise individuals into two groups: (i) those with at least one functional difficulty and (ii) those without any functional difficulty. This approach allows for a better understanding of disability status. Consequently, we used a binary system to classify individuals. The General Household Survey consists of six questions related to functional impairments, including whether an individual has difficulty in seeing, hearing, walking or climbing steps, remembering or concentrating, taking care of oneself (washing all over or dressing, feeding, toileting, etc.), and communicating. This study thus developed a disability variable based on the presence or absence of these functional difficulties (Stewart et al., 1981).

Specifically, an individual's disability status receives a score of 1 if he reports at least one of the mentioned functional difficulties. Otherwise, the disability variable receives a score of 0. This classification technique holds several advantages. For instance, using smaller scores could summarise it succinctly, resulting in higher score reliability. In addition, the ability to estimate the functional status of individuals who fail to respond to all the functional questions would be enhanced (Stewart et al., 1981).

Table 1: Variable description & definitions

Variables	Code	Description
Disability Status	DS	*Dummy Variable*: 1 = functional difficulties, 0 if otherwise
Employee	Employee	*Dummy variable*: 1 if the individual is employed in a non-farm job outside the home, and 0 if unemployed and looking for a job.
Age	***age15–24 has been taken as the reference age group***	
	Age	*Ordinal Variable*: 1 = 15–24 years; 2 = 25–34 years; 3 = 35–44 years; 4 = 45–54 years; 5 = 55–60 years.
Gender	sex	*Dummy Variable*: 1 if the individual is male, 0 if otherwise
Geographical Dummy	rural	*Dummy Variable*: 1 if the individual resides in a rural area, 0 if otherwise
Marital status	mar	Dummy Variable: 1 if the individual is in any form of union (married [monogamous], married [polygamous] & informal union), 0 if otherwise (divorced, separated, widowed & never married)
Educational status	***[No education] has been taken as the reference educational status***	
	edu	*Ordinal Variable*: 1 if the individual has no education, 2 if the individual has primary education, 3 if the individual has secondary education, 4 if the individual has tertiary education.
Region	***[North Central, NC] has been taken as the reference region***	
	reg	1 if the individual lives in North East (NE); 2 if the individual lives in North West (NW) 3 if the individual lives in South East (SE); 4 if the individual lives in South South (SS) 5 if the individual lives in South West (SW)

Source: Authors' compilation

4. FINDINGS AND DISCUSSION

4.1. Descriptive Analysis

In carrying out the descriptive statistics, the sample was restricted to respondents aged at least 15 years and not older than 60 years. This was necessitated by the need to exclude likely non-labour force participants from the analysis. Table 2 shows the descriptive statistics for both the entire population and the population broken down by functional status. The population that reported being without functional difficulties and with functional difficulties was 85.4 per cent and 14.6 per cent, respectively. About 61 per cent of the 15–60-year-old population were employed in the full population. Sixty-two per cent of the population were males, and about 52 per cent resided in rural areas. This implies that a greater percentage of the population resides in rural areas. Table 2 also shows the spatial distribution of the population across the regions. Of the population, 15, 16, 11, 17, 26, and 14 per cent reported residing in the North Central, North East, North West, South East, South South, and South West regions, respectively.

In terms of age, 26, 22, 18, and 7 per cent were within the 25–34, 35–44, 45–54, and 55–60 year limits, respectively. Also, 54 per cent of individuals were married or cohabiting, which implied that 46 per cent were unmarried in the full sample. With regards to education, 14 per cent reported having primary education; 43 per cent, secondary education; 35 per cent, tertiary education, while 8 per cent reported having no formal education.

There are also several findings about the population disaggregated by functional status. For example, employment accounted for approximately 65 and 21 per cent of the population without functional difficulties and with functional difficulties, respectively. Comparatively, a greater proportion of individuals without functional difficulties were employed than individuals with functional difficulties. Moreover, 61 per cent of those who reported having no functional difficulties were male. This implies that 39 per cent of the population without functional difficulties was female. Of those who reported having functional difficulties, 59 per cent were male and 41 per cent were female.

Table 2: Descriptive statistics

Variable	Full	Without functional difficulties	With functional difficulties	Difference
Employee	0.61 (0.5)	0.65 (0.5)	0.21 (0.3)	0.44 [0.00]***
Gender (male = 1)	0.62 (0.5)	0.61 (0.5)	0.59 (0.5)	0.02 [0.00]***
Region (rural = 1)	0.52 (0.5)	0.56 (0.5)	0.63 (0.5)	-0.07 [0.00]***
Regions				
NC	0.15 (0.4)	0.22 (0.5)	0.16 (0.3)	0.06 [0.00]***
NE	0.16 (0.4)	0.18 (0.4)	0.21 (0.4)	-0.03 [0.11]
NW	0.11 (0.3)	0.12 (0.3)	0.09 (0.3)	0.03 [0.01]***
SE	0.17 (0.3)	0.15 (0.3)	0.22 (0.5)	-0.07 [0.00]***
SS	0.26 (0.5)	0.21 (0.5)	0.28 (0.5)	-0.07 [0.00]***
SW	0.14 (0.3)	0.12 (0.3)	0.05 (0.3)	0.07 [0.01]***
Marital status	0.54 (0.5)	0.57 (0.5)	0.69 (0.5)	-0.12 [0.00]***
Age group				
15–24	0.27 (0.5)	0.28 (0.5)	0.19 (0.4)	0.09 [0.00]***
25–34	0.26 (0.5)	0.26 (0.5)	0.21 (0.5)	0.05 [0.11]
35–44	0.22 (0.5)	0.20 (0.5)	0.27 (0.5)	-0.07 [0.00]***
45–54	0.18 (0.4)	0.18 (0.4)	0.21 (0.5)	-0.03 [0.00]***
55–60	0.07 (0.3)	0.08 (0.3)	0.12 (0.3)	-0.04 [0.00]***
Educational status				
none	0.08 (0.3)	0.10 (0.3)	0.47 (0.5)	-0.37 [0.00]***
primary	0.14 (0.4)	0.28 (0.4)	0.29 (0.5)	-0.01 [0.00]***
secondary	0.43 (0.5)	0.23 (0.5)	0.15 (0.3)	0.08 [0.00]***
tertiary	0.35 (0.5)	0.39 (0.5)	0.09 (0.3)	0.03 [0.01]***
No. of observations	7,197	6,144 (85.4%)	867 (14.6%)	-

***Source*:** GHS wave 4; author's computations; sample adjusted for national representativeness using post-stratification weights.

Note: ****, **, and * have statistical significance at the 1 per cent, 5 per cent, and 10 per cent levels, respectively. Standard deviations are in round brackets; p-values are in square brackets.*

Age-wise, there were differences between those who reported having no functional difficulties and those who reported experiencing functional difficulties. For instance, while 28, 26, 20, 18, and 8 per cent were within the 15–24, 25–34, 35–44, 45–54, and 55–60-year limits, respectively, in the population

that reported experiencing no functional difficulties, the population that reported having functional difficulties accounted for 19, 21, 27, 21, and 12 per cent of those within the 15–24, 25–34, 35–44, 45–54, and 55–60-year limits, respectively. Furthermore, in the population that reported experiencing no functional difficulties, 57 per cent were married or cohabiting. Table 2 shows that among the population that reported having functional difficulties, 69 per cent reported being married or cohabiting.

A greater percentage of the disaggregated population resided in rural areas, with 56 per cent of those reporting no functional difficulties and 63 per cent of those reporting some functional difficulties living in these areas, respectively. Education-wise, most of the respondents had some form of formal education: 29, 15, and 9 per cent of the individuals with functional difficulties reported having primary education, secondary education, or tertiary education, respectively, while 47 per cent indicated they had no form of education. In contrast, 10, 28, 23, and 39 per cent of the individuals without functional difficulties reported having no form of education, primary education, secondary education, or tertiary education, respectively. Ceteris paribus, the expectation that increasing educational status reduces the detrimental effects of functional disabilities makes this plausible (Nwosu, 2015).

Table 2 also shows the spatial distribution of the population across the regions. For the individuals stating they have no functional difficulties, 22, 18, 12, 15, 21, and 12 per cent reported residing in the North Central, North East, North West, South East, South South, and South West regions, respectively. Of the individuals who reported having functional difficulties, 16, 21, 9, 22, 27, and 5 per cent lived in the North Central, North East, North West, South East, South South, and South West regions, respectively. Table 2 also indicates that there were statistically significant differences in the variables across individuals with and without functional difficulties.

Table 3 presents a comparison of the employment gap between individuals with and without functional difficulties across the waves.

Table 3: Relationship between functional status and employment status: Analysis of variance (ANOVA)

Source	SS	df	MS	F	p > F
Between groups	9.15	1	8.09	32.64	0.00***
Within groups	1733.61	7195	0.27		

***Source*:** Authors' computations.

Note: ****, **, and * denote statistical significance at the 1 per cent, 5 per cent, and 10 per cent levels, respectively; statistics are corrected for survey design and national representativeness; df, SS, MS, F, and p denote degrees of freedom, sum of squares, mean sum of squares, F-statistic, and p-value, respectively.*

The results indicate that there was a statistically significant difference between the mean employment score for individuals with and without functional difficulties (F = 32.64, p =.00). This may indicate some evidence of disability-related disparities in employment. However, we cannot assert that disability-related discrimination is the cause of these disparities until we undertake a more formal analysis. This next section focuses on determining potential discrimination.

4.2. Econometric Analysis

The Fairlie decomposition estimate coefficients are presented in Table 4. The study used employment of individuals without functional difficulties as the non-discriminatory norm. Path dependence is a possible issue associated with Fairlie's sequential decomposition, which refers to the potential for different results when the order of variables in the decomposition is altered (Erdem, 2019; Fairlie, 2016; Fairlie & Robb, 2007; Schwiebert, 2015). Stated differently, the primary issue with the non-linear model stems from its sensitivity to the order of variables incorporated into the decomposition process. The Fairlie technique attempts to solve the problem by randomly ordering the variables across replications of the decomposition (Fairlie, 2016). To mitigate this concern, this study employed a substantial number of simulations to approximate the average decomposition across all possible orderings of variables while ensuring the preservation of the summing-up property. In order to test the sensitivity of the decomposition estimates to variable re-ordering, the study randomly shuffled the order of variables in the decomposition using 1000 replications, which is the minimum recommended number for most applications. (Fairlie, 2016; Jann, 2006).

The individual variables' signs have specific implications. A positive contribution on the part of a covariate signifies that the covariate contributed to widening the employment gap between individuals with and without functional difficulties, while a negative contribution indicates that it contributed to reducing the gap. The Fairlie decomposition concentrates on assessing how group differences in attributes influence the difference in employment rates between individuals with and without functional difficulties. This approach allows analysis of nonlinear outcomes. The estimates of dummy variables with several categories are calculated as a sum instead of categorically estimating them. It can also be observed in Table 4 that there is no significant difference in the outcomes of the pooled (column A) and non-discriminatory norm (column B).

The employment rate among individuals with no functional difficulties is about 19 percentage points (p.p.) greater than among individuals with functional difficulties (65.9 per cent against 46.9 per cent). In other words, the difference in employment between the two groups is about 0.19. The Fairlie decomposition shows that only 3.16 p.p. of that differential, which corresponds to 16.63 per cent of the total differential, may be explained by the endowments included in the model. The results are indicative of the fact that if the individuals with functional difficulties had the characteristics of the individuals without functional difficulties, their employment rate would increase (Arlette, 2012).

Based on the results of the Fairlie decomposition, the difference in group differences between people who do not have any functional difficulties and those who do have functional difficulties in all the model's covariates only makes up less than 20 per cent of the employment gap. Unobserved variables associated with employment may account for some of the gap. However, previous studies have opined that most of the unexplained gap may be attributed to discrimination (Arlette, 2012; Kidd et al., 2000). In other words, ceteris paribus, individuals with functional difficulties have disadvantages in employment compared to individuals without functional difficulties. Expressed differently, discrimination between the subgroups, among other omitted determinants of employment, could partly explain the employment gap. The decomposition of the employment gap revealed that the gap cannot be entirely attributable to observable characteristics (Arlette, 2012). For instance, functional difficulties impose productivity constraints that may not fully account for the observed

characteristics, contributing to a portion of the difference. Others may include a lack of social networks and a low quality of education. That said, it is likely that at least some of it was the result of employment discrimination due to individuals' disabilities.

Table 4: Decomposition of disability-related employment disparity

	(A) Individuals with/without function difficulties pooled		(B) Individuals without functional difficulties	
Variable	**Estimate**	**Share (% of total gap)**	**Estimate**	**Share (% of total gap)**
Mean prediction among individuals without functional difficulties	0.659		0.655	
Mean prediction among individuals with functional difficulties	0.469		0.463	
Total gap (A)	0.190		0.192	
Total explained gap (B)	0.0316	16.63	0.0252	13.13
Contribution of variable groups				
gender	0.0132***	6.95	0.0131***	6.88
	(0.0001)		(0.0000)	
rural	0.0309***	16.26	0.0311***	16.20
	(0.0000)		(0.0001)	
educational status	-0.0071*	-3.74	-0.0080*	-4.27
	(0.0554)		(0.0552)	
age	-0.0151**	-7.95	-0.0205**	-10.68
	(0.0433)		(0.0429)	
marital status	-0.0019***	-6.26	-0.0022***	-6.35
	(0.0013)		(0.0005)	
region	0.0216*	11.37	0.0218**	11.35
	(0.0610)		(0.0415)	
Observations	7,197		6,144	

***Source*:** Authors' computations.

Note: ****, **, * denotes significance at the 1 per cent, 5 per cent, and 10 per cent levels, respectively. The p-values are reported in brackets. Estimates and standard errors are generated from 1000 bootstrap samples. The sample was adjusted for national representativeness using post-stratification weights. Fairlie decomposition routine estimates follow Jann (2006). The outcome variable, employee, has a value of 1 if the individual holds a non-farm job outside their home, and 0 if they are unemployed and actively seeking employment.*

The finding that disability-related discrimination makes a substantial contribution to the employment gap is similar to conclusions reached in some previous studies. For instance, Mizunoya and Mitra (2013) found that people with disabilities have lower employment rates and attributed such employment rates to discrimination. Enemchukwu (2018) found a similar result in Tanzania. Several studies affirm that the employment gap is largely due to the functional difficulties of employees, with employers often harbouring pessimistic views about the work-related abilities of these individuals (Gold et al., 2012; Kaye, 2001; Lengnick-Hall et al., 2008). According to these studies, the employment gap is often explained by biased behaviour by employers and "pre-market" discrimination, which largely depend on the functional status of the individual.

The covariates have several economic implications. There is a disability-related employment gap between individuals with and without functional difficulties associated with their region of residence. The region in which an individual resides contributes to widening the employment gap between individuals with and without functional difficulties. Specifically, the region widens the gap by about 11.37 per cent. In the same vein, residing in a rural location widens the employment gap between individuals with functional difficulties and those without functional difficulties by 16.26 per cent.

Gender-wise, being male widens the employment gap by 6.95 per cent. This might possibly be caused by the fact that employment between males and females differs due to women's engagement in house management and other family commitments. The results show that education narrows the employment gap between individuals with and without functional difficulties. In other words, education contributes to the narrowing of the employment gap between the two groups. As educational attainment advances, the gap narrows. This is plausible since better educational qualifications improve employment outcomes, ceteris paribus (Lang & Manove, 2011). The findings of our study are consistent with some previous empirical studies (Asafu-Adjaye, 2012; Kuepie et al., 2006), but contrast with others (Fasih, 2008; Riddell & Song, 2011). In the same vein, age contributes to a narrowing of the employment gap. This is expected given that age is a reasonable proxy for experience, which may help reduce the employment gap between individuals with and without functional difficulties.

The marital status variable made a negative contribution to the employment gap. This is an indication that marital status played a role in reducing the disability-related employment gap. This may be due to the higher possibility of sick spouses enjoying more optimal treatment and follow-up care (Syse & Lyngstad, 2017), as well as having a higher probability of earlier recovery and re-entry into employment. In addition, married or cohabiting individuals benefit from their spouses' networks to secure jobs.

Our study has shown that age group, marital status, gender, and the location effect were among the most important covariates of the employment gap in the Fairlie decomposition model. Closing the gap in the demographic and proximal characteristics of people with and without functional difficulties was not enough to end employment inequalities between them, as shown by the significant unexplained contribution. These findings have huge implications for labour market outcomes in Nigeria and other developing economies.

5. CONCLUSION

The paper investigated the existence of a disability gap in employment in Nigeria and its implications. The Fairlie decomposition technique was employed to explore the presence of any disability-related employment discrimination. The results revealed significant employment gaps associated with disabilities, over and above the contribution of the observed covariates. However, discrimination due to functional difficulties was likely a huge factor in the employment gap (due to a large component unexplained by the observed characteristics of the labour force). As indicated earlier, some of this unexplained employment gap may be due to unobserved characteristics such as innate ability and productivity. In other words, the Fairlie decomposition reveals that observed characteristics between individuals with and without functional difficulties do not adequately explain the employment gap overall.

Therefore, based on the study's findings, policies regarding work accessibility might be more effective than anti-discrimination laws. Nonetheless, policies that prohibit discrimination based on functional status and ensure equal opportunity in the labour market are essential. These policies safeguard individuals from unjust treatment or exclusion from employment opportunities because of their functional difficulties, promoting a workforce that is more inclusive and diverse.

In other words, it is important for employers to foster inclusive work environments that promote equal opportunities and treat individuals with respect regardless of their functional status. Anti-discrimination policies, education and awareness programs, and reasonable accommodation practices can help mitigate disability-related employment discrimination and create a more equitable workplace for all employees.

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