



## TECHNOLOGY AND ECONOMIC DISPARITIES IN THE NIGERIAN LABOR MARKET

Oluwajuwon Olanrewaju<sup>1</sup>, Kelechi Helen Amuzie<sup>2</sup> and Solomon Audu<sup>3</sup>

<sup>1</sup>Bursary Department, Caleb University, Lagos State.

<sup>2</sup>Relationship Manager, Keystone Bank, Awka Branch, Anambra State.

<sup>3</sup>Department of Accounting, Finance & Taxation, Caleb University, Lagos State.

### Cite this article:

Oluwajuwon O., Kelechi H. A., Solomon A. (2024), Technology and Economic Disparities in the Nigerian Labor Market. African Journal of Economics and Sustainable Development 7(2), 174-180. DOI: 10.52589/AJESD-JB3QOM6H

### Manuscript History

Received: 19 Jan 2024

Accepted: 5 Apr 2024

Published: 1 May 2024

**Copyright** © 2024 The Author(s). This is an Open Access article distributed under the terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0), which permits anyone to share, use, reproduce and redistribute in any medium, provided the original author and source are credited.

**ABSTRACT:** *The main focus of this study was to examine the influence of technology on economic disparities in the Nigerian labor market. The quantitative research method was used and secondary data was collected over an eight-year period which spanned from 2015 to 2022. Simple regression was used to analyze the independent variable (technology) which is proxy by global innovation index on the dependent variable (economic disparity of labor) which is proxy by human development index. The result of this study reveals that technology has an inverse significant influence on human development index. It is therefore concluded that technology innovation has a significant inverse influence on labor disparity in Nigeria. It is therefore recommended that those that constitute labor need to upskill themselves with the use of technology in order to earn more and gain from the opportunities that technology has to offer.*

**KEYWORDS:** Global innovation index, Human development index, Labor disparity, Technology innovation.



## INTRODUCTION

Technological inputs in the past decades have tremendously increased labour performance and output, specifically technological knowhow in robotics, applications, automation, and computerization. The advent of technological development has significantly transformed the production processes for many different industries in Nigeria. This led to the fear and general belief of many that technological development has increased automation of some easy tasks of the middle skill white collar and blue-collar labour (Autor, 2015).

Rise in technology is fundamentally transforming the nature of traditional workplaces, leading to the emergence of new work environments; its impact on labour productivity, and earning levels are being raised as a by-product of the changing nature of work. This issue now became the focus and significant aspect of discussion in recent times. Kuznets (1955) highlighted the impact of technology on labor productivity and changes in labor earning over the years. Kuznets (1955) showed how technology changes promote industrial growth, which lead to an increase in labor demand in the industrial sector and a corresponding increase in the ratio of wages in industrial employment to wages in agricultural employment. Rising industrial wages induced a flow of workers from the low-wage agricultural sector to the high-wage industrial sector, initially leading to increased income inequality.

Technology today is changing at a rapid pace, enabling faster change and progress, causing an acceleration of the rate of change. However, it is not only technology trends and emerging technologies that are evolving, a lot more has changed, making IT professionals realize that their role will not stay the same in the contactless world tomorrow. An IT professional in 2024 will constantly be learning, unlearning, and relearning (Nikita, 2023) as technological growth brings about change in employment landscape through innovations because most jobs done by many workers are now automated, which significantly increased the unemployment gap and economic disparities. However, millions of jobs have been created and will be created because of technological transformation, but they will only be available for labour who can leverage technology. According to Jean (2017), manufacturing companies are experimenting with having floor and line workers use mechanical exoskeletons to reduce strain and fatigue when lifting heavy objects. He shared that sales representatives will need to become more capable with online marketing and engagement to adapt to customer preferences. Technology will continue to change the landscape of work; as a result of this, many have lost their jobs while many are being employed with lucrative benefits. The question is about which jobs are lost and which are gained and who those changes affect; this is important in considering whether people will have the opportunity to shift from working in the jobs of yesterday to the jobs of tomorrow. Which jobs are positioned for growth, well paying, and which face declining demand? According to Acemoglu (2002), the recent increase in inequality is most likely due to an acceleration in skill bias. In contrast to twentieth-century developments, much of the technical change during the early nineteenth century appears to be skill-replacing. So, because of skilled workers taking over the industries, technological innovation increased at a very high pace. The evidence is clear that technological change has reduced the need for routine mechanized work and increased both the demand and pay for high-skilled technical and analytical work. The impact of automation and artificial intelligence is an acceleration of a trend decades in the making.

Dachs (2017) opined that from existing research and experience from previous technological revolutions, the study reveals a positive note about the future. It argues that innovation is



labour-friendly: it destroys employment but also creates employment. He said that in previous times, the race between job creation through product innovation and job destruction through process innovation has been won by the job-creating effects of innovation. So, it does not mean that digitalisation will lead to high levels of unemployment. However, the costs of digitalisation are not equally distributed due to the dynamic nature of technological change and access to the right technological skills needed for better productivity at work in this part of the continent. Low skilled workers were more affected by the advent of technological innovation and dynamic nature of change and also occupations with high share of routine tasks, precisely in the service industries. So, this structure change, a result of technology and innovation, continues to widen the economic disparity gap in the labour market.

**Technology and Labour Productivity:** The mid-1990s reveal a rapid growth of output and labour productivity which was significantly driven by advances in Information and Communication Technology (ICT) (Jorgenson, 2001; Venturini, 2009; Lam & Shiu, 2010). In particular, numerous studies have shown that investments in technology boosted the economy of the United States (USA) (Jorgenson & Stiroh, 2000; Jorgenson, 2001) and some economies of the European Union (EU). It is evident that technology enhances labour productivity from experience since the mid-1990's. Presently, laborers who leverage well with technology become sought after in the labour market.

**Technology and Income Inequalities in the Labor Market:** A reasonable level of income inequality is acceptable and necessary to reward hard work and innovation, but the gap in wage inequality is wide and stands as a threat to long-term economic growth. Technology and digitization, also known as general purpose technology, are at the core of this widening gap in wage inequality. They have initiated the automation of routine tasks, the globalization of labour markets, and thus have lowered wages in occupations that are easily substitutable now or in the future with machines, AI, etc. However, the rapid rise of high-skilled workers' wages is due to the inability to access skills needed for productivity in our educational institution (Augustine 2016). The educated and skilled workforce has been further rewarded, which has widened the inequality gap, by the increasing premium for skills that are hard to measure and hard to automate: cognitive and social intelligence, entrepreneurial and leadership skills, and the ability to adapt and innovate. According to (Augustine, 2016), low wage and low-skill workers are the ones bearing the economic cost of automation and digitization and are the most disadvantaged in access to skills complimentary to digitization, namely cognitive and social intelligence skills.

Thus, low skill with jobs that could easily be substituted with automation are the most disadvantaged in preparedness for jobs of the future. Both long-term and short-term policy goals should be tailored to complement the rapid speed of technological advancements and digitization. Investment in human capital (just as the adoption of Singapore investing more in human capital) is the only way to use technological advancement to promote widespread prosperity. With the focus on long-term sustainable economic growth, reforms and reinvention of educational institutions with respect to revolution of job requirement in the labour market and need of the society is needed. Hence, the main objective of this study is to examine the influence of technology on economic disparity in Nigeria. To achieve this, the following specific objective was met, which is to:

- i. assess the influence of technology innovation on the human development index in Nigeria.



The remaining part of this study shows the review of theory and empirical review along with the research methodology, the data analysis and discussion of findings, and then the conclusion and recommendation from this study.

## **THEORETICAL REVIEW**

### **Internal Labor Market Theory**

This theory can be traced to the early 19<sup>th</sup> century; Jacoby (1984) identified the operation of the theory in the market economy. The theory explains that there are two categories of labor which are the specialized form of labor and the general form of labor. The theory shows that employers are ready to prevent the transaction cost of replacing specialized labor as such usually have an adverse effect on the business.

However, Osterman (1984) explained that labor price is usually determined by the interaction between supply and demand of labor. This further strengthens the position of the internal labor market theory. However, based on the market segmentation and industry requirement, there seem to be instances where the general form of labor is needed rather than the specialized form of labor, which might seem to be more valuable.

Despite this, the advent of technology in the current disposition means that labor will be required to use technology; it also means that boundaries or barriers to knowledge have been significantly removed. This therefore means that technology has led to a disruption in labor disparity. In Nigeria, for instance, where a teeming size of the population does not have access to quality information communication technology or education, this supposes that there will be labor price variance in the population. Hence, this study is set to examine that validity of this theory from the Nigerian perspective to identify how technology influences labor in Nigeria.

### **Empirical Review**

Acemoglu (2002) examined the relationship between technology and inequality. A qualitative research design was used to examine literature and identify factors that caused labor inequality. It was revealed that globalization, technology, and change in demand for skills, amongst others, influences labor wage disparity.

Hornstein et al. (2005) assessed the effect of technical change on labor market inequalities—a qualitative review that focused on the changing process of the work environment and labor inequality. They pointed out that organization process change and union collective bargaining also influence labor price inequality.

Walwei (2016) assessed the influence of digitalization on the labor market. A qualitative research design was used in the study with special focus on Germany. It was pointed out that digitalization does influence labor market variations.

Gries and Nuade (2018) evaluated the correlation between artificial intelligence, labor price inequality and job performance. A qualitative research method was used to explain theoretically how artificial intelligence influences labor price variance and job performance. They pointed out although theoretically that AI is linked to unemployment but in reality, unemployment level has been low compared to the massive advancement in technology.



However, there have been increasing labor price variance and concerns on maintaining job productivity.

Aleman-Castilla and Rodriguez-Pueblita (2020) evaluated the association between trade and labor market interaction. A qualitative research design was used in the study with the aim of reviewing theories and practice. They revealed that there is a need to build data for such study in the future.

Wang et al. (2021) focused on trade and technology roles in reducing wage inequalities among some selected countries. A qualitative research design was used to design a way of measuring wage inequality. They pointed out that trade has an indirect influence on technology, which has a significant influence on wages.

Nikulin et al. (2021) examined wage inequality among firms in different countries. Secondary data was used to make inferential deductions. They showed that technology has an effect on wage inequality.

## METHODOLOGY

The positivist research philosophy is the bedrock on which the methodology of this study was framed. The quantitative research method was used and the ex post facto research design was used in this study. Secondary data was collected over a time frame of eight years, which spanned from 2015 to 2022. The simple regression model was used due to availability of data. The data were sourced from Global Economy. The research model used in this study is shown below:

$$Y = F(X)$$

where

Y = Human development Index (Dependent Variable)

X = Global innovation index (Independent Variable)

Mathematically, this can be rewritten as:

$$HDI = \beta_0 + \beta_1 GII + e_i$$

Where

HDI = Human development index (Dependent variable)

GII = Global innovation index (Independent variable)

$\beta_0$  = Intercept where GII is zero

$e_i$  = Error term





---

## REFERENCES

- Acemoglu, D. (2002). Technology and inequality. *NBER Reporter Online, National Bureau of Economic Research, Cambridge*, 12-16.
- Aleman-Castilla, B., & Rodriguez-Pueblita, C. (2020). A summary of the main theories and evidence at the firm and worker levels. *Trade and Labour Market Outcomes*, 80-107.
- Gries, T., & Naude, W. (2018). Artificial intelligence, jobs, inequality and productivity: Does aggregate demand matter? *IZA Institute of Labor Economics Discussion Paper No. 12005*, 1-39.
- Hornstein, A., Krusell, P., & Violante, G. L. (2005). The effects of technical change on labor market inequalities. *CEPS Working Paper No. 113*, 1-49.
- Jacoby, S. M. (1984). The development of internal labor markets in American manufacturing firms. In P. Osterman, *Internal Labor Markets* (pp. 23-69). Cambridge: MIT Press.
- Nikulin, D., Wolszczak-Derlacz, J., & Parteka, A. (2021). GVC and wage dispersion, firm-level evidence from employee-employer database. *Equilibrium, Quarterly Journal of Economics and Economic Policy*, 16(2), 357-375.
- Walwei, U. (2016). Digitalization and structural labour market problems: The case of Germany. *ILO Research Paper No. 17*, 1-46.
- Wang, W., Findlay, C., & Thangavelu, S. (2021). Trade, technology and the labor market: impacts on wage inequality within countries. *Asian Pacific Economic Literature*, 1-17. doi:doi: 10.1111/apel.12313