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EMPLOYMENT CREATION POTENTIAL OF INDUSTRIES WITHOUT SMOKESTACKS

A NIGERIA CASE STUDY

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Employment creation potential of industries without smokestacks: A Nigeria case study

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List of Abbreviations

AfCFTA - African Continental Free Trade Area

CBN – Central Bank of Nigeria

ERGP - Economic Recovery and Growth Plan

fintech – financial technology

GDP – Gross Domestic Product

ICT – information and communication technology

IT – information technology

IWOSS – industries without smokestacks

NBS – National Bureau of Statistics

NDP – National Development Plan

NESP - Nigeria Economic Sustainability Plan

STEM – science, technology, engineering, and mathematics

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Executive summary

This report examines the potential for industries without smokestacks (IWOSS) in creating large-scale job opportunities in Nigeria, particularly for the young and female population subgroups. With the emergence of technology and shifts in the global economy, the relevance of some industries in economic development have increased. These industries are codified as IWOSS. IWOSS are sectors with higher labor productivity relative to traditional agriculture, and they are also tradable (Bhorat et al. 2020; Heitzig et al. forthcoming). These sectors include agro-processing, financial and business services, information and communications technology (ICT), tourism, formal trade, and transport. The emerging role of IWOSS is particularly important as evidence indicates that the employment crisis and poor performance of manufacturing have become major concerns in Nigeria.

The study addresses the following questions: (i) What is the employment situation in Nigeria? (ii) What is the pattern of sector growth vis-a-vis performance of IWOSS and non-IWOSS sectors in Nigeria? (iii) What is the potential growth and labor demand of IWOSS sectors? The methods employed include an evaluation of sectors' performance in terms of growth and wage employment, analyses of present and future levels of employment and productivity, and the use of a value-chain approach to assess employment creation potential and significant constraints. These approaches are complemented with a survey conducted between February and September of 2022 with firms selected from three IWOSS sectors.

The selected sectors for in-depth evaluations were financial and business services, ICT, and formal trade. The sectors were selected due to their relatively high productivity and positive employment elasticities. Baccini et al. (2021) noted that sectors with higher labor productivity drive economic development in 13 African countries, including Nigeria. For Nigeria to achieve sustained economic growth with significant job creation opportunities, sectors with high labor productivity need to be prioritized.

This study's findings show that the relatively high growth the Nigerian economy experienced during the 2000s has become fragile in the last few years. As a result, the number of jobs created was below the number of people entering the labor market, leading to a rising unemployment rate, especially among youths. Nevertheless, the service sector—comprising mostly IWOSS sectors—contributed the majority of total output (50 percent) and employment (53 percent), as of 2019. Accordingly, IWOSS such as construction and ICT have increased their contribution to output by an average of 74 percentage points while others, such as the mining sector, have drastically declined by up to 61 percentage points between 2000 and 2020. On employment, IWOSS sectors such as financial and business services and trade have increasingly contributed to employment between 2010 and 2018. Consequently, there is a labor resource shift from low-productivity sectors such as traditional agriculture to higher-productivity sectors such as the financial and business services sector.

Further, the study finds that IWOSS sectors contracted during the COVID-19-induced recession; however, the IWOSS sectors' rate of recovery was higher than that of the

manufacturing and non-IWOSS sectors. This suggests that IWOSS sectors are more resilient, contributed significantly to the rapid recovery of the Nigerian economy, and will continue to play an important role in the post-pandemic era. Even during the peak of the pandemic, the ICT sector (an IWOSS sector) experienced a positive growth of about 15 percent, which was due to an increased digitalization of economic activities. Other IWOSS sectors were fully recovered by the first quarter of 2022.

The analysis also shows youths and females make up a higher percentage of the demographic in jobs in the IWOSS sectors than they do in the non-IWOSS sectors. In 2018, for example, women represented 34 percent of employment in IWOSS sectors compared to 32.2 percent for non-IWOSS sectors. Additionally, the share of 25-34-year-olds in total employment was higher for IWOSS sectors (29.8 percent) compared to non-IWOSS sectors (26.3 percent). This suggests that IWOSS sectors are more inclined toward employing youths compared to non-IWOSS sectors in Nigeria.

However, most of those employed in IWOSS sectors have relatively higher education. Specifically, in 2018, 76.7 percent of the total labor force in IWOSS sectors had secondary and post-secondary education compared to 57.4 percent in non-IWOSS sectors. The IWOSS sectors that accounted for the most employment of highly skilled workers were formal trade and financial and business services, while the sector that accounted for most of the employment of the low-skilled workforce was the export crops and horticulture sector.

In the future, IWOSS sectors are projected to deliver the majority of jobs to labor market entrants. The study estimates that IWOSS sectors could create up to 56 percent of the projected 47.3 million new jobs between 2018 and 2035; however, fewer jobs will be created for unskilled workers. Of the 47 million new jobs, IWOSS sectors will generate 27 million, out of which 9 million jobs will employ females.

The report further highlights the general and sector-specific constraints limiting the selected IWOSS sectors' competitiveness, investment inflow, output, and employment growth. Thus, the study identifies constraints that inhibit growth and employment generation in the economy as a group as well as those that pertain to the individual sectors. In addition, the study investigates the skills assessments for the selected sectors. The general constraints are related to the weak enabling environment, which includes deficient infrastructure, skills gaps, lack of credit facilities, and high prevalence of corruption. At the sector-specific level, financial and business services face constraints related to the high prevalence of nonperforming loans, poor corporate governance, and cyber breaches and attacks. Meanwhile, the ICT industry is affected by the poor performance of educational institutions in preparing their students with in-demand technological skills. Lastly, the trade sector is hampered by issues related to poor logistics and transport infrastructure, long processing time at the ports, and low access to and volatility of foreign exchange.

Therefore, the report makes recommendations to address both general and IWOSS sector-specific constraints. The study emphasizes the need to strengthen financial institutions to expand their loan services, especially to small- and medium-sized enterprises. Also, the study notes the need to increase investment in critical infrastructure, such as transport (roads,

railways, and air transport), electricity, and communication infrastructure. Further, the study highlights the importance of creating an enabling policy space that strengthens the ICT industry, increases the competitiveness of the financial sector, and enshrines good governance.

On the skills deficit, the study advocates for enhanced collaboration between industries and higher education institutions, as well as the integration of ICT skills into the school curricula in order to increase the preparedness of students. Effective implementation of these policy recommendations as well as the other sector-specific ones described in the report are expected to foster private-sector development and increase job creation, especially for youths and women.

Introduction

Young people under the age of 30 account for nearly 70 percent of the population of Africa, making it the world's youngest continent (United Nations 2021). While this trend provides exciting opportunities for enhancing creativity and innovation, it comes with a high burden, as the formal education system and apprenticeship programs cannot adequately prepare the large number of young people for the future of work. As a result, the continent may have a large share of youths without high quality jobs for their desired quality of life. The future remains bleak as projections show that the number of youths in Africa will increase by 42 percent by 2030 (United Nations, 2015), further indicating the need to close the youth skills gap on the continent in order to actualize improved employment.

Nigeria is Africa's most populous country with over 200 million people and has the largest labor force in the continent (Macrotrends 2022; Global Business Service 2021). The most recent national labor force population survey shows that over 69.7 million Nigerians are within the working age group and are willing to work (NBS 2020a). Out of the 69.7 million people, over 42 percent of young people (aged 15-34 years) are unemployed (NBS 2020a). In this regard, Nigerians are found in the web of the informal economy, self-employment, and underemployment, which leaves many Nigerians, mostly youths, to experience vulnerable employment, poor working conditions, and high poverty (World Bank 2015). Indeed, in 2020, about a third of the youths (28.2 percent) were underemployed (NBS 2020a). Put together, Nigeria will need to deliver a large number of quality jobs for youths.

The manufacturing sector, which was long assumed to play a central role in generating considerable employment in Nigeria, has remained relatively stagnant over the years (Itaman and Awopegba 2021). Recent estimates show that the manufacturing sector accounts for less than 10 percent of the national gross domestic product (GDP), and as a result, it employs only a small cohort of the labor force (World Bank 2022a). Accordingly, the contribution of the manufacturing sector to formal sector employment has remained stagnant, averaging 11.4 percent between 2011 and 2021 (World Bank 2022a). The situation is further worsened by minimal employment opportunities in the public sector (World Bank 2015). A considerable share of young Nigerians who graduate each year with a degree, certificate, or diploma seem to prefer working with the government due to the perceived job security; however, public sector jobs have been in short supply over the past two decades (World Bank 2015). On the other hand, the private sector, which has been active in creating jobs, has been unable to adequately absorb the large number of people entering the labor market (World Bank 2019b).

To mitigate this problem, a growing body of studies (Page 2019; Page 2020) points to alternative sectors known as industries without smokestacks (IWOSS) that exhibit similarities with the manufacturing sector, notably their tradability, proclivity to absorb large numbers of low-skilled employees, and potential for technological change and productivity growth. More specifically, the sectors have higher labor productivity and are tradables (Heitzig et al. forthcoming). Agro-processing, financial and business services, ICT, tourism, trade, transport, and logistics are examples of IWOSS sectors. These sectors are gaining

significant recognition in the development of African countries following the emergence of technology and the increased integration of these countries into the global economy.

The central concern is whether these IWOSS sectors can provide a satisfactory performance in creating adequate and quality employment in Nigeria. This case study adds to the body of evidence around IWOSS sectors by examining the role of IWOSS in generating large-scale job prospects for Nigeria's youths, particularly in the formal economy. Also, the study seeks to identify barriers to growth and employment creation in the specified IWOSS sectors. The paper focuses on three IWOSS sectors: financial and business services, ICT, and trade. The sectors were selected using two main factors: high productivity and positive employment elasticity. Following findings from Baccini et al. (2021), which show that more productive industries drive economic development, this study, therefore, defines IWOSS sectors to include those with high labor productivity that have significant implications for job creation opportunities. In addition, the selected sectors are at the center of the future of work and have a considerable potential to create large-scale formal employment opportunities for Nigeria's youth. ICT, for example, acts as an enabler for other sectors of the economy. As a result, growth in the industry would entail significant job creation in the sector itself and in other sectors of the economy.

The study's findings show that the relatively high growth experienced by the Nigerian economy during the 2000s became fragile in the last few years. As a result, there is rising unemployment, especially among youths, as the number of jobs created in the economy was smaller than the number of people entering the labor market. Nevertheless, the service sector—comprising mostly IWOSS sectors—contributed the majority of total output (50 percent) and employment (53 percent) as of 2019 (NBS, 2020). Accordingly, IWOSS sectors (such as construction and ICT) have increased their contribution to output by an average of 74 percentage points. In comparison, other sectors (such as the mining sector) have seen a drastic decline in their contribution by up to 61 percentage points between 2000 and 2020. On employment, IWOSS sectors such as financial and business services and trade increasingly contributed to employment between 2010 and 2018. Consequently, there is a labor resource shift from low-productivity sectors such as traditional agriculture to higher-productivity sectors such as the financial and business services sector.

Further, the study finds that IWOSS sectors contracted during the COVID-19-induced recession; however, IWOSS sectors' rate of recovery was higher than that of the manufacturing and non-IWOSS sectors. This suggests that IWOSS sectors contributed significantly to the rapid recovery of the Nigerian economy and will continue to play an important role in the post-pandemic era. Even during the peak of the pandemic, IWOSS sectors such as the ICT sector were resilient, and other IWOSS sectors were fully recovered by the first quarter of 2022.

The analysis also shows that youths and females make up a higher percentage of the demographic in jobs in the IWOSS sectors than they do in the non-IWOSS sectors. In 2018, for example, 34 percent of employment in IWOSS sectors was accounted for by women, compared to 32.2 percent for non-IWOSS sectors. Although the difference in employment share for women between the two sectors is marginal, it is noteworthy that IWOSS sectors

are more likely to absorb women workers relative to non-IWOSS sectors. Additionally, the share of 25-34-year-olds in total employment is higher for IWOSS sectors (29.8 percent) compared to non-IWOSS sectors (26.3 percent). This suggests that IWOSS sectors are more inclined toward employing youths compared to non-IWOSS sectors in Nigeria.

However, most of those employed in IWOSS sectors have relatively higher secondary and post-secondary education. Specifically, in 2018, 76.7 percent of the total labor force in IWOSS sectors had secondary and post-secondary education compared to 57.4 percent in non-IWOSS sectors. The sectors that accounted for the most employment of highly skilled workers among IWOSS sectors were formal trade and financial and business, while the export crops and horticulture sector accounted for most of the employment of the lower-skilled workforce. It is important to note that most youths in Nigeria have secondary and post-secondary education (NBS 2020b).

The study's projection indicates that the IWOSS sectors have the potential to create up to 56 percent (27 million) of the 47 million new jobs projected between 2018 and 2035, and 9 million of these will go to females.[1] Whether the extent of the skills gap—which is the difference between the skills required for a job and the skills employees actually possess—will shrink in the future remains unknown and is worthy of further investigation.

The remainder of the study is structured as follows: Section 2 briefly examines the country's macroeconomic context and background, and section 3 assesses, in a comparative manner, patterns of economic and structural transformation in Nigeria. Section 4 analyzes the sectoral composition of the IWOSS and non-IWOSS sectors. Section 5 identifies the constraints to IWOSS sector growth, and section 6 examines the trends of labor demand growth into the future. Section 7 discusses the firm survey results with emphasis on the labor skills requirements and skills gaps. Section 8 highlights policy recommendations, and section 9

[1] The estimation is based on historical trends, and the approach used in the computation is described in section 6.

Country context

This section provides an overview of the Nigerian economy before and during the COVID-19 pandemic. The analysis shows that Nigeria had fragile growth with limited job creation prior to the pandemic. Employment was reported to be sluggish both for youths and females, resulting in high unemployment rates. In particular, the rate of unemployment was seen to be higher in the first year of the pandemic. The section is broadly divided into the pre-pandemic era (2000-2019) and the pandemic era (2020-2021), with emphasis on the extent of job creation.

Pre-pandemic era

Economic growth

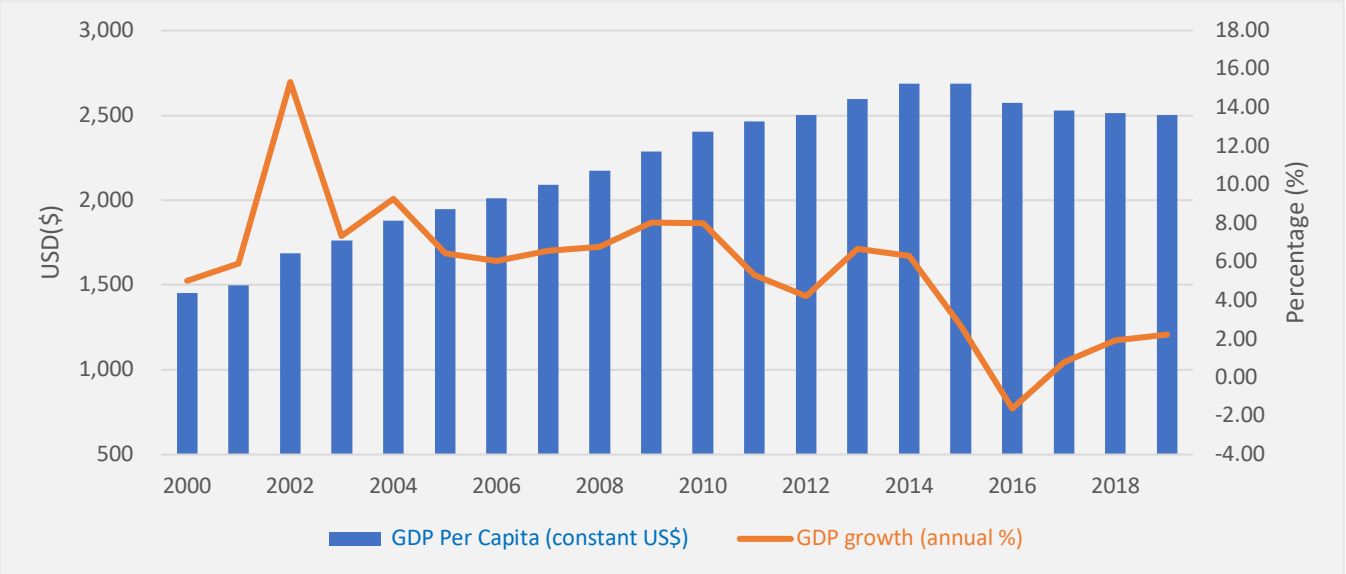
The Nigerian government implemented several reforms to rebuild the economy in the fourth republic, particularly beginning from the second term of former President Olusegun Obasanjo's administration. In 2003, the government developed the National Economic Empowerment and Development Strategy to anchor economic reform efforts (Okonjo-Iweala and Osafo-Kwaako 2007). The reforms focused on four areas—macroeconomic reform, structural reform, public sector reform, and institutional and governance reform—which were aimed at increasing private sector participation in the economy, considering the essential role the private sector plays in enhancing wealth creation and reducing poverty (Okonjo-Iweala and Osafo-Kwaako 2007). The result was an increase in the average GDP growth rate exceeding 6 percent between 2004 and 2010 (see figure 1), accompanied by a rise in per capita income. Consequently, Nigeria's per capita income rose from less than $1,900 in 2004 to $2,400 by 2010, an increase of about 26 percent (World Bank 2022a).

Furthermore, the reforms helped cushion the effect of the 2007-2008 global financial crisis on the economy. However, the heightened insecurity across the country, especially in the northern part, as well as other legacy issues such as poor infrastructure, impeded the economy and resulted in slower growth between 2011 and 2012 (International Monetary Fund 2014). Because the economic growth rate minimally exceeded population growth, per capita income only slightly increased. Consequently, per capita income reached $2,501 in 2012. While the reforms supported the development of the non-oil sector, the continuous reliance on the oil sector as the primary source of government revenue and export earnings made the economy vulnerable to volatility in the oil price (International Monetary Fund 2014).

The collapse in the price of crude oil in mid-2014 and decline in oil production, owing to the continued vandalization of crude oil pipelines, resulted in slow growth in 2014 and, subsequently, negative growth in 2015 (see figure 1). This indicates that Nigeria’s growth continues to be largely dependent on changes in commodity price. Consequently, Nigeria’s per capita GDP reached its peak value of $2,688 in 2014 and reduced gradually to about $2,400 by 2019 (see figure 1). By 2017, the Nigerian government developed the Economic

Recovery and Growth Plan (ERGP) as a way to unlock private sector investment (World Bank 2017b, 2021).

Figure 1: GDP per capita and GDP growth rate in Nigeria, 2000-2019



Source: World Development Indicator, 2021

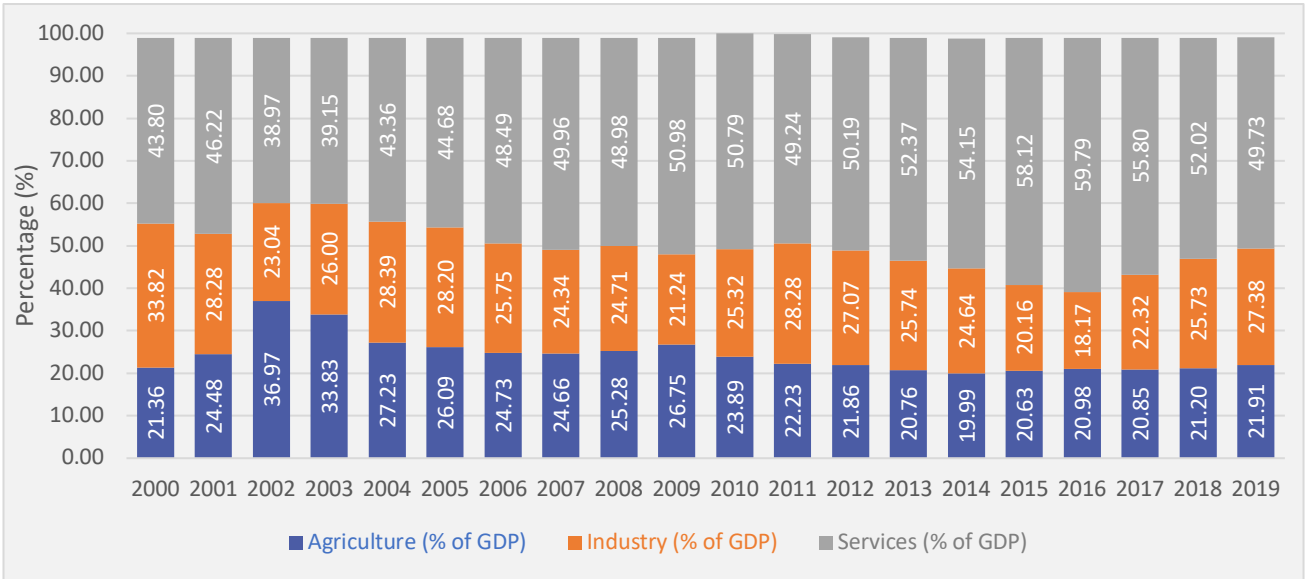
Sectoral performance

Structural transformation theory assumes that the share of manufacturing (industrial) output increases as an economy develops, whereas agricultural sector output falls (Herrendorf, Rogerson, and Valentinyi 2014). However, in the case of Nigeria, as shown in figure 2, as the share of agricultural output fell, the share of industrial output fell as well. Conversely, the share of service sector output rose from 39 percent in 2002 to 59.8 percent in 2016 (see figure 2). The rise in service sector output was caused primarily by the telecommunications sector's privatization in the early 2000s and the financial sector's recapitalzsation in 2006 (Chete et al. 2014). Specifically, the implementation of private sector-friendly reforms in Nigeria has resulted in a gradual contraction in the agricultural sector and expansion of the service sector. Between 2000 and 2004, the share of the agricultural sector in total output was an average of 28.8 percent and fell to 21.1 percent between 2015 and 2019 (see figure 2).

More recently, the share of industrial output has increased, and this is mainly due to the drive to improve ease of doing business as contained in the ERGP in 2017 (World Bank 2019a). Based on the plan, Nigeria implemented several reforms resulting in improved ease of doing business: Nigeria's ranking rose from 169 in 2016 to 131 in 2020 (World Bank 2016, 2020). The reforms under the ERGP were coordinated by the Presidential Enabling Business Environment Council (PEBEC). One of the reforms by PEBEC was the development of an electronic platform that integrates the tax authority and the Corporate Affairs Commission (CAC). Also, the name reservation platform managed by CAC, which prolongs the business

registration process, has been upgraded, reducing the time it takes to register a business. With some improvements in the business environment, industrial output as a share of total output increased marginally from 18.2 percent in 2016 to 22.3 percent in 2017 and further increased to 28.2 percent in 2020. This improvement indicates that the deindustrialization previously experienced in Nigeria was partly due to the government's weak industrial policies (Itaman and Awopegba 2021).[2]

Figure 2: Sectoral contribution to GDP in Nigeria, 2000-2019



Source: World Development Indicator, 2021

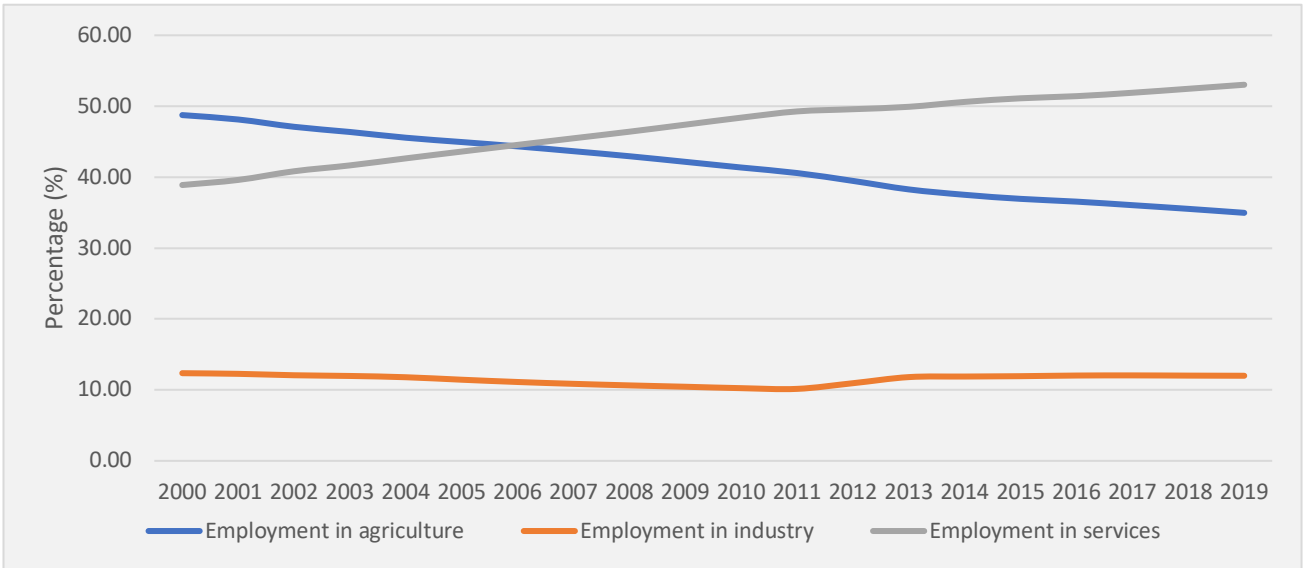
Despite the recent improvements in industrial output, the sector has employed a low share of the population in the last two decades. As shown in figure 3, between 2001 and 2019, the industrial sector contributed less than 15 percent of total employment, a figure that is significantly lower than even the agriculture sector, which accounted for 42 percent of employment within the same time period. Furthermore, figure 3 shows that the Nigerian economy since 2006 has become service sector-led, with the sector contributing more than 50 percent of the total employment as of 2019. Similarly, the figure shows that the reallocation of employment from the agricultural sector did not lead to a substantial increase in industrial sector employment as anticipated. Structural transformation entails movement of workers from less productive sectors—such as agriculture—to more productive sectors—such as manufacturing and service.

Theoretically, the manufacturing sector has higher productivity and is more labor-intensive. As a result, it is typically the sector that workers first move to when an economy is experiencing structural transformation as people leave low-productivity sectors (Newfarmer, Page, and Tarp 2018). In Nigeria's case, the reallocation of labor was skewed toward the

[2] Deindustrialization entails a decline in the share of industrial output in total output over a given period of time.

service sector, whose share of total employment rose from 38.9 percent in 2001 to 53 percent in 2019 (see figure 3). Meanwhile, the relatively low employment in the industrial sector might be partly responsible for the high unemployment rate in Nigeria. Also, the skills in demand in the service sector are usually technical, though the sector provides a small number of jobs for low-skilled workers. This suggests that people with nontechnical skills might remain unemployed, contributing to an even higher unemployment rate (Baccini et al. 2021).

Figure 3: Sectoral contribution to employment (% of total employment)

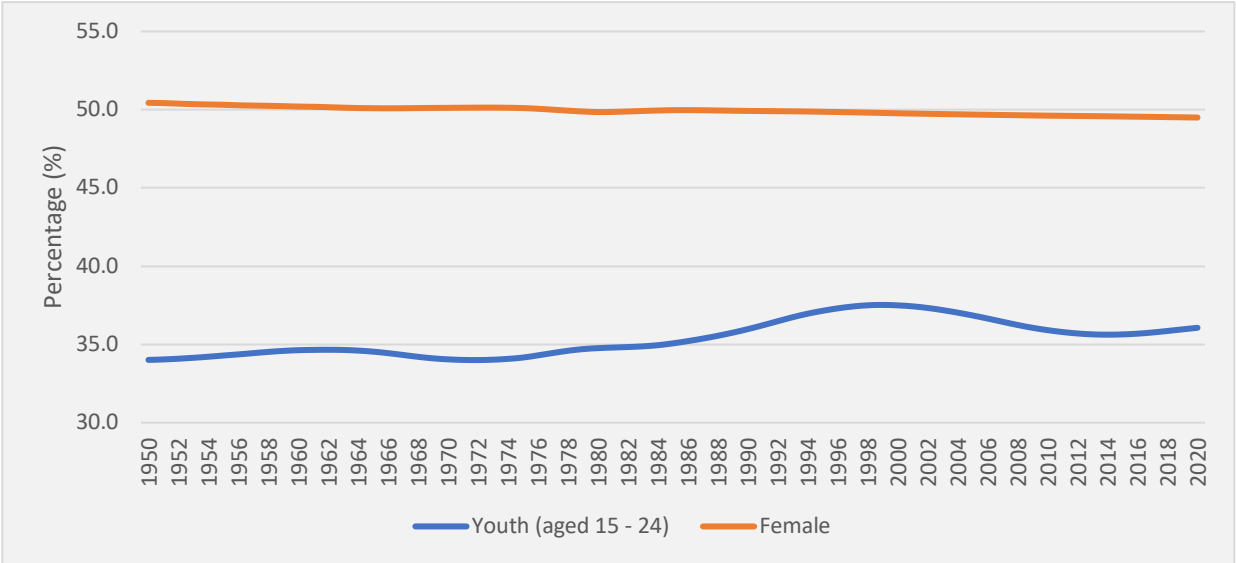


Source: World Development Indicator, 2021

Labor market outcomes

About half of Nigeria's working-age population is female and more than one-third are youths (see figure 4). These statistics inform why this study is important and the need to understand Nigeria's job market along the youth and gender dimensions. Two central messages can be deduced from the chart. First, the chart indicates that Nigeria has a relatively young working-age population, and the labor market must be structured in a way that creates jobs on a large scale for youths. For example, the chart shows that the share of youths in the working-age population peaked in 2000 and afterwards started to decline. This is consistent with the evidence in Fox et al. (2020) for the sub-Saharan Africa region. However, in the last few years, the share has been increasing, suggesting that youths are becoming increasingly represented in the Nigerian labor market. As a result, the labor market needs to be responsive in creating jobs for the youths. Second, the working-age population is equally divided between males and females. The trend has been relatively stable for the last five decades. However, there is limited understanding of the extent to which females are incorporated into the labor market.

Figure 4: Youth (ages 15-24) and female share of working-age population in Nigeria



Source: United Nations World Population Prospects, 2022

As mentioned earlier, Nigeria had an impressive economic growth rate between 2004 and 2010, with average GDP growth exceeding 6 percent (see figure 1), but the growth was unable to create a sustainable employment path in subsequent periods. For example, between 2010 and 2018, when the growth was much lower, limited jobs were created such that over the period, employment increased by less than 200,000 people, from 51.21 million people employed in 2010 to 51.33 million in 2018 (see table 1). Table 1 further emphasizes this employment gap, showing that the rate of change in employment between 2010 and 2018 was less than the rate of change in labor force participation (0.03 percent relative to 4.85 percent). In other words, more people joined the labor force than were absorbed into employment within this period.

Further into the data from an age/gender perspective, it is observed that the rate of change in labor force participation was higher among youths (7.73 percent) and the females (5.49 percent) than the males (4.36 percent). This suggests that more youths and females entered the labor market than did males between 2010 and 2018. However, youths and women recorded the least employment growth over the same period. While employment growth was negative for females and marginally positive for youths (-2.23 percent and 0.24 percent, respectively), males and the overall economy recorded positive growth rates (2.35 percent and 0.12 percent, respectively). Meanwhile, the gap between job creation and labor market supply is significant, as the employment growth rate for youths was 0.24 percent between 2010 and 2018 while the labor force participation for youths increased by 16.89 percent within the same period. However, the rate of change for underemployment was higher than full employment, indicating that people, especially youths and women, that joined the labor market were mostly absorbed in jobs that require much lower skills than workers possessed.

Table 1: Employment patterns and salient features in Nigeria, 2010-2018

	2010	2018	Absolute Change (2010 to 2018)	Annualized % change (2010 to 2018)
Labor force population (in millions)				
Total	65.17	90.47	25.30	4.85
Male	36.90	49.78	12.88	4.36
Female	28.27	40.69	12.42	5.49
Youth	27.34	44.23	16.89	7.73
Fully employed (in millions)				
Total	51.21	51.33	0.12	0.03
Male	29.63	31.98	2.35	0.99
Female	21.58	19.35	-2.23	-1.29
Youth	19.48	19.73	0.24	0.16
Underemployed (in millions)				
Total	10.65	18.22	7.57	8.89
Male	5.54	7.68	2.14	4.82
Female	5.11	10.54	5.43	13.30
Youth	5.99	11.36	5.37	11.22

Source: Authors' computation from National Bureau of Statistics, Labour Force Statistics, 2020

The low absorption of the labor force into full employment has resulted in an increase in the unemployment rate. Table 2 shows that the unemployment rate rose from 5.1 percent in 2010 to 23.1 percent in 2018. When underemployment is added to the unemployment rate, expanded unemployment rose from 21.4 percent in 2010 to 43.3 percent in 2018. A closer look at table 2 shows that youths and women recorded the highest levels of the expanded unemployment rate at 26.7 percent and 28.8 percent, respectively, between 2018 and 2020. This indicates that the youths are the least integrated into the Nigerian economy and might help to explain increased youth emigration (Adhikari, Chaudhary, and Ekeator 2021), as well as the high crime rate (World Bank 2021).[3] The issue of youth emigration appears to be a

[3] A high crime rate is also related to high poverty, inequality, and social fragility stemming from social differences.

reoccurring problem in African countries, pointing to the urgency to advance policies that will promote job creation, especially for youths.

Table 2: Unemployment patterns in Nigeria, 2010-2018

	2010	2018	Absolute change (2010 to 2018)	Annualized % change (2010 to 2018)
Total unemployed (in millions)				
Total	3.32	20.93	17.61	66.33
Male	1.73	10.12	8.39	60.76
Female	1.59	10.81	9.22	72.37
Youth	1.87	13.15	11.28	75.56
Expanded unemployment rate (%)				
Total	21.43	43.27	21.84	12.74
Male	19.69	35.76	16.06	10.19
Female	23.69	52.45	28.76	15.18
Youth	28.73	55.40	26.67	11.61
Narrow unemployment rate (%)				
Total	5.09	23.13	18.04	44.29
Male	4.68	20.33	15.65	41.81
Female	5.63	26.56	20.93	46.47
Youth	6.83	29.72	22.89	41.92
Underemployment rate (%)				
Total	16.34	20.14	3.80	2.91
Male	15.01	15.42	0.41	0.34
Female	18.06	25.90	7.84	5.42
Youth	21.90	25.68	3.78	2.16

Source: Authors' computation from National Bureau of Statistics Labour Force Statistics, 2022

Employment situation since the emergence of the COVID-19 pandemic

The emergence of the COVID-19 pandemic exposed the fragile nature of Nigeria's labor market as the labor force participation and employment level reduced drastically.[4] The most recent unemployment statistics by the National Bureau of Statistics (NBS), from the fourth quarter of 2020, show that the unemployment rate reached double digits. In addition, the evidence in table 3 and figure 5 suggests that the rate of new entrants into the labor market outpaces the rate of job creation, thereby leading to an increase in the rate of unemployment. Alternatively, the data suggests that jobs were lost even though the number of people in the labor market remained unchanged or marginally increased. This indicates that the COVID-19 pandemic pushed the unemployment rate higher.

As a result of the pandemic, women and youth exited the labor market. As shown in Table 3, female labor force participation decreased from 40.69 million to 30.15 million, resulting in an annualized contraction in labor force participation of about 12.95 percent. The decrease might be attributed to increased prioritization of family over career among women, as well as the loss of jobs that accompanied the pandemic (UN Women 2020). In addition, the rate of contraction among youth is higher than the national average, suggesting that the pandemic discouraged more youth from participating in the labor market compared with older people. The relatively high participation of older individuals and males in the labor market could be linked to their perceived responsibility to be the provider of resources for the functioning of the family.

[4] Unemployment was mostly as a result of organizations laying off staff at the peak of the pandemic due to the economic disruptions that accompanied it.

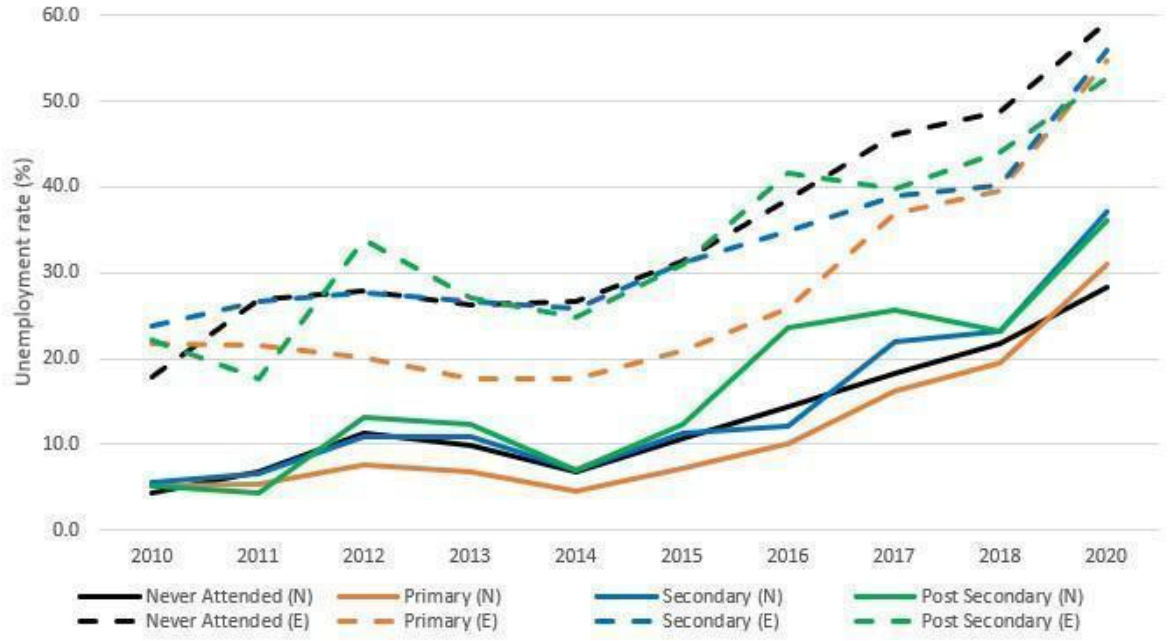
Table 3: Employment patterns and salient features in Nigeria, 2018-2020

	2010	2018	2020	Absolute change (2010 to 2018)	Absolute change (2018 to 2020)	Annualized % change (2010 to 2018)	Annualized % change (2018 to 2020)
Labor force population (in millions)							
Total	65.17	90.47	69.68	25.30	-20.80	4.85	-11.49
Male	36.90	49.78	39.52	12.88	-10.25	4.36	-10.30
Female	28.27	40.69	30.15	12.42	-10.54	5.49	-12.95
Youth	27.34	44.23	29.94	16.89	-14.28	7.73	-16.15
Fully employed (in millions)							
Total	51.21	51.33	30.57	0.12	-20.75	0.03	-20.22
Male	29.63	31.98	18.33	2.35	-13.64	0.99	-21.33
Female	21.58	19.35	12.24	-2.23	-7.11	-1.29	-18.37
Youth	19.48	19.73	10.93	0.24	-8.80	0.16	-22.30
Underemployed (in millions)							
Total	10.65	18.22	15.92	7.57	-2.30	8.89	-6.31
Male	5.54	7.68	8.61	2.14	0.94	4.82	6.09
Female	5.11	10.54	7.30	5.43	-3.24	13.30	-15.35
Youth	5.99	11.36	6.29	5.37	-5.07	11.22	-22.30

Source: Authors' computation from National Bureau of Statistics Labour Force Statistics, 2020

The increase in the unemployment rate cuts across all educational levels. As shown in figure 5, the unemployment rate among educated Nigerians (that is, those with post-secondary education) is in the double digits. Between 2018 and 2020, unemployment rose by about 12.98 percentage points for those with a post-secondary education, up from 23.08 percent in 2018 to 36.06 percent in 2020. For the same period, the unemployment rate for those with a secondary education rose from 23.08 percent in 2018 to 37.13 percent in 2020, and those with a primary education rose from 19.54 percent in 2018 to 30.86 percent in 2020 (see figure 5; NBS 2020b).

Figure 5: Unemployment by level of education, 2010-2020



Source: Authors' computation from National Bureau of Statistics Labour Force Statistics, 2020

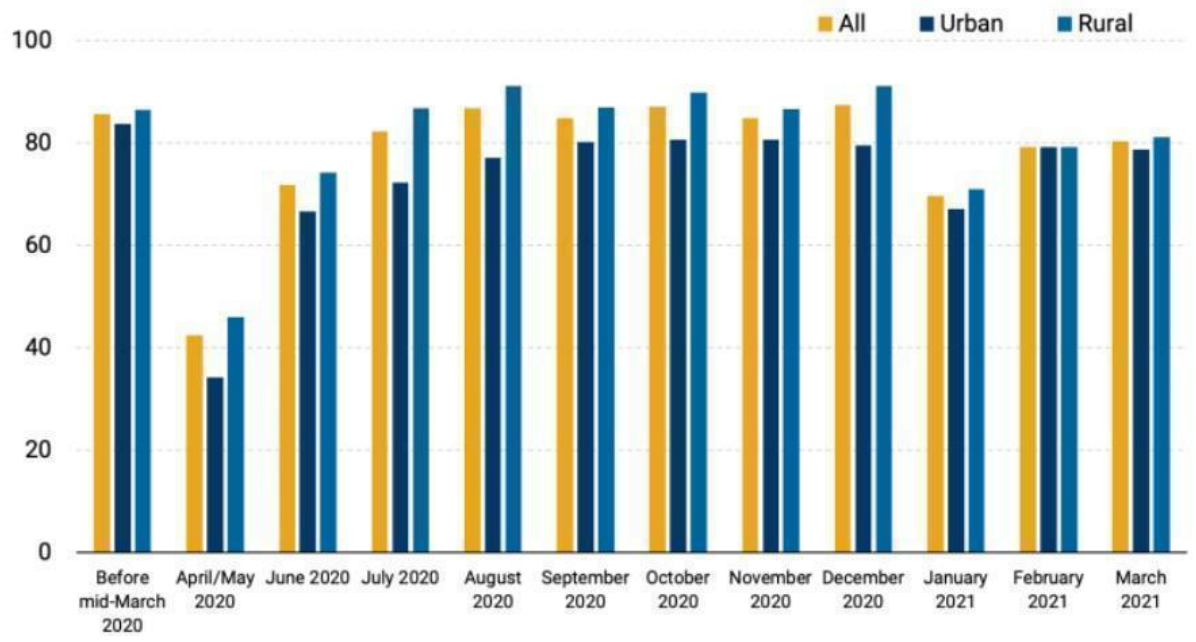
Notes: (N) indicates the narrow unemployment rate, and (E) indicates the expanded unemployment rate (which includes the underemployment rate).

Furthermore, using data from the 2018-2019 General Household Survey and the Nigeria COVID-19 National Longitudinal Panel Survey, Lain and Vishwanath (2021) show that between the pre-pandemic period and March 2021, employment in Nigeria had what they call a "swoosh" recovery, since urban employment rebounded more slowly than its abrupt decline (see figure 6). In addition, figure 6 shows that the share of employed Nigerians fell from about 85 percent during the pre-pandemic period (before mid-March 2020) to less than 50 percent in April/May 2020 (the height of the pandemic when movement restrictions were enforced). However, the relaxation of the restrictions, which began in a phased form starting in June 2020, resulted in an increase in the share of employment (see figure 6).

The COVID-19 pandemic had a temporary effect on employment in Nigeria. The share of employment by September 2020, according to Figure 6, had almost reached pre-pandemic levels. However, as the country experienced a second wave of the COVID-19 pandemic between December 2020 and January 2021, which was accompanied with some slight movement restrictions, the share of employment declined again (in January 2021) but recovered quickly in the following month. With the absence of official statistics on unemployment in 2021, the evidence from the COVID-19 phone survey presented in figure 6 suggests that the impacts of the COVID-19 pandemic on Nigeria's employment conditions are transitional.

There is a high plausibility that the COVID-19 pandemic has introduced new structural changes into the Nigerian economy. The pandemic amplifies the structural deficit of the Nigerian economy and as a result, the Nigeria Economic Sustainability Plan (NESP) was implemented in mid-2020 to avert the effect of the pandemic on businesses and households (NESP 2020). Through the plan, the Nigerian government stimulated the economy with the injection of about 2.3 trillion naira ($5.3 billion) into key sectors of the economy,[5] including agro-processing, renewable energy, and manufacturing. Further, in 2021, the National Development Plan (NDP) 2021-2025 was also developed to guide government developmental activities over the next five years, with the principal objective of supporting the creation of 21 million jobs (NDP 2021). The government aims to achieve the job creation projection by providing an enabling environment that supports private sector development.

Figure 6: Share of respondents working, March 2020-March 2021



Source: Lain and Vishwanath (2021). The COVID-19 crisis isn't over for workers in Nigeria. Brookings, Future Development

[5] Using an exchange rate of NGN435:US$1

Sectoral decomposition: Comparing IWOSS with non-IWOSS sectors

In the previous section, the report discusses the shift away from the agriculture sector toward the services sector, among other trends. The growth of the services sector in Nigeria is not alarming given that this sector has been widely understood to be an important driver of the growth and development of the country (Adetokunbo and Edioye 2020). The relatively low contribution of the manufacturing sector in Nigeria, as well as the shift from agriculture to services, could be attributed to diverse structural and institutional factors that lower the efficiency of doing business in the country. An example of a structural factor is the unreliable electricity. In the 2020 Ease of Doing Business Report, Nigeria ranked poorly under the electricity section, with a ranking of 169 out of 190 surveyed countries and 33 out of 46 countries in sub-Saharan Africa (World Bank 2021). Production processes and modern equipment are powered on electricity, and unreliable electricity results in low productivity, as human resources are made idle. Institutional factors entail weak property rights and rule of law. These factors have discouraged investors from investing in sectors with high risk but high potential.

This section begins to consider whether other sectors, which share a number of characteristics with the manufacturing sector and are positioned to be key drivers of structural transformation in an economy, have the potential to fill the role traditionally reserved for manufacturing industries. These alternate sectors are colloquially termed IWOSS. They have the following shared characteristics as clearly described in Allen et al. (2021):

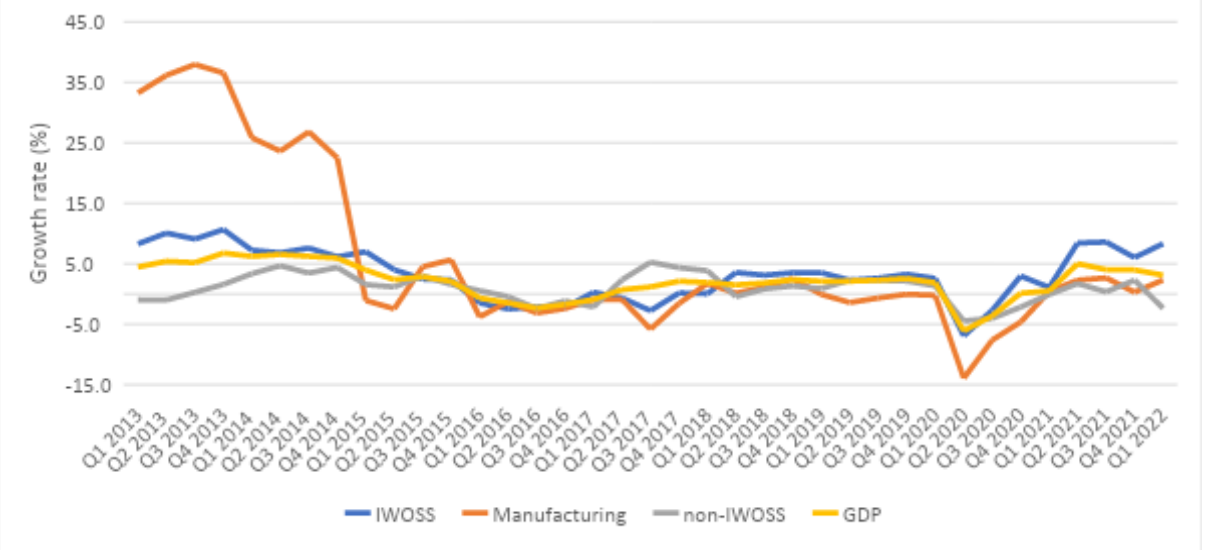
- They engage in tradable activities (that is, their product can be exchanged for monetary compensation).
- They have a high value-added per worker relative to average economy-wide productivity.
- They exhibit the capacity for technological change and productivity growth and show some evidence of scale and/or agglomeration economies.
- They have the ability to employ large numbers of low- and moderately- skilled labor.

The study identifies eight IWOSS in Nigeria, including agro-processing, export crops and horticulture, tourism, ICT, transport, construction, financial and business services, and formal trade (excluding tourism). Other IWOSS sectors consist of professional, scientific, and technical services. The study considers employment in these IWOSS sectors in comparison to the non-IWOSS sectors such as traditional agriculture, mining, utilities, and informal trade (excluding tourism). This comparison aids in understanding the sectors that have the potential for large-scale expansion to absorb the labor force. An important addition

to the discussion in this section, beyond Allen et al. (2021), is the consideration of employment and GDP comparisons by IWOSS and non-IWOSS sectors.

In figure 7, the growth rate of IWOSS sectors, manufacturing, and non-IWOSS sectors in Nigeria between the first quarter of 2013 and the first quarter of 2022 is presented. This period covers the last two recessions Nigeria has experienced in the past two decades.[6] It is evident that growth patterns of IWOSS sectors reflect the overall growth pattern. Even more, the growth of IWOSS is slightly above the overall economy's growth, except in a few periods such as the third quarter of 2017. This suggests that IWOSS outperformed the entire economy and gives an indication of its relatively higher productivity. Also, during the COVID-19-induced recession, the magnitude of contraction in the IWOSS sectors is slightly lower than the whole economy; however, the post-recession recovery is considerably higher in IWOSS sectors relative to the overall economy.[7] For instance, in the fourth quarter of 2021, the IWOSS sectors grew at 6.02 percent, while the whole economy grew at 3.98 percent.

Figure 7: Comparative analysis between the growth rate of IWOSS sectors, manufacturing, and non-IWOSS sectors



Source: Authors' calculation based on GDP estimates from the National Bureau of Statistics
Note: GDP is the economic-wide growth rate

Further, the study compares the number of jobs in IWOSS sectors to that in non-IWOSS sectors, noting the extent to which IWOSS sectors account for formal private employment in Nigeria. Additionally, the contribution of both IWOSS and non-IWOSS sectors to GDP is examined. To further buttress the initial comparison, the study considers demographic and

[6] The first recession happened in 2016 due to the collapse of crude oil prices in the international market. The second recession happened in 2020 and was caused by the lockdown measures implemented to curtail the spread of the COVID-19 pandemic.
[7] The growth was due to the resilience of the ICT sector, which maintained double-digit growth throughout the periods.

skills profiles of employment in the aggregate IWOSS sectors in comparison to the non-IWOSS sectors.

Table 4 shows employment in the aggregate formal private sector in the IWOSS and non-IWOSS sectors, as well as the individual IWOSS and non-IWOSS sectors for the periods 2010 and 2018. In 2010, enterprises in IWOSS sectors accounted for 17.57 percent (24.91 percent in 2018) of the formal private sector jobs in Nigeria compared to those in non-IWOSS sectors accounting for 80.1 percent of the formal private sector jobs (70.8 percent in 2018). Although non-IWOSS sectors constitute a larger share of the formal private sector jobs in Nigeria than IWOSS sectors, the IWOSS sectors recorded an increase in the share of employment from 2010 to 2018 while the reverse was experienced in the non-IWOSS sectors. This trend shows IWOSS sectors have significant potential of absorbing people entering into the labor market. The formal trade sector saw the largest increase in capacity for employment in 2018 compared to other IWOSS sectors. Nonetheless, all IWOSS sectors have seen an increase in employment from 2010 to 2018.

Among non-IWOSS sectors, the agriculture sector recorded the highest level of employment between the 2010 and 2018 period compared to other non-IWOSS sectors.[8] In 2010, 73.5 percent of the formal private sector jobs in the non-IWOSS sector was from the traditional agricultural sector (65.6 percent in 2018). Some individual non-IWOSS sectors, such as informal trade, recorded increases in employment across the two periods; on the other hand, utilities recorded a 2.69 percent decline in the employment share between 2010 and 2018.

[8] The agricultural sector in Nigeria is largely subsistence; however, there is an emerging number of large-scale farms.

Table 4: Employment in IWOSS and non-IWOSS sectors in Nigeria, 2010 and 2018

	Employment (thousands)			Employment share		Annual % growth
	2010	2018	Change	2010	2018	2010-2018
Total formal private employment	**51,632.49**	**71,276.32**	**19,643.82**	**100.00**	**100.00**	**4.76**
Total IWOSS	9,071.61	17,753.36	8,681.75	17.57	24.91	11.96
Agro-processing	950.99	2,002.98	1,051.99	1.84	2.81	13.83
Export crops and horticulture	359.38	169.66	-189.72	0.70	0.24	-6.60
Tourism	1,955.44	1,586.15	-369.29	3.79	2.23	-2.36
ICT	254.56	409.01	154.45	0.49	0.57	7.58
Transport	1,286.58	2,501.72	1,215.14	2.49	3.51	11.81
Construction	869.89	1,647.19	777.30	1.68	2.31	11.17
Financial and business services	179.00	985.77	806.76	0.35	1.38	56.34
Formal trade (excl. tourism)	2,632.20	3,873.04	1,240.85	5.10	5.43	5.89
Other IWOSS Services	583.57	4,577.83	3,994.26	1.13	6.42	85.56
Manufacturing	1,183.79	3,080.68	1,896.88	2.29	4.32	20.03
Non-IWOSS	41,377.09	50.442.28	9,065.19	80.14	70.77	2.74
Traditional Agriculture	30,407.08	33,110.20	2,703.12	58.89	46.45	1.11
Mining	105.85	116.59	10.74	0.21	0.16	1.27
Utilities	120.60	94.61	-25.99	0.23	0.13	-2.69
Informal trade (excl. tourism)	4,334.04	6,377.15	2,043.11	8.39	8.95	5.89
Other non-IWOSS	5,780.87	9,964.14	4,183.27	11.20	13.98	9.04
Government	628.66	779.60	150.94	1.22	1.09	3.00

Source: National Bureau of Statistics, CBN Statistical Bulletin, and University of Groningen Economic Transformation Database

Notes: Other IWOSS sectors consist of professional, scientific, and technical services; other non-IWOSS sectors consist of administrative and support services, education, human health and social services, and other services.

In addition, the study computes the employment elasticity of the various sectors of the economy, and the findings are reported in table 5. Employment elasticity measures how much employment responds to an equivalent change in output. The IWOSS sectors have a positive employment elasticity of 0.22, which indicates that changes in IWOSS output result in an increase in employment. Among the IWOSS sectors, the horticulture sector has the largest elasticity. The high elasticity implies that contraction in employment is associated with a decrease in output. In other words, employment in the horticulture sector decreased at a rate higher than the pace of output contraction.[9] The employment elasticity for manufacturing and non-IWOSS sectors are also positive. Specifically, the manufacturing sector's elasticity is 0.34, and non-IWOSS sectors in general have an elasticity of 0.32. However, the low employment elasticity indicates that output growth results in the creation of limited jobs.

[9] The contraction is likely driven by the need to meet increasing domestic demand.

Table 5: Change in GDP and employment since 2010 by sector

	Change in GDP	Change in employment	Employment elasticity
	2010-2018	**2010-2018**	**2010-2018**
Overall economy	73,124.57	19,643.82	0.27
Total IWOSS	39,593.69	8,681.75	0.22
Agro-processing	3,260.80	1,051.99	0.32
Export crop and horticulture	-101.12	-189.72	1.88
Tourism	1,136.74	-369.29	-0.32
ICT	7,024.81	154.45	0.02
Transport	1,633.60	1,215.14	0.74
Construction	4,460.09	777.30	0.17
Financial and business services	6,592.78	806.76	0.12
Formal trade (excl. tourism)	12,435.19	1,215.14	0.74
Other IWOSS services	3,150.79	3,994.26	1.27
Manufacturing	5,616.08	1,896.88	0.34
Non-IWOSS	27,914.80	9,065.19	0.32
Traditional agriculture	14,423.52	2,703.12	0.19
Mining	5,194.11	10.74	0.002
Utilities	860.82	-25.99	-0.03
Informal trade (excl. tourism)	490.61	2,043.11	4.16
Government	927.62	150.94	0.16
Other non-IWOSS	6,018.12	4,183.27	0.695

Source: National Bureau of Statistics, CBN Statistical Bulletin, and University of Groningen Economic Transformation Database

Notes: Other IWOSS sectors consist of professional, scientific, and technical services; other non-IWOSS sectors consist of administrative and support services, education, human health and social services, and other services.

Following a similar approach as Allen et al. (2021), figure 8 shows the correlation between the natural log of sectoral productivity in 2018 (measured as the ratio of sectoral GDP to sectoral employment of GDP per worker) and the change in employment share by industry between 2010 to 2018. The size of the bubble represents the sector's share of employment in 2018. The linear regression line indicates whether the structural transformation is growth-inducing (positively sloped) or not (negatively sloped). For Nigeria, between 2010 and 2018, the slope of the regression line (as shown in figure 8) is positive, although the estimated coefficient is only significant at the 10 percent level. The direction of the correlation suggests some evidence of growth-inducing structural transformation. In other words, there is a labor resource shift from low productivity sectors (such as traditional agriculture) to higher productivity sectors (such as the financial and business services sector).

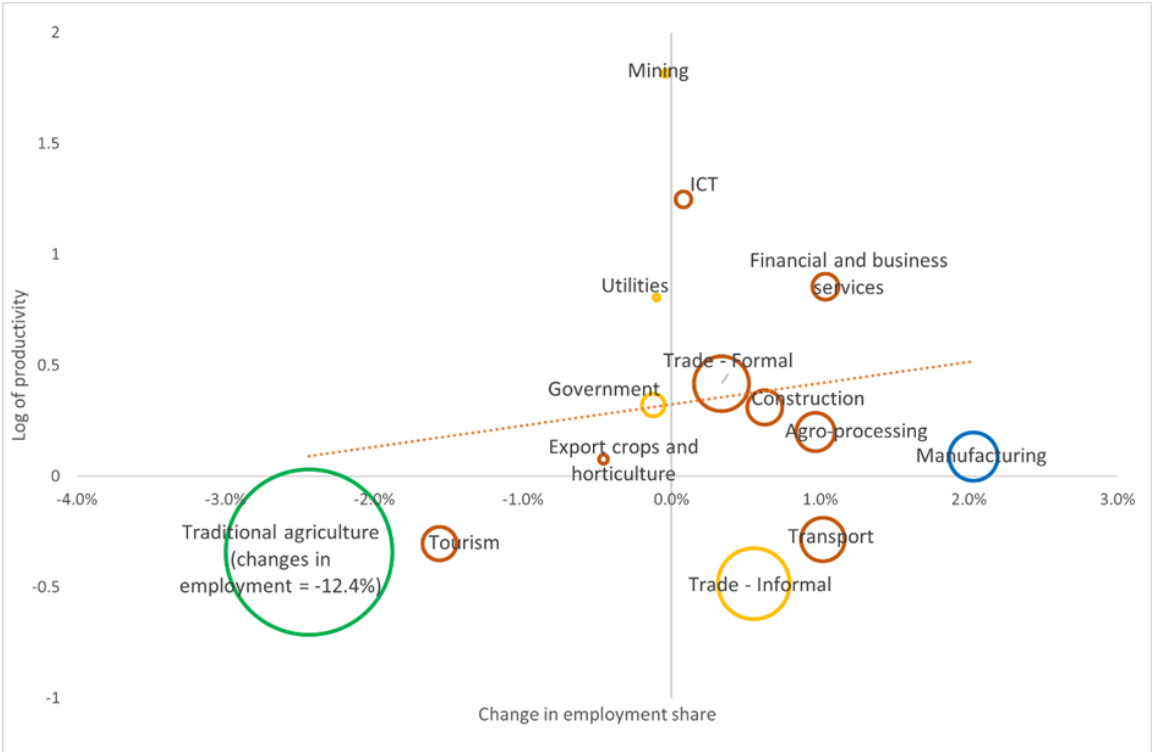
The sectors are grouped into four quadrants using two factors: changes in employment share between 2010 and 2018 and the labor productivity level. Based on the first criterion, firms with positive changes in employment shares are on the right-hand side of the quadrants, whereas those with negative changes are on the left-hand side. Those on the right-hand side had a higher employment share in 2018 relative to 2010. Based on the second criterion, firms with labor productivity above the sectors' average are up, whereas those with lower productivity are below. A combination of those criteria results in four quadrants as shown in figure 8. Sectors in the top right quadrant include ICT, financial and business services, construction, agro-processing, and manufacturing. These sectors experienced an increase in the share of employment and also had productivity above the average sectors' productivity level. The growth in employment share in the ICT sector is driven by digitalization, and that of the financial and business services sector is largely due to intensified financial inclusion efforts. The growth in agro-processing and manufacturing may be due to government interventions aimed at strengthening domestic production.

At the bottom left quadrant, which is the second quadrant, there are the traditional agriculture and tourism sectors. Both sectors experienced a decrease in employment share between 2010 and 2018, and in addition, both sectors' productivities in 2018 were lower than all sectors' average productivity. The reduction in the sectors' employment share could be attributed to the sectors' relatively low productivity. The remaining two quadrants are the top left quadrant and the bottom right quadrant. In the top left quadrant, there are mining, utilities, government, and export crops and horticulture. These sectors experienced a decrease in the share of employment, although their productivity was above sectorial average. The bottom right quadrant has the informal trade and transport sectors. While these sectors' productivity was less than the sectors' average, they experienced an increase in employment share between 2010 and 2018.

Out of the four quadrants, sectors in the top right quadrant have relatively higher productivity and are experiencing an increase in employment share, and as such, they hold the potential for the generation of employment in the future. Following the evidence in Baccini et al. (2021), which argued that sectors with higher labor productivity contribute more to economic development in African countries including Nigeria, the study focused on the quadrant with higher productivity and positive changes in employment. Consequently, the

three sectors focused on in the study—financial and business services, ICT, and formal trade—fall within the top right quadrant.

Figure 8: Correlation between sectoral productivity and change in employment in Nigeria, 2010-2018



Source: Authors' calculations based on data from National Bureau of Statistics, CBN Statistical Bulletin, and the University of Groningen Economic Transformation Database

Table 6 shows the change in, and composition of, employment by IWOSS and non-IWOSS sectors based on socio-demographic characteristics—gender, age, and educational attainment. These characteristics are those observed from the data and may be limited, as they do not discuss other characteristics such as disability status of youths, geographical variation, and underrepresented groups. Nonetheless, relative to male employment, female employment was lower in both IWOSS and non-IWOSS sectors for the 2010 and 2018 period. The low share of female employment reflects the low participation of females in paid employment. However, between the reference period, the female share of employment has increased in both sectors, a 5.3 percent increase for IWOSS sectors and 1 percent increase for non-IWOSS sectors. In addition, when compared in parallel, female employment is higher in IWOSS sectors. In 2018, for example, 34 percent of employment in IWOSS sectors was accounted for by women compared to 32.2 percent for non-IWOSS sectors, suggesting that IWOSS sectors have more female representation than non-IWOSS sectors.

The study further considers workers' ages as they relate to participation in the labor force in Table 6, with the cohorts as follows: 15-24 years, 25-34 years, and 35-65 years of age. In 2018, people between the ages of 15 and 24 years accounted for 20.5 percent of total

employment, those aged 25 to 34 years made up 27.3 percent, and those aged 35 to 65 years were 52.3 percent. Within sectors, the employment of individuals within the cohort of 15-to-24-year-olds accounted for 18.2 percent of total employment in IWOSS sectors and 21.2 percent in non-IWOSS sectors. The share of 25-to-34-year-olds in total employment is higher for IWOSS sectors (29.8 percent) compared to non-IWOSS sectors (26.3 percent). This suggests that IWOSS sectors are more inclined toward employing young people within the age bracket of 25 and 34 years compared to non-IWOSS sectors in Nigeria.

Regarding changes in the profile of employment over time by age, employment for all cohorts has increased over the years in both IWOSS and non-IWOSS sectors. However, IWOSS sectors experience higher average annual growth in employment for all age cohorts compared to non-IWOSS sectors. For the cohort aged 15 to 24 years old, the annual average growth for IWOSS sectors was 28.8 percent (compared to 10.8 percent for non-IWOSS sectors) and for the cohort aged 25 to 35 years, IWOSS sectors recorded an annual growth rate of 31.2 percent (compared to 3.2 percent for non-IWOSS sectors). The cohort aged 35 to 65 years old recorded the least growth in both sectors, with average annual growth being 9.5 percent for IWOSS sectors and 0.7 percent for non-IWOSS sectors.

The third socio-demographic feature is the education level of employment. Education gives an indication of the skills of people. In 2018, 23.3 percent of those employed in IWOSS sectors had less than a secondary education, compared to 42.6 percent in non-IWOSS sectors. Of those employed in IWOSS sectors, 50.1 percent had completed secondary education, far higher than the 38.5 percent in non-IWOSS sectors. Overall, IWOSS sectors seem to absorb more educated labor relative to non-IWOSS sectors, with IWOSS sectors employing a higher proportion of individuals with secondary and post-secondary education compared to non-IWOSS sectors.

Table 6: Demographic and educational characteristics of IWOSS and non-IWOSS workers, 2010-2018

	Absolute change 2010-2018		Employment Share, 2010		Employment Share, 2018		Average annual Growth		
	IWOSS	Non-IWOSS	IWOSS	Non-IWOSS	IWOSS	Non-IWOSS	IWOSS	Non-IWOSS	All
Total	8,681.8	9,065.2	100	100	100	100	12	2.7	4.8
By Gender									
Male	6,881.6	7,877.5	53.4	63.6	66	67.8	17.8	3.7	6.4
Female	1,800.2	1,187.7	46.6	36.4	34	32.2	5.3	1.0	2.2
By age									
15-24 years old	2,247.0	4,958.8	10.8	13.9	18.2	21.2	28.8	10.8	13.9
25-35 years old	2,440.3	2,726.3	31.4	25.4	29.8	26.3	31.2	3.2	5.1
35-65 years old	3,994.4	1,380.2	57.8	60.7	52	52.5	9.5	0.7	2.5
By education									
Less than secondary	-1,390.50	-8,504.34	60.9	72.5	23.3	42.6	-3.1	-3.5	-3.5
Secondary	6,223.2	11,248.9	29.5	19.7	50.1	38.5	29.1	17.2	21.1
Post-secondary	3,849.1	6,320.7	9.6	7.7	26.6	18.9	55	24.8	32.8

Sources: Authors calculation based on 2010 and 2017 National Bureau of Statistics Labour Survey, 2010 and 2018 National Living Standard Survey, and Groningen Economic Transformation Database

Table 7 presents employment by gender and age at a disaggregated level between 2010 and 2018. First, it is observed that there are considerable changes in demographics across sectors between 2010 and 2018. For instance, the employment share of females declined whereas there was a relative increase in the employment of people between the ages of 15 and 24 years. Focusing on 2018, among IWOSS sectors, formal trade had the highest proportion of female employment at 64.1 percent. The IWOSS sectors with the lowest shares of female employment were the transport and construction sectors, at 1 percent and 2 percent respectively. The formal trade sector was more likely to employ youths, as it records the highest share of employment for individuals within the age group of 15-24 years (35.5 percent) and 25-34 years (30.2 percent). The ICT sector followed with an employment share of 36.4 percent for the age cohort 25-34 years. The transport sector absorbs older-

aged labor, as the share of total employment within the age cohort 35-65 years was the highest (63.7 percent) relative to the other sectors.

The manufacturing sector of Nigeria only accounts for 38.9 percent of the share of female employment, with a higher share of employment being in the age cohort 35-65 years. Among non-IWOSS sectors, the informal trade sector had the highest share of female employment, with the share of females employed in the sector at 64.1 percent of total employment, while the mining sector recorded the lowest share of female employment with an employment share of 7.8 percent in 2018.[10] The government sector records the highest share of older workforce employment, with 82.9 percent of the total workforce being individuals within the age group of 35-65 years. The high share of older people partly reflects the weak absorbing capacity of the government in employing young people in the last decades and the reliance on the private sector for job creation.

[10] The mining sector is physically demanding, hence the low share of females in the sector.

Table 7: Share of employment by gender and age, IWOSS sectors, 2010-2018

	Share, 2010 (%)				Share, 2018 (%)			
	Female	15–24 years old	25–34 years old	35–65 years old	Female	15–24 years old	25–34 years old	35–65 years old
IWOSS	46.6	10.8	31.4	57.8	34.0	18.2	29.8	52.0
Agro-processing	45.8	14.7	29.5	55.9	32.2	21.8	27.7	50.4
Construction	8.8	6.8	26.8	66.4	2.0	16.2	34.3	49.5
Export crops and horticulture	50.4	12.7	26.9	60.5	44.8	28.9	28.1	43.1
Financial and business services	13.6	7.8	27.0	65.2	19.8	9.8	30.1	60.2
ICT	41.3	13.5	31.9	54.6	21.5	18.2	36.4	45.5
Tourism	65.5	13.4	38.7	47.9	53.4	15.3	34.1	50.6
Formal trade	69.9	10.9	29.1	60.0	64.1	35.5	30.2	34.3
Transport	6.6	7.7	33.6	58.8	1.0	9.8	26.6	63.7
Other IWOSS services	34.7	6.3	26.6	67.1	35.8	9.6	28.4	62.0
Manufacturing	60.7	14.9	34.3	50.9	38.9	21.3	29.6	49.1
Non-IWOSS	36.4	13.9	25.4	60.7	32.2	21.2	26.3	52.5
Traditional agriculture	30.8	36.9	63.1	155.7	25.5	22.4	25.9	51.8
Government	23.7	5.8	94.2	332.5	21.0	2.3	14.8	82.9
Mining	20.5	39.2	60.8	210.8	7.8	17.9	23.2	58.9
Informal trade	69.9	27.2	72.8	150.1	64.1	35.5	30.3	34.3
Utilities	13.8	29.8	70.2	138.7	10.0	6.5	25.0	68.5
Other non-IWOSS	42.6	34.9	65.1	141.0	35.4	10.0	25.9	64.2
Total	38.7	13.3	26.7	60.0	32.9	20.5	27.3	52.3

Sources: Authors calculation based on 2010 and 2017 National Bureau of Statistics Labour Survey; 2010 and 2018 National Living Standard Survey and Groningen Economic Transformation Database

Table 8 reports the educational attainment level of the labor force disaggregated by sector, which reflects the skill level of people. The study assumes that attaining higher education is correlated with higher level of skills. One clear observation from table 8 is that IWOSS sectors absorb more skilled workers on average than non-IWOSS sectors.[11] Specifically, in 2018, 76.7 percent of the total labor force in IWOSS sectors had secondary and post-secondary education compared to 57.4 percent in non-IWOSS sectors. The sectors that accounted for the most employment of highly skilled workers among IWOSS sectors were the financial and business sector (where those with secondary and post-secondary education accounted for 93.2 percent of labor) and ICT (where those with secondary and post-secondary education accounted for 85 percent of labor). The export crops and horticulture sector accounted for most of the employment of low-skilled workforce (where those with less than secondary education accounted for 39 percent of labor).

Considering non-IWOSS sectors, the traditional agricultural sector accounts for most of the employment of low-skilled workers. In 2018, 54.1 percent of the traditional agricultural sector workforce had less than a secondary education. On the other hand, the informal trade sector and the government sector account for the top employers of labor with secondary and post-secondary education. While 60.1 percent of the informal trade sector employees comprised individuals with secondary education, 58.65 percent of the government sector employees had post-secondary education in 2018.

In summary, IWOSS sectors absorbed more high-skilled labor in 2018 compared to non-IWOSS sectors, with the financial and business sector employing mostly high-skilled labor. On the other hand, the agriculture sector mostly employed low-skilled workers, which is intuitive as most agricultural activities in Nigeria are low-scale/smallholder farming using traditional farming methods.

[11] The high fraction of skilled jobs in the IWOSS sector is due to the dominance of ICT and financial and business services; these sectors employed high-skilled people (see table 8). However, transport, trade, and construction employed low-skilled labourers.

Table 8: Share of employment by education level, IWOSS sectors, 2010-2018

	Share, 2010 (%)			Share, 2018 (%)		
	Less than secondary	Secondary	Post-secondary	Less than secondary	Secondary	Post-secondary
IWOSS	60.9	29.5	9.6	23.3	50.1	26.6
Agro-processing	73.5	22.1	4.4	36.9	47.3	15.9
Construction	55.8	34.8	9.5	28.0	56.0	16.1
Export crops and horticulture	70.9	23.5	5.6	39.0	48.3	12.8
Financial and business services	40.7	27.3	32.0	6.7	31.3	61.9
ICT	39.8	32.1	28.1	15.0	36.0	49.0
Tourism	71.8	21.4	6.8	20.8	57.1	22.1
Formal trade	61.4	31.6	7.0	23.9	60.1	16.1
Transport	52.0	42.1	6.0	37.0	53.6	9.4
Other IWOSS services	37.6	26.9	35.5	12.2	41.9	45.9
Manufacturing	66.6	28.8	4.7	19.6	58.1	22.3
Non-IWOSS	72.5	19.7	7.7	42.6	38.5	18.9
Traditional agriculture	84.0	16.0	4.4	54.1	36.4	9.5
Government	51.3	48.7	59.0	12.4	29.0	58.6
Mining	74.7	25.3	12.4	42.3	44.2	13.5
Informal trade	66.1	33.9	7.6	23.9	60.1	16.1
Utilities	51.2	48.8	29.3	20.2	41.4	38.5
Other non-IWOSS	57.9	42.1	30.1	19.1	32.2	48.7
Total	70.4	21.7	8.0	36.8	42.2	20.9

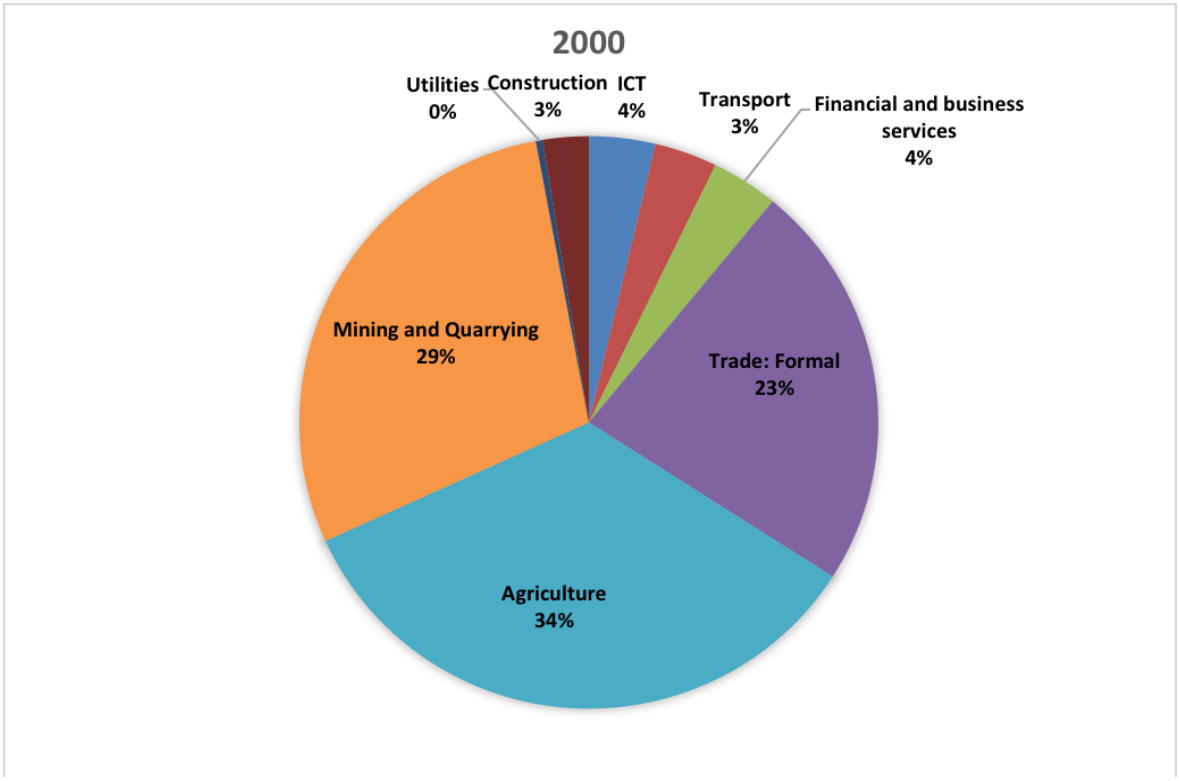
Sources: Authors calculation based on 2010 and 2017 National Bureau of Statistics Labour Survey, 2010 and 2018 National Living Standard Survey, and Groningen Economic Transformation Database

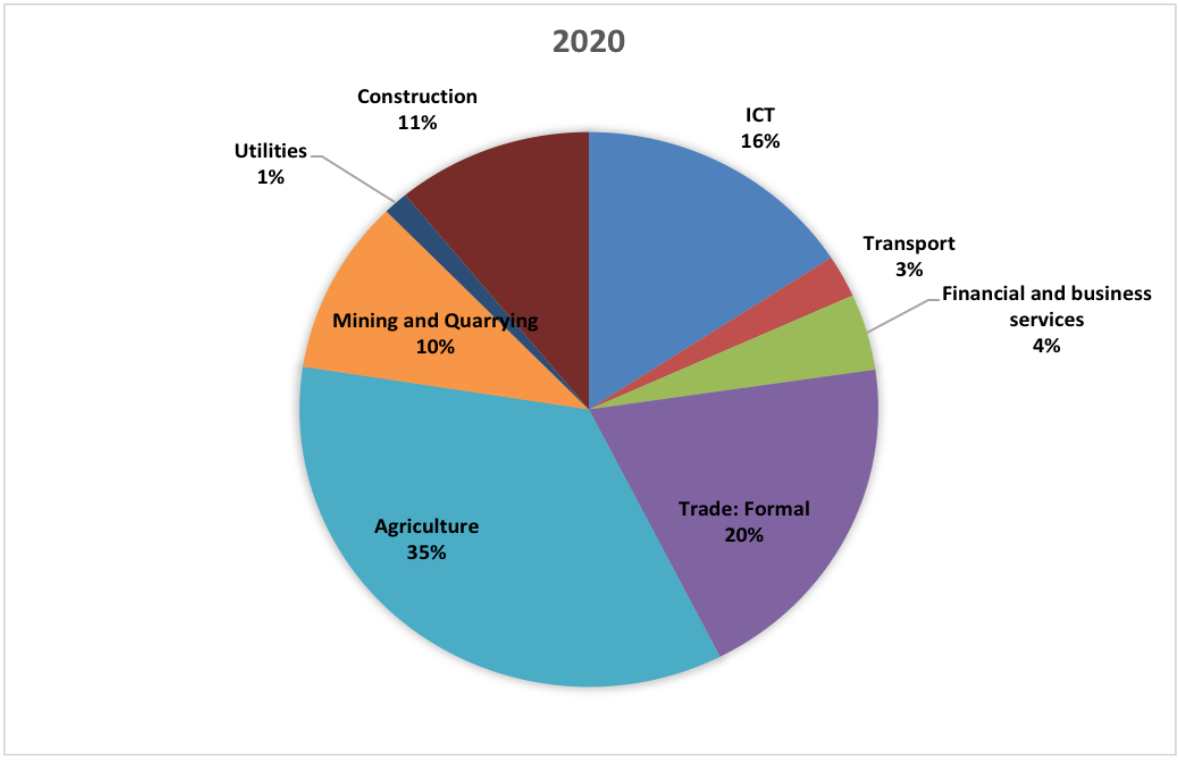
Patterns of growth and structural transformation

This section provides an understanding of the sectoral patterns of economic growth in Nigeria. By dissecting output and employment growth by sector and assessing changes over time, this section aims to highlight the structural formation and transformation of the Nigerian economy.

Figure 9 shows the shares of output of the country's main sectors in 2000 and 2020**.** The periods selected were due to consistency in industry classification and data availability. As shown in figure 9, the most profound changes between the two data points occurred in the ICT and construction sectors, which saw significant improvements in their contribution to GDP from 4 percent and 3 percent respectively in 2000 to 16 percent and 11 percent in 2020, representing an increase of 75 and 73 percentage points in their share of GDP. Focusing on the ICT sector, there has been significant growth in the number of internet service providers in business, rising to about 188 providers in recent times, according to the Nigerian Communications Commission records. Other sectors such as the financial and business sector (4 percent), agriculture (35 percent), and utilities (1 percent) saw marginal improvements in their contribution to GDP in 2020 compared to 2000. Although the changes in the transport and trade sectors were small, both declined in their GDP contribution by 21.9 and 5.3 percentage points, respectively. The sector with the largest decline was the mining sector, which saw a 61percentage point decline in its share of GDP for the two periods considered.

Figure 9: Contribution to GDP by industry, 2000 and 2020 (percent)

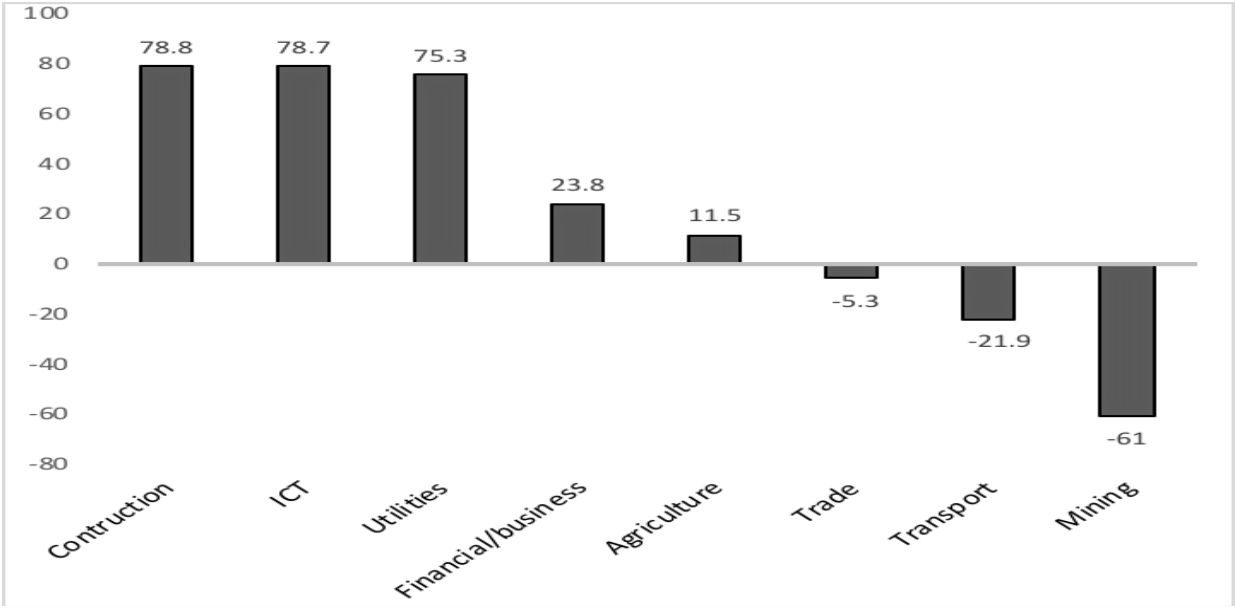




Source: Authors' computation from National Bureau of Statistics Report on Gross Domestic Product

These changes clearly illustrate gains and improvement in IWOSS in Nigeria. Figure 10 demonstrates that the highest percentage point improvements in GDP contribution were seen in the construction, ICT, and utility sectors (all IWOSS), while the greatest decline was in the mining and transport sectors. It is apparent that primary sectors are shrinking while tertiary services sectors are growing, thus shifting the Nigerian economy from an agrarian economy to a service-based economy.

Figure 10: Percentage points contribution to GDP across sectors, 2000 and 2020



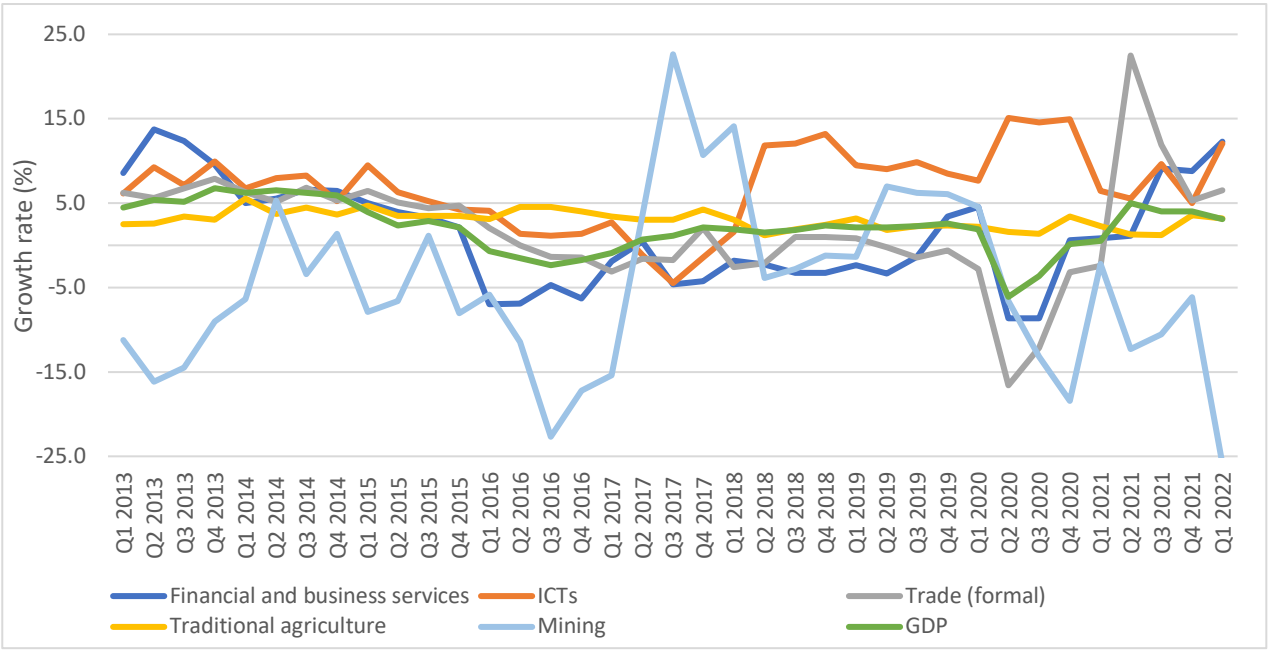
Source: Authors' computation from National Bureau of Statistics Report on Gross Domestic Product

Nigeria recorded two recessions between 2010 and 2021, largely due to weak domestic capacity to absorb external shocks. In figure 11, the study presents the growth trend of a few selected sectors from the first quarter of 2015 to the first quarter of 2022. These periods cover the last two recessions Nigeria has had within the past two decades, the first in the second quarter of 2016 and subsequently in the third quarter of 2020 (World Bank 2021). While the 2016 recession was induced by the collapse in commodity prices, the 2020 recession was largely induced by the COVID-19 lockdown measures.

Nigeria experienced higher-than-anticipated recovery from the pandemic shock. As shown in figure 11, the agriculture and ICT sectors did not experience negative growth during the periods of recession. However, while these sectors of the economy were resilient to the recession, the majority of the sectors contracted. Nevertheless, except for mining, all the sectors including the financial and business services, ICT, and trade sectors experienced positive growth in the first quarter of 2022 as the economy recovered from the COVID-19 pandemic-induced recession. The sharp decline in mining output seems largely due to the sharp fall in crude oil production, which is a component of the mining sector. Oil theft, aging infrastructure, and low investment in the oil sector led to the decline in Nigeria's crude oil

production from over 1.404 million per barrel in the first quarter of 2021 to about 1.299 million per barrel in the second quarter of 2022 (Organization of the Petroleum Exporting Countries 2021, 2022). There is a plausibility of base effect in the growth recorded in the first quarter of 2022; however, prompt government actions such as the implementation of the NESP contributes largely to the growth (World Bank 2022a). The program helps in providing the needed incentives to cushion the effects of the pandemic on the economy.

Figure 11: Year-on-year sectoral growth, 2013Q1 to 2022Q1 (percent)



Source: Authors' calculation based on GDP estimates from the National Bureau of Statistics

Nigeria experienced moderate structural transformation over the last two decades. Structural transformation entails movement of labor from less productive sectors to highly productive sectors, thereby contributing to high and sustainable growth. Economic sectors are divided into three main categorizations—primary, secondary, and tertiary. The primary sector largely consists of the agriculture and mining sectors; the secondary sector consists of manufacturing, utilities, and construction; the tertiary sector consists of trade, ICTs, financial services, and transportation. The tertiary sector comprises industries that are largely non-polluting.

Nigeria experienced decreased employment in the primary sector between 2010 and 2018, in line with the structural transformation postulation. As shown in table 9, the primary sector contributed about 59.1 percent of total employment in 2010, a figure that decreased to 46.6 percent in 2018. The decline in the share of the primary sector in total employment suggests a shift in the employment composition in Nigeria away from the primary sector toward the secondary and tertiary sectors.

In the structural transformation theory, labor movement follows a sequence. However, Nigeria's case is quite different. Traditionally, labor moves from the primary sector to the secondary sector and then to the tertiary sector. As shown in table 9, the primary-sector employment share decreased by 12.5 percentage points, from 59.1 percent in 2010 to 46.6 percent in 2018. However, the employment share in the secondary sector only increased by 3.5 percentage points, from 6.1 percent in 2010 to 9.6 percent in 2018. The larger share of the increase was experienced in the tertiary sector. The increase in the secondary sector's employment share was largely driven by the manufacturing sector, which recorded a 15 percent share of growth in employment absorption. This is significantly higher than the growth recorded in the construction sector (4 percent share of change) and the utility sector (-1 percent share of change).

With weak employment absorption in the secondary sector, the tertiary sector created a large proportion of the new jobs between 2010 and 2018. As shown in table 9, the tertiary sector contributed about 67.3 percent of the new jobs, which is more than three times higher than the share for new jobs in the primary and secondary sectors. As a result, the share of tertiary-sector employment in total employment rose from 34.9 percent in 2010 to 43.8 percent in 2018. Among the tertiary sectors, the financial and business services sector recorded the highest employment absorption (23.5 percent), followed by trade services (12.3 percent) and government services (11.2 percent). The lowest share of change among tertiary sectors was recorded by the transport sector (6.2 percent), out of a total employment of 1.3 million people in 2010 and 2.5 million people in 2018.

Table 9: Employment by sector, 2010-2018

Sector	Employment (thousands)		Employment share (%)		Absolute change (thousands)	Share of change (%)	Annual % change
	2010	2018	2010	2018			
Agriculture	30,407	33,110	58.9	46.5	2,703	13.8	1.1
Mining	106	117	0.2	0.2	11	0.1	1.3
Primary Sector	**30,513**	**33,227**	**59.1**	**46.6**	**2,714**	**13.8**	**1.1**
Manufacturing	2,135	5,084	4.1	7.1	2,949	15.0	17.3
Utilities	121	95	0.2	0.1	-26	-0.1	-2.7
Construction	870	1,647	1.7	2.3	777	4.0	11.2
Secondary sector	**3,126**	**6,826**	**6.1**	**9.6**	**3,700**	**18.8**	**14.8**
Trade services	8,979	11,392	17.4	16.0	2,413	12.3	3.4
Transport services	1,287	2,502	2.5	3.5	1,215	6.2	11.8
Financial and business services	1,821	6,430	3.5	9.0	4,609	23.5	31.6
Government services	2,433	4,633	4.7	6.5	2,200	11.2	11.3
Other services	3,474	6,267	6.7	8.8	2,793	14.2	10.0
Tertiary sector	**17,994**	**31,224**	**34.9**	**43.8**	**13,230**	**67.3**	**9.2**
Total	**51,632**	**71,276**	**100.0**	**100.0**	**19,644**	**100.0**	**4.8**

Source: Authors' calculations based on University of Groningen Economic Transformation Database

To contextualize the growth and employment of enterprises across sectors in Nigeria, table 10 presents the labor productivity of enterprises across IWOSS and non-IWOSS sectors. It is evident that the IWOSS sectors have higher labor productivity than both the manufacturing and non-IWOSS sectors. Among the IWOSS sectors, financial and business services had the highest productivity in 2010 but was overtaken by ICT in 2018. In both 2010 and 2018, financial and business services, ICT, and formal trade were the IWOSS sectors with the highest labor productivity.

Table 10: Labor productivity by sector, 2010 and 2018

	Labor productivity (local currency in thousands)	
	2010	**2018**
IWOSS	2,741.07	3,630.84
Agro-processing	2,546.73	2,837.12
Export crop and horticulture	1,290.89	2,138.34
Tourism	141.50	891.11
ICT	23,393.30	31,734.49
Transport	540.01	930.71
Financial and business services	33,724.18	12,811.93
Formal Trade	2,178.43	4,691.20
Construction	1,805.94	3,661.43
Other IWOSS	2,933.16	1,062.18
Manufacturing	977.14	2,198.48
Non-IWOSS	690.95	1,120.18
Other non-IWOSS	358.22	811.80
Traditional agriculture	413.88	815.72
Mining	79,872.27	117,068.88
Utilities	1,843.01	11,448.12
Informal trade (excl. tourism)	751.86	587.91
Government	3,178.91	3,753.31
Overall economy	1,057.71	1,792.14

Source: National Bureau of Statistics, CBN Statistical Bulletin, and University of Groningen Economic Transformation Database

As shown in table 10, the overall economy productivity increased from 1.06 million naira ($2,436.7) to about 1.79 million naira ($4,114.9),[12] indicating an average annual productivity growth of about 3.89 percent. The study uses the labor productivity decomposition method developed by Fabricant (1942), which has also been used by Nayyar, Hallward-Driemeier, and Davies (2021) and Heitzig et al. (forthcoming). The decomposition approach is represented in equation 1 to understand sources of growth in the labor productivity between 2010 and 2018.

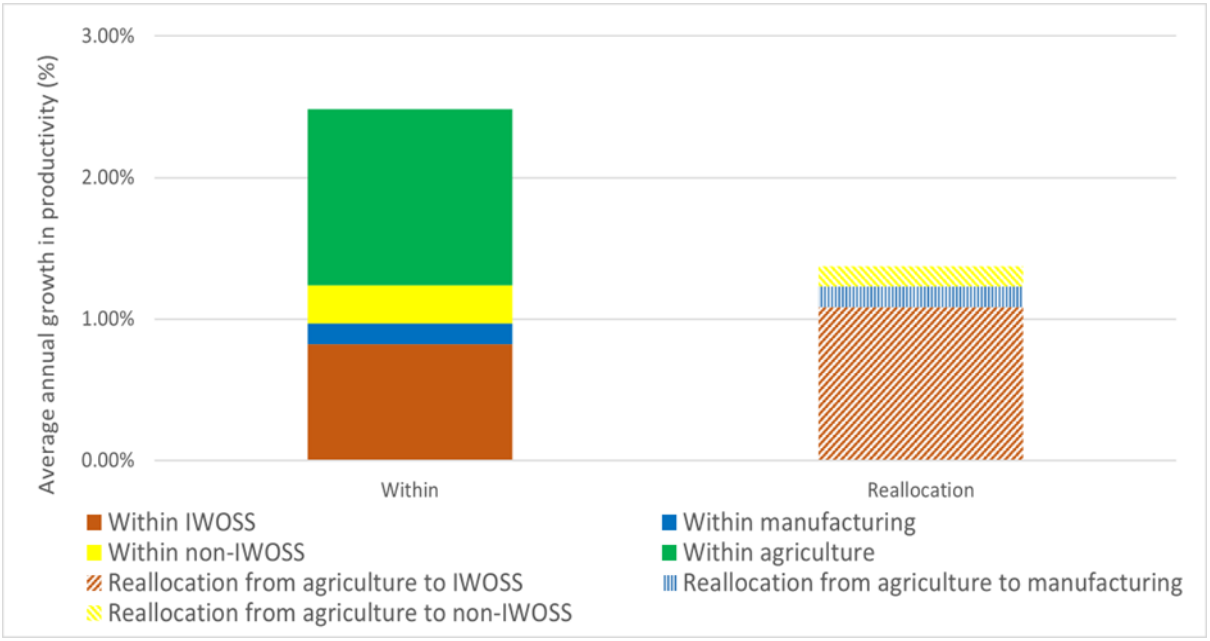
$$\Delta y^t = \sum_i^m \theta_i^{t-k} \Delta y_i^t + \sum_i^m y_i^t \Delta \theta_i^t \quad (1)$$

The growth in labor productivity is made up of two components: "within" and "between" components. The between components are also called structural change. The within components measure the growth in sectoral productivity while keeping the share of employment constant. For this analysis, the study uses four sector classifications: IWOSS; non-IWOSS, excluding traditional agriculture; manufacturing; and agriculture.

The between components reflect changes in employment share while keeping labor productivity constant at its final level. For the study, the between components are made up of three components. The first component reflects employment share changes in IWOSS relative to traditional agriculture; the second component reflects employment changes in non-IWOSS excluding agriculture relative to traditional agriculture; the third component reflects change in manufacturing relative to traditional agriculture. The results obtained for both within and between components are presented in figure 12. The chart shows that within components contribute more to Nigeria's labor productivity growth. Agriculture contributed the highest to the within component, followed by IWOSS, non-IWOSS excluding agriculture, and manufacturing. In terms of between components, which represent structural changes, reallocation of workers from agriculture to IWOSS contributes the highest. These results suggest that IWOSS sectors contributed significantly to labor productivity in Nigeria. In other words, significant improvement in productivity of the IWOSS sector is expected to enhance the aggregate labor productivity.

[12] Calculating using a current exchange rate of ₦435 to $1.

Figure 12: Decomposition of labor productivity growth in Nigeria, 2010-2018



Source: Authors' calculations using National Bureau of Statistics Report on Gross Domestic Product and the 2010 and 2018 National Living Standards Survey

Constraints to IWOSS growth

A significant aspect of evaluating the employment potential of any sector is by gaining insight into the constraints affecting the growth of the sector. This section discusses system-wide challenges and sector-specific challenges in the Nigerian economy. However, special considerations were made on four IWOSS sectors with specific potential for employment growth (ICT, trade, financial and business services, and real estate) in order to gain insight into the challenges affecting the growth of these sectors.

Constraint to growth: System-wide challenges affecting firms in Nigeria

The system-wide challenges facing IWOSS sectors in Nigeria can be broadly categorized as poor infrastructure, lack of access to finance, the skills gap, and corruption.

- **Infrastructure:** The infrastructural deficit in Nigeria is one of the significant factors affecting the growth and development of IWOSS sectors, in particular, and the Nigerian economy more generally. Nigeria's infrastructural deficit according to the National Planning Commission is estimated at $100 billion annually, which is 189.77 percent above the 2021 federal budget (inclusive of recurrent expenditure, which takes a higher share) (National Planning Commission 2022). The wide infrastructure gap is exacerbated by the growing population, with Nigeria’s annual population growth rate at 2.58 percent (World Bank 2022a), which further increases the demand for infrastructure. The infrastructure gap cuts across power, health care, education, transportation, and housing. Among these, one of the most important sectors for economic growth is the power sector. The World Bank (2020) estimates the economic cost of the shortages in Nigeria’s power sector to be about $28 billion, which amounts to about 2 percent of the country’s GDP.

- **Lack of access to finance:** Access to credit and finance is a pertinent constraint to private sector growth in Nigeria. Small- and medium-scale enterprises account for 96 percent of the total number of businesses in the country and contribute about 50 percent to the national GDP of Nigeria (PwC 2020). Despite their importance, 80 percent of these small- and medium-scale enterprises in Nigeria fail within five years due to financial constraints (Adebisi and Gbegi 2013). In a PwC survey of over 10,000 firms, lack of access to finance was ranked as the leading constraint to business operation in Nigeria, and less than a third of Nigeria’s micro-, small-, and medium-size enterprises (MSMEs) have successfully obtained a loan from a financial institution as at the period of the survey (PwC 2020). Credit is not easily available and where it is available, it is very costly. Consequently, there is an estimated financing gap of about 617.3 billion naira (US$1.40 billion) for Nigerian MSMEs (PwC 2020), and most businesses have had to rely on personal savings or reinvested profits as a source of business finance (World Bank 2017a).

- Furthermore, Nigeria’s total domestic credit to the private sector as a share of GDP is only about 12 percent (which is below the 17 percent average for sub-Saharan Africa)

as of 2020. This is especially low, considering that Nigeria is Africa's largest market (by GDP and population), and more so when compared to other sub-Saharan African countries. For instance, Senegal's private sector as a share of GDP is about 29 percent, Rwanda's 25 percent, while Algeria, Kenya, and Egypt stand at 30 percent, 33 percent, and 27 percent respectively.[13] Outside Africa, Malaysia has a 134 percent share, and Brazil has 70 percent. These disparities highlight the depth of financial constraint for businesses in Nigeria. And by implication, the possibility of growth and expansion of businesses including those in IWOSS sectors is significantly affected by lack of access to finance at an affordable rate.

- **Skills gap:** The skills gap is the mismatch between the skills that employers require and the skills that job seekers possess. The high share of educated Nigerians not employed is a reflection of the education system not equipping the graduates with emerging and highly demanded skills. Also, Nigeria's high youth unemployment rate (33.3 percent) is an indication of the Nigerian economy's weak capacity to create jobs for those in the labor market (NBS 2020b). According to the survey carried out in this study, the dichotomy between the skills required by industry and those taught in classrooms is one of the key factors responsible for Nigeria's high unemployment. Furthermore, about 60 percent of graduates in Nigeria lack basic digital skills to compete in the 21st-century digital economy (World Bank 2021). This poses a challenge to IWOSS sectors in Nigeria such as the ICT sector, which requires such skills for industry competitiveness and growth.

- **Corruption**: Corruption is another dominant obstacle limiting businesses in Nigeria. In 2014, 28.9 percent of businesses in Nigeria experienced at least one bribe payment request, higher than the sub-Saharan Africa's average of 22.3 percent and the world average of 15.8 percent (World Bank Enterprise Survey 2022). Relatively worse statistics reveal that one in every two firms (55.3 percent) are expected to give gifts to public officials to get things done. (The figure is 28.1 percent for sub-Saharan African countries and 19.5 percent for the world.) The Chatham House estimated that $582 billion has been stolen from Nigeria since independence in 1960 (*Economist* 2019), which are funds meant to facilitate the growth of sectors in the economy. The 2021 Corruption Perception Index ranks Nigeria at 145 out of 180 countries (Transparency International 2021), implying that Nigeria is one of the most corrupt countries in the world. Such a situation hinders the ease of doing business and creates a negative perception of Nigerian businesses, particularly among foreign partners.

Constraints to growth in specific IWOSS sectors

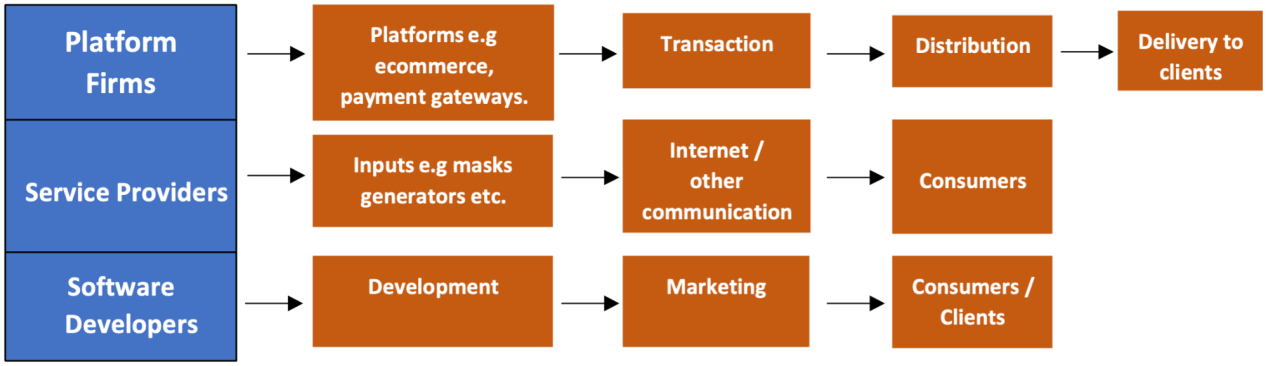
Information and communications technology (ICT)

Nigeria's ICT sector is a significant IWOSS sector, both locally and regionally. It is known to be Africa's largest ICT market, with 82 percent of the continent's telecommunications

[13] Domestic credit to the private sector (as a percent of GDP) according to the World Bank Development Indicators (World Bank 2022a).

subscribers and 29 percent of internet usage (National Information Technology Development Agency, 2021). The Nigerian Communications Commission (2021) estimates that Nigeria has about 76 million subscriptions on broadband (a penetration rate of 40 percent) and 187 million lines in the voice segment as of May 2021. The Nigerian government recognizes ICT as the enabler of the development of other critical sectors including education, health care, agriculture, and manufacturing. The Nigerian government in November 2019, launched the National Digital Economy Policy and Strategy (2020-2030) aimed at repositioning the Nigerian economy toward opportunities that digital technologies provide. The policy document is also aimed at addressing the challenges of the ICT sector.

Figure 13: ICT value chain



Source: Authors' conceptualization

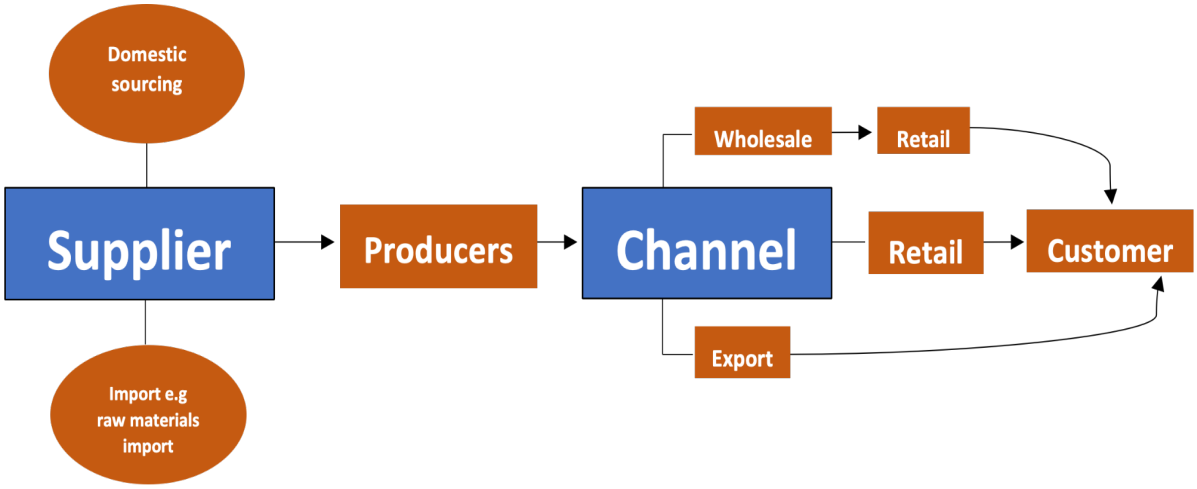
As seen in Figure 13, the ICT sector in Nigeria comprises several industries within its value chain, which include platform firms, service providers, and software developers. One of the major challenges faced across the value chain is the dearth of ICT-related knowledge and skills among the labor force, considering that many Nigerians lack the basic skills required to function in the sector. This is mainly due to a lack of access to quality education that can provide the relevant skills. Another challenge faced in the ICT sector in Nigeria is erratic power supply, as highlighted by Ifejiofor and Nwankwo (2015), which is critical to ICT facilities. For instance, in the telecommunications sector, the various telecom masts located all over the country are powered by heavy-duty diesel generators due to inadequate power supply. With the constant volatility in the global oil market and, more recently, the upward trend in the market owing to the Russia-Ukraine war, there is a concomitant increase in cost for firms operating in the sector. Ifejiofor and Nwankwo (2015) also highlight the high cost of setting up and maintaining ICT facilities in the country as key challenges.

Trade services

Trade services refers to the sale and delivery of tangible and intangible products between producers and consumers. Trade services that take place between a producer and consumer that are, in legal terms, based in different countries are called international trade services (World Trade Organization 2010). The constraints inherent in trade services in

Nigeria primarily include the following: poor infrastructure, long processing time at the ports, and the volatility of and poor access to foreign exchange.

Figure 14: Value chain of trade services



Source: Authors' conceptualization

The value chain of the trade services sector is seen in figure 14, with players in the sector including suppliers, producers, and consumers, among others. The supply stage of the value chain deals with suppliers that source inputs for production such as raw materials. The suppliers can either be domestic or foreign (in cases where the raw materials are imported). A common challenge with dealing with foreign suppliers is the need to trade with foreign exchange, which has been scarce and highly unstable in Nigeria, thereby making imports more expensive and difficult. In September 2021, the Manufacturers CEOs Confidence Index by local manufacturers stated that the demand for foreign exchange on the back of outstanding obligations has risen to about $2 billion as local producers appear to be running out of options for survival (Manufacturers Association of Nigeria 2021).

Furthermore, trade is adversely affected by infrastructural deficit and insecurity challenges. Poor infrastructure is a major impediment to the sector's growth, as basic infrastructure such as road and railway networks are grossly inadequate. As a result, transporting goods within and outside the country has become more challenging. For instance, Nigeria has about a 70 percent road deficit, with only 50,000 kilometers out of 200,000 kilometers of road networks being paved in the country (Tunji 2022). The infrastructure deficit is also manifested in the form of congestion at the port. For instance, at Lagos ports in the Apapa district and at Tin Can Island, cargo ships form a constant line to dock. It takes an average of five hours to manually check each container. The Seaport Terminal Operators Association of Nigeria affirms delays at the country's ports are costing the economy $55 million per day (NNN 2021). In mid-2020, waiting times for cargo ships at Lagos ports reached 50 days, with thousands of trucks overcrowded on the roadside and drivers forced to pay to ensure the security of their trucks (McBain 2020). In addition, insecurity especially in the northern and southeastern parts of Nigeria has further complicated the movement of goods and people.

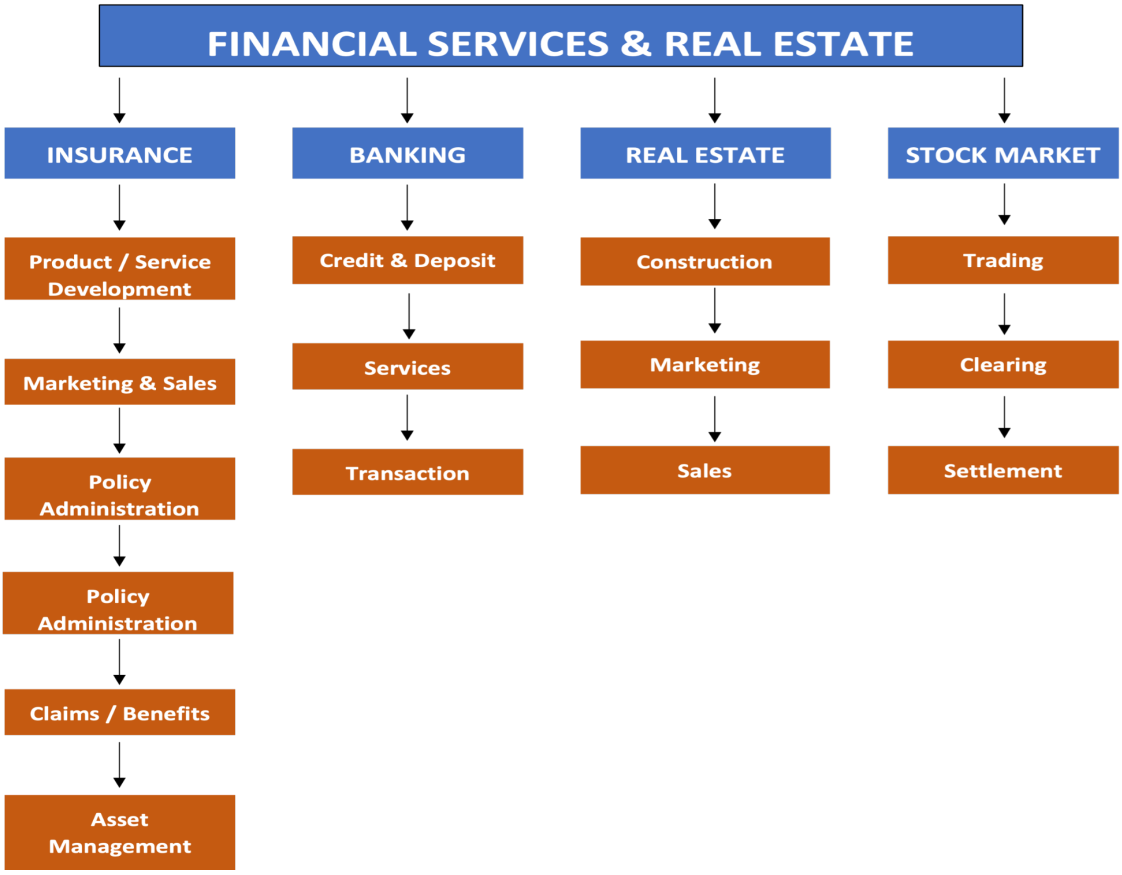
Moving goods across insecurity-prone areas is usually associated with additional cost, thereby increasing the cost of operation and final prices to be paid by consumers.

Financial & business services

For this study, the financial and business services sector is also referred to as the finance and real estate sector because of the context classification of industries. The financial sector and real estate sectors are relevant in this study such that, while the financial service segment mobilizes resources in the form of savings and converts them into loans, the real estate sector involves investing in the development and/or sale of land and buildings for residential, commercial, or industrial purposes. A sound financial system is pertinent to the growth and development of an economy. Additionally, a functioning banking system helps speed up economic growth and poverty alleviation through the effective mobilization of capital for investment purposes, while poorly functioning banks can hinder economic growth (Prochniak and Wasiak 2017).

Nigeria's financial service industry is worth $9 billion and comprises banks and nonbank financial institutions. These include finance companies, primary mortgage institutions, community banks, discount houses, insurance companies, and foreign exchange bureaus de change.

Figure 15: Value chain of financial and business services



Source: Authors' conceptualization

Figure 15 illustrates the value chain for finance and business services (including real estate). The financial and real estate value chain is designed based on four components that include insurance, banking, real estate, and the stock market. Crucial constraints in the financial services sector[14] in Nigeria include the problem of nonperforming loans, poor corporate governance, and cybercrime breaches. Loans are nonperforming when the borrower does not make any scheduled (interest) payment for a specified period, usually 90 days. Nigerian banks have a significant amount of nonperforming loans: according to the National Bureau of Statistics (NBS), Nigeria's nonperforming loans were 1.4 trillion naira ($3.9 billion) and 1.2 trillion naira ($3.3 billion) in 2019 and 2020, respectively (NBS 2022).

An additional constraint to the financial sector in Nigeria is poor corporate governance. Corporate governance refers to the rules, processes, or laws by which businesses are operated, regulated, or controlled. Good corporate governance practices ensure that a company's board and management acts in the best interest of the company and remains accountable to the company's shareholders. Poor corporate governance is often identified as a major factor responsible for financial sector distress, making it more important for banks to be held to the highest standards of corporate governance. For instance, in 2009, eight executive directors and eight chief executives of Nigerian banks were removed by the Central Bank of Nigeria (CBN) due to corporate governance issues (Akande 2016).

Another challenge affecting the financial and business services sector is cybercrime breaches and attacks. It is worth stating that the evolution and adoption of technology in Nigeria has positively impacted the Nigerian economy via the growth of the financial sector and financial technology (fintech) industry. In the first quarter of 2021, the Nigerian fintech industry generated about $293.2 million in revenue (over 70 percent of which was realized from foreign direct investments). Even more, the revenue from the fintech industry is projected to reach $543 million by 2022, a significant growth from the $178.3 million generated in 2018 and the $153.1 million generated in 2017 (George 2020). The fintech industry has also experienced significant legal and regulatory developments. For example, the Federal Executive Council recently approved the Nigerian Start-Up Bill, which has now been passed into law. Despite these significant strides, the sector has been constrained by the rising rate of cybercrime breaches and attacks. In 2018, commercial banks in Nigeria lost 15 billion naira ($39 million) to electronic fraud and cybercrime. This was a 537 percent increase on the 2.37-billion-naira loss recorded in 2017. Over 17,600 bank customers and depositors lost a total of 1.9 billion naira to cyber fraud in 2018, with fraud rising by 55 percent since 2017 (Ogbonnaya 2020). The attacks were widespread such that even financial institutions that had made significant investments in cybersecurity were also attacked (Aladenusi 2022).

Meanwhile, the real estate sector is faced with various constraints such as unfavorable land policies in the form of compulsory acquisition and compensation of land. The Land Use Act 1978 regulates the ownership, acquisition, and administration of land, which includes land allocation, registration of title, and management of land within the states and Federal Capital Territory of Nigeria. The control and administration of land are vested in the governor of the

[14] In Nigeria, about 45 percent of adults have an account with a financial institution and only about 2 percent of Nigerians have insurance (EFInA 2021).

state where the land is situated. Hence, allocation of land for real estate development is dependent on the government's approval, which leads to inefficient allocation in most cases as the developers are constrained to locations that are approved by the government. Also, when real estate developers acquire land, they are required by the law to pay compensation to owners of existing structures on the land, which increases their cost even before construction begins.

Future trends: Potential growth and labor demand of IWOSS sectors

In this section, Nigeria's potential growth and employment prospects in 2035 is estimated using disaggregated data. The projection for the country was obtained by summing the sectors' projection. The sectoral growth performance was based on the Central Bank's Real Sector statistics from 2010 to 2018, whereas the employment performance was based on the National Bureau of Statistics (NBS) Labour Survey Report for 2010 and 2017. The estimates obtained were used to compute the projection at the sector level and at the whole-economy level.[15] Furthermore, the growth and employment at the disaggregated level supports the understanding of how IWOSS sectors perform relative to non-IWOSS sectors and the manufacturing sector. With the projection, insights into sectors that can generate 21 million jobs by 2025, as prescribed by the NDP (2021), are provided.[16]

Table 11 provides quantitative estimates of the projection for employment. The study provides three different projections: baseline, pessimistic, and optimistic scenarios. The multiple scenarios are because projections are highly susceptible to policy reforms. In the baseline projections, the study uses average employment growth that is similar to the growth observed between 2010 and 2018 as well as the outlook of the sector as contained in the NDP. For instance, the study anticipates that employment in the ICT sector between 2018 and 2035 would exceed the 7.6 percent recorded between 2010 and 2018 because of the digitalization drive of the administration. Also, the financial sector experienced the highest growth between 2010 and 2018, therefore it is anticipated that the sector would still record the fastest growth between 2018 and 2035. The assumption is based on the financial inclusion drive and the importance attributed to the sector in the NDP. However, it is anticipated that the rate of employment growth will be lower than the 22.5 percent recorded between 2010 and 2018.

In the pessimistic projection, the study assumes that the rate of employment growth would be lower than what was assumed under the baseline in all sectors by 1 percent. In other words, if it has been assumed that a sector will record a baseline employment growth of 5 percent, for the pessimistic projection the sector is assumed to grow by 4 percent. Likewise, for the optimistic projection, it was assumed that the sector employment would grow at 0.5 percentage points higher than the baseline projection's assumed growth rate. The obtained employment projections are reported in table 11.

[15] The COVID-19 pandemic disrupted economic activities and the job market. As a result, in the study, the authors assume that past, current, and future government responses would restore the economy to its past growth trajectory. Hence, the projection in this study should be interpreted with caution, as it mainly serves as a guide to understand the growth and employment outlook in Nigeria.
[16] The nonavailability of employment data beyond 2018 limits the authors' ability to quantify the number of jobs that have been created so far.

Under the baseline projection, by 2035, 47.38 million jobs are expected to be created with 26.67 million jobs in the IWOSS sector, 2.59 million in manufacturing, and 18.12 million in the non-IWOSS sector. The number of jobs expected to be generated under the pessimistic projection is 31 million jobs comprising 20.81 million jobs in the IWOSS sector, 1.82 million jobs in manufacturing, and 8.72 million jobs in the non-IWOSS sector. Further, under the optimistic projection, 56.24 million jobs will be created consisting of 29.91 million jobs in the IWOSS sector, 3.01 million jobs in the manufacturing sector, and 23.33 million jobs in the non-IWOSS sector. In all of the three projection scenarios, the IWOSS sector is expected to account for about half of the new jobs that will be created by 2035. Subsequent analysis focuses only on the baseline projections.

In table 12, the breakdown of the baseline employment projection at the sectoral and GDP projections is provided.[17] It is observed that between 2018 and 2035, real GDP is expected to grow at an average rate of 4.2 percent per year. Based on the projections, IWOSS output will grow by 5.6 percent, which is 1.4 percentage points higher than the entire economy and 2 percentage points higher than the projected 3.6 percent for non-IWOSS sectors. Tourism is expected to grow the most with 13 percent growth, followed by construction with 12.8 percent and export crops and horticulture with 8.2 percent.

Employment for the entire economy is expected to grow by 3.9 percent per year. As shown in table 12, employment growth in IWOSS sectors is 8.8 percent and is higher than non-IWOSS sectors and the manufacturing sector. The financial and business services sector is topmost, with an expected growth of 16.5 percent, followed by agro-processing with 11.8 percent and transport with 10.8 percent. In addition, the average employment growth estimated at 3.9 percent would lead to the creation of about 47.4 million new jobs between 2019 and 2035.[18] IWOSS sectors are expected to generate about 56 percent of the new jobs, while non-IWOSS sectors would create 38.2 percent and manufacturing would create the remaining 5.5 percent. These results indicate the importance of IWOSS sectors in birthing new jobs in Nigeria.

A breakdown of new employment in the IWOSS category indicates that most of the new jobs are in the transportation sector (4.6 million jobs). Meanwhile, formal trade is expected to create 3.5 million jobs while the financial and business services sector will create 2.8 million jobs and ICT about half a million jobs. In summary, the selected three IWOSS sectors would contribute about 40 percent of the new jobs generated by IWOSS sectors. As pointed out in section 4, the three selected sectors have the high productivity and positive employment elasticity. With the evidence in this section, the growth of the selected sectors is higher than the overall economy's average growth of 3.9 percent. Although the employment growth of agro-processing, construction, and transport are higher than that of ICT and formal trade, the transition toward a digital economy indicates that employment in the ICT sector will be

[17] The projections were calculated using a linear growth model. For linear growth, the average growth rates obtained between 2010 and 2018 were used. The method employed historical trends to compute the projections.

[18] The selected IWOSS sectors—financial and business services, ICT, and formal Trade—had employment growth higher than the overall economy’s employment growth, suggesting that they have potential job creation effects.

amplified and, as such, should be given special recognition. The integration of technology into other sectors of the economy indicates that the future economic development of Nigeria will largely depend on the performance of the ICT sector. For instance, fintech is a subsection of the financial sector powered by technology. Also, artificial intelligence is an integral part of ICTs, and it is powering innovation in the transportation sector.

With the emergence of the African Continental Free Trade Area (AfCFTA) agreement, it is crucial for Nigeria to fully optimize the job creation associated with the trade agreement. The AfCFTA agreement is aimed at unlocking gains in regional trade. Olapade and Onyekwena (2021) show that Nigeria has the potential of benefiting from the AfCFTA, especially in the agricultural sector. However, the realization of the gains depends largely on strengthening the domestic productivity capacities of firms. In addition, in the 2021-2025 NDP, the potential of regional trade was highlighted. Thus, the trade sector also receives special recognition as a key IWOSS sector, not only for its high productivity and positive employment elasticity but also for its potential based on the newly established regional trade agreement.

Table 11: Employment projections: Three scenarios

	Historical data	Baseline scenario			Pessimistic scenario			Optimistic scenario		
	2018	2025	2035	Average annualized growth (2018-2035)	2025	2035	Average annualized growth (2018-2035)	2025	2035	Average annualized growth (2018-2035)
IWOSS	17.75	26.93	44.42	8.84	25.46	38.56	6.89	27.70	47.66	9.91
Manufacturing	3.08	4.21	5.67	4.94	3.98	4.90	3.48	4.33	6.09	5.75
Non-IWOSS	50.44	57.88	68.56	2.11	54.57	59.16	1.02	59.60	73.77	2.72
Total	71.28	89.03	118.66	3.91	84.02	102.63	2.59	91.63	127.52	4.64

Source: Authors

Table 12: A growth scenario to 2035: Projecting GDP and employment (baseline)

	GDP (millions of naira)		Employment (in thousands)						Share of total employment		
	2018	2035 (projection)	Average growth (%) (2018-2035)	2018	2025 (projection)	2035 (projection)	Add. Jobs (2018-2035)	Average growth (%) (2018-2035)	2018 (%)	2025 (%)	2035 (%)
IWOSS	32757.3	63904.0	5.59	17753.36	26934.80	44424.01	26670.65	8.84	24.9	30.3	37.4
Agro-processing	3101.5	5299.0	4.17	2002.98	3327.45	6029.27	4026.29	11.82	2.8	3.7	5.1
Construction	2605.3	8285.0	12.82	1647.19	2566.25	4588.41	2941.22	10.50	2.3	2.9	3.9
Export crops and horticulture	362.8	865.6	8.15	169.66	195.62	221.72	52.06	1.80	0.2	0.2	0.2
Financial and business services	6566.5	7934.9	1.23	985.77	1797.89	3757.33	2771.56	16.54	1.4	2.0	3.2
ICT	8527.7	18681.7	7.00	409.01	634.20	1034.23	625.22	8.99	0.6	0.7	0.9
Tourism	776.7	2493.8	13.00	1586.15	1748.70	2210.75	624.60	2.32	2.2	2.0	1.9
Formal trade	7316.1	12292.5	4.00	3873.04	5012.70	7380.76	3507.71	5.33	5.4	5.6	6.2
Transport	956.6	1918.6	5.92	2501.72	3927.31	7103.21	4601.49	10.82	3.5	4.4	6.0
Other IWOSS services	2544.1	6132.8	8.30	4577.83	7724.65	12098.33	7520.50	9.66	6.4	8.7	10.2
Manufacturing	3319.1	4232.7	2.23	3080.68	4212.41	5668.17	2587.50	4.94	4.3	4.7	4.8
Non-IWOSS	33725.5	55143.3	3.55	50442.28	57884.22	68564.45	18122.17	2.11	70.8	65.0	57.8
Traditional agriculture	17181.3	33563.5	5.32	33110.20	35380.01	39079.79	5969.59	1.06	46.5	39.7	32.9
Government	1531.6	965.2	-2.13	779.60	878.02	1004.02	224.42	1.69	1.1	1.0	0.8
Mining	6092.5	3366.1	-2.54	116.59	125.74	140.84	24.25	1.22	0.2	0.1	0.1
Informal trade	4157.7	6985.7	2.90	6377.15	8019.28	9920.27	3543.82	3.27	8.9	9.0	8.4
Utilities	405.1	845.1	5.49	94.61	93.51	100.52	5.91	0.37	0.1	0.1	0.1
Other non-IWOSS	4355.3	9417.6	7.52	9964.14	13387.65	18318.31	8354.17	4.93	14.0	15.0	15.4
Total	69799.9	123279.9	4.23	71276.3	89031.4	118656.6	47380.3	3.91	100	100	100

Sources: Authors calculation based on 2010 and 2017 National Bureau of Statistics Labour Survey; 2010 and 2018 National Living Standard Survey; National Bureau of Statistics Gross Domestic Products Reports; and Groningen Economic Transformation Database

In 2018, employment in IWOSS sectors contributed about 25 percent of total employment, and the share is expected to increase to 30.3 percent in 2025 and 37.4 percent in 2035 (see table 12). Apart from tourism, the share of each of the IWOSS sectors is projected to increase by 2035. For instance, the employment share of financial and business services is expected to increase to 3.2 percent from 1.4 percent in 2018. The increase suggests that employment in Nigeria over the next decades would shift toward IWOSS sectors.

Table 13 presents the employment projection based on skills.[19] The results indicate that by 2035, employment of low-skilled workers would fall to 16.2 percent from 36.8 percent in 2018.[20] In addition, the transition also reflects the important role of technical and vocational education and training targeted at upskilling young people and increasing the likelihood of obtaining employment (FRN 2021). The reduction in low-skilled employment is observed to hold for IWOSS, non-IWOSS, and manufacturing sectors. This suggests that the demand for skilled and highly skilled workers would be higher in 2035.

Structural transformation entails replacement of less productive jobs with highly productive jobs (Baccini et al. 2021). Usually, highly productive jobs require a skilled workforce. Nigeria's employment creation along skill levels follows structural transformation postulation. By 2035, about a third of workers in IWOSS sectors would be highly skilled, an increase from 26.6 percent in 2018. At the disaggregated level, among the IWOSS sectors, financial and business services and ICT are expected to have a high proportion of highly skilled workers while the transportation sector would have those with the least skills. Similarly, formal trade entails a moderate level of skills. It follows that in preparing people for jobs in the IWOSS sectors, considerable attention should be directed at building their skills, particularly those interested in working in either the financial and business sector or the ICT sector. These findings indicate that training programs and education curricula have to be strengthened to prepare those already in the labor market as well as those entering with highly in-demand skills.

Further disaggregated information is presented in Table 14 across the gender dimension to understand how the new jobs would be taken up by males and females. The estimates indicate that between 2018 and 2035, about 32 million jobs will be taken up by males and 15.6 million by females. For the jobs taken up by females, more than 58 percent are in the IWOSS sectors with the majority in the trade, agro-processing, and financial and business services sectors. Female employment in the construction sector is expected to decline by about 9,400 jobs between 2018 and 2035. This suggests that without deliberate intervention, women will less likely gain employment in the construction sector compared to either the financial and business services or trade sector. A large share of the new jobs in the IWOSS

[19] Due to the absence of data on skill levels in Nigeria, the report uses information on education to represent skills. As a result, those with primary education and below are regarded as low skilled, secondary as skilled, and post-secondary as highly skilled.

[20] While the NDP 2021-2025 indicates that 21 million jobs will be created by 2025, no emphasis was placed on the fraction that would be low- or high-skill jobs. In this study, because education was used to proxy skill level, the transition reflects participants in the labor force possessing a higher educational level by 2035 than a decade before. This is consistent with increased government efforts to increase educational attainment in the country.

industry that would be taken up by males are in the transportation, agro-processing, and construction sectors.

Table 13: Projecting labor demand by skill

	2018			2035 (projection)			2035 (projection, %)			Annual % growth		
	Low skilled	Skilled	High skilled	Low skilled	Skilled	High skilled	Low skilled	Skilled	High skilled	Low skilled	Skilled	High skilled
IWOSS	23.3	50.1	26.6	4930.4	24907.91	14586.05	11.1	56.1	32.8	1.1	10.6	12.3
Agro-processing	36.9	47.3	15.9	820.57	3572.00	1636.70	13.6	59.2	27.1	0.7	16.3	24.4
Construction	28.0	56.0	16.1	419.10	3209.28	960.02	9.1	69.9	20.9	-0.5	14.6	15.4
Export crops and horticulture	39.0	48.3	12.8	63.68	123.11	34.93	28.7	55.5	15.8	-0.2	3.0	3.6
Financial and business services	6.7	31.3	61.9	61.89	896.10	2799.34	1.6	23.8	74.5	-0.4	11.2	21.1
ICT	15.0	36.0	49.0	108.65	315.37	610.21	10.5	30.5	59.0	4.5	6.7	12.0
Tourism	20.8	57.1	22.1	191.17	1400.02	619.56	8.6	63.3	28.0	-2.5	3.2	4.5
Formal trade	23.9	60.1	16.1	405.48	5353.39	1621.89	5.5	72.5	22.0	-3.3	7.7	9.5
Transport	37.0	53.6	9.4	1873.10	4354.74	875.37	26.4	61.3	12.3	6.0	13.2	16.1
Other IWOSS services	12.2	41.9	45.9	986.40	5683.90	5428.02	8.2	47.0	44.9	4.5	11.6	9.3
Manufacturing	19.6	58.1	22.3	732.09	3143.93	1792.16	12.9	55.5	31.6	1.2	4.4	9.5
Non-IWOSS	42.6	38.5	18.9	13506.39	34116.46	20941.60	19.7	49..8	30.5	-2.2	4.5	7.1
Traditional agriculture	54.1	36.4	9.5	10761.22	22671.62	5646.96	27.5	58.0	14.4	-2.3	5.2	4.7
Government	12.4	29.0	58.6	65.33	225.39	713.30	6.5	22.4	71.0	-1.9	0.0	3.3
Mining	42.3	44.2	13.5	37.95	86.31	16.58	26.9	61.3	11.8	-1.4	4.0	0.3
Informal trade	23.9	60.1	16.1	1168.52	6717.33	2035.12	11.8	67.7	20.5	-1.4	4.4	5.8
Utilities	20.2	41.4	38.5	13.07	38.32	49.13	13.0	38.1	48.9	-1.9	-0.1	2.1
Other non-IWOSS	19.1	32.2	48.5	1460.30	4377.50	12480.52	8.0	23.9	68.1	-1.4	2.1	9.3
Total	36.8	42.2	20.9	19168.52	62168.30	37319.81	16.2	52.4	31.5	-1.6	6.3	8.8

Sources: Authors calculation based on 2010 and 2017 National Bureau of Statistics Labour Survey; 2010 and 2018 National Living Standard Survey and Groningen Economic Transformation Database

Table 14: Projecting labor demand by gender

	2018		2025 (projection)		2035 (projection)		Add. Jobs		Annual growth (%)	
	Male'000	Female'000	Male'000	Female'000	Male'000	Female'000	Male'000	Female'000	Male	Female
IWOSS	11724.5	6028.9	18135.0	8799.8	29355.8	15068.2	17631.3	9039.4	8.8	8.8
Agro-processing	1358.2	644.7	2274.3	1053.2	4006.2	2023.1	2647.9	1378.4	11.5	12.6
Construction	1613.9	33.3	2538.7	27.6	4564.5	23.9	2950.6	-9.4	10.8	-1.7
Export crops and horticulture	93.6	76.0	106.1	89..5	117.1	104.6	23.5	28.6	1.5	2.2
Financial and business services	790.4	195.4	1340.2	457.7	2656.8	1100.5	1866.4	905.1	13.9	27.2
ICT	321.0	88.0	490.9	143.3	782.3	252.0	461.2	164.0	8.5	11.0
Tourism	739.8	846.4	808.8	939.9	956.0	1254.7	216.2	408.4	1.7	2.8
Formal trade	1388.8	2484.3	1798.8	3213.9	2651.5	4729.2	1262.8	2244.9	5.3	5.3
Transport	2477	24.2	3903.7	23.6	7078.3	24.9	4600.8	0.7	10.9	0.2
Other IWOSS services	2941.2	1636.6	4873.5	2851.1	6543.1	5555.2	3601.8	3918.6	7.2	14.1
Manufacturing	1882.7	2554.3	2554.3	1658.1	3189.6	2478.6	1306.9	1280.6	4.1	6.3
Non-IWOSS	34199.4	16242.9	39486.8	18397.4	47069.5	21494.9	12870.1	5252.1	2.2	1.9
Traditional agriculture	24669.7	8440.5	27311.9	8068.2	31190.8	7889.0	6521.1	-551.5	1.6	-0.4
Government	616.0	163.6	702.3	175.7	808.4	195.6	192.4	32.0	1.8	1.2
Mining	107.5	9.1	118.1	7.7	133.7	7.2	26.2	-1.9	1.4	-1.2
Informal trade	2286.7	4090.5	2727.4	5291.9	3085.2	6835.8	798.5	2745.3	2.1	3.9
Utilities	85.2	9.4	85.1	8.4	92.8	7.7	7.6	-1.7	0.5	-1.0
Other non-IWOSS	6434.4	3529.8	8542.1	4845.5	11758.8	6559.6	5324.4	3029.8	4.9	5.0
Total	47806.6	23469.7	60176.1	28855.3	79614.9	39041.8	31808.2	15572.1	3.9	3.9

Sources: Authors calculation based on 2010 and 2017 National Bureau of Statistics Labour Survey; 2010 and 2018 National Living Standard Survey and Groningen Economic Transformation Database

Firm survey results

This section supplements the analysis presented in the previous section by providing complementary findings using interviews conducted with eight small- and medium-sized firms across the three selected IWOSS sectors. The approach presented in this section is case-study-based with the aim of generating relevant, in-depth insights applicable to a broad spectrum of firms within the three predetermined sectors. However, these results should not be considered as representative of all firms.

The results presented are the initial considerations to understand what occupations youths tend to be employed in and whether there are any potential business expansion plans that may result in increased youth employment in the future. The results also consider current gaps in skills among employed youth. The survey presented in this section only captures information on currently employed youths, which implies that skills composition and gaps among the youth population will likely be underestimated due to the absence of information from unemployed youths.

This section proceeds by first providing an overview of the approach, the characteristics of the firms that were interviewed, and the questionnaire used to guide the interviews. The results of the surveys across the different sectors are then presented for inference purposes.

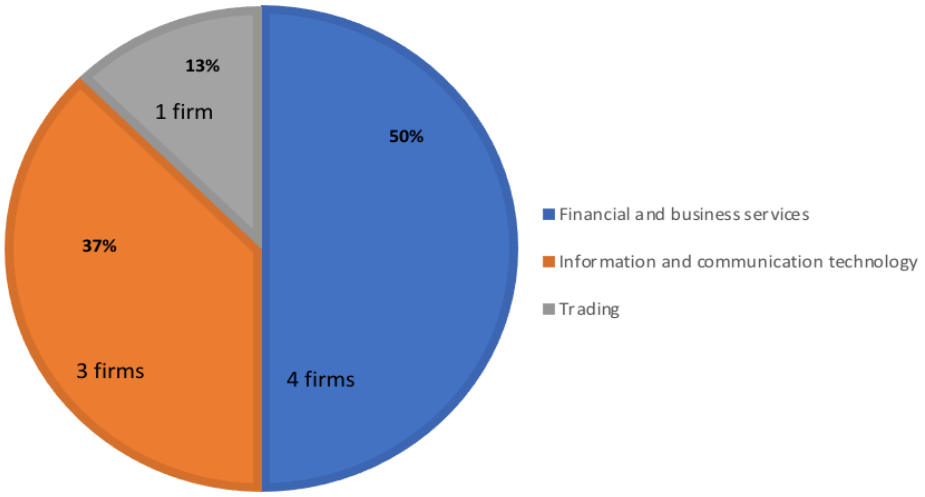
Approach

Section 6 provides the labor force survey data with projections of employment for various IWOSS sectors, while estimating the skill gaps in the youth population in line with these projections. As highlighted in Allen et al. (2021), this method has its advantages and disadvantages. One advantage is that it provides informative insights for skill gap projections, while the primary disadvantage is its reliance on historical data, which is limited in scope for explaining future trends in employment and skills. Another limitation is that skill development is proxied with education completion, which is contextually and systematically problematic since it neglects nuances in skill development, including learning process, experience, informal training, and on-the-job training, among other factors.

To address such shortcomings in the measurement of skill composition and requirements across industries, a firm-level survey was conducted for deeper insight into skill profiles than previously accessed data sources used in the preceding sections. To the best of our knowledge, there are no in-depth firm-level surveys on IWOSS sectors available for Nigeria, particularly with regards to categorizing skill set into soft and hard skills. Meanwhile, such categorization is required to gauge the potential for employment growth in different IWOSS sectors in Nigeria.

Eight semi-structured interviews were conducted in total, comprising enterprises in the financial and business services, ICT, and trade sectors, located in the cities of Lagos and Abuja, Nigeria. Figure 16 describes the distribution of the enterprises. While 13 percent of the respondents were from the trade sector, 37 percent were from the ICT sector. Most respondents are from the financial and business services sector, comprising 50 percent of the total survey respondents. The study acknowledges the small sample size, which motivated the approach of adopting a case study by engaging in in-depth and multifaceted exploration of relevant issues. The results obtained provide valuable insights into the key IWOSS sectors in the Nigerian context.

Figure 16: Distribution of the number of interviews by sector



Source: Authors

The interview sessions relied on a survey instrument that comprised closed-ended and open-ended questions aimed at providing a comprehensive assessment of the current and future skill set required for competitiveness in the firm. These measures, among others, included the main occupations taken up by young people between the ages of 15 to 30 years within the firm, the firm's existing skills profile, the firm's expansion plans, and the firm's future employment, occupational, and skills needs.

Furthermore, the study relied on formal education to identify the stock of skill levels in the survey. This approach is advantageous as it is a comparable measure of skill level across enterprises and countries. Although this approach has its specific weakness, including that skill sets are more encompassing than the completion of a formal, structured, pedagogical framework, it remains relevant for the analysis as it allows for the mapping of results to the labor force survey data. This approach further enables the computation of skill gaps in accordance with other similar studies (e.g., Allen et al. 2021) and the methods described in a previous section of this report.

To substantiate the skill set assessment in the respective enterprises, the study also enquires about the specific occupational skills requirements, which are relevant as an essential component for the development of a national skills development strategy.

Respondents were asked about the specific occupational skill requirements for a disaggregated list of soft and hard skills, such as mathematics, active learning, troubleshooting, and persuasion skills. Following Allen et al. (2021), the skill requirements are aggregated into six categories:

- Basic skills, which facilitate learning or the more rapid acquisition of knowledge (soft skill);
- Social skills, which are used to work with people to achieve goals (soft skill);
- Problem-solving skills, which are used to solve novel, ill-defined problems in real-world settings (soft skill);
- Resource management skills, which are used to allocate resources efficiently (soft skill);
- Technical skills, which are used to design, set up, operate, and correct malfunctions involving the application of machines or technological systems (hard skill); and
- Systems skills, which are used to understand, monitor, and improve socio-technical systems (hard skill).

Having categorized the skill sets, the respondents in the survey were asked to classify each skill according to its importance and complexity in its application in the occupation's daily course of events. Precisely, a skill's level is measured on a scale ranging from 1 (lowest) to 5 (highest), such that the lowest implies that the skill level is least complex, and the highest means that the skill level is most complex. The skill importance is defined as how critical possession of the skill is to complete daily tasks in the organization. This category is rated on a scale of 1 (not important) to 5 (critically important), such that a higher rating suggests that the specific skill set is required for the completion of the daily tasks in the enterprise.

Only individuals with sufficient information about the enterprise's human capital requirement and an adequate understanding of the skill requirements of each of the identified occupations were interviewed. These individuals are the top human resource managers or floor managers directly supervising the business's operations. It is essential to acknowledge a relevant shortcoming by seeking only one opinion in describing the skill sets in the surveyed enterprises. The main drawback is that the response may be subjective since the answers given by the interviewee are not verified and subjected to a more objective confirmation such as company reports, statistics, or bulletins. Nonetheless, it is relevant to note that the responses only indicate managers' perceptions regarding the skill requirements for identified occupations.

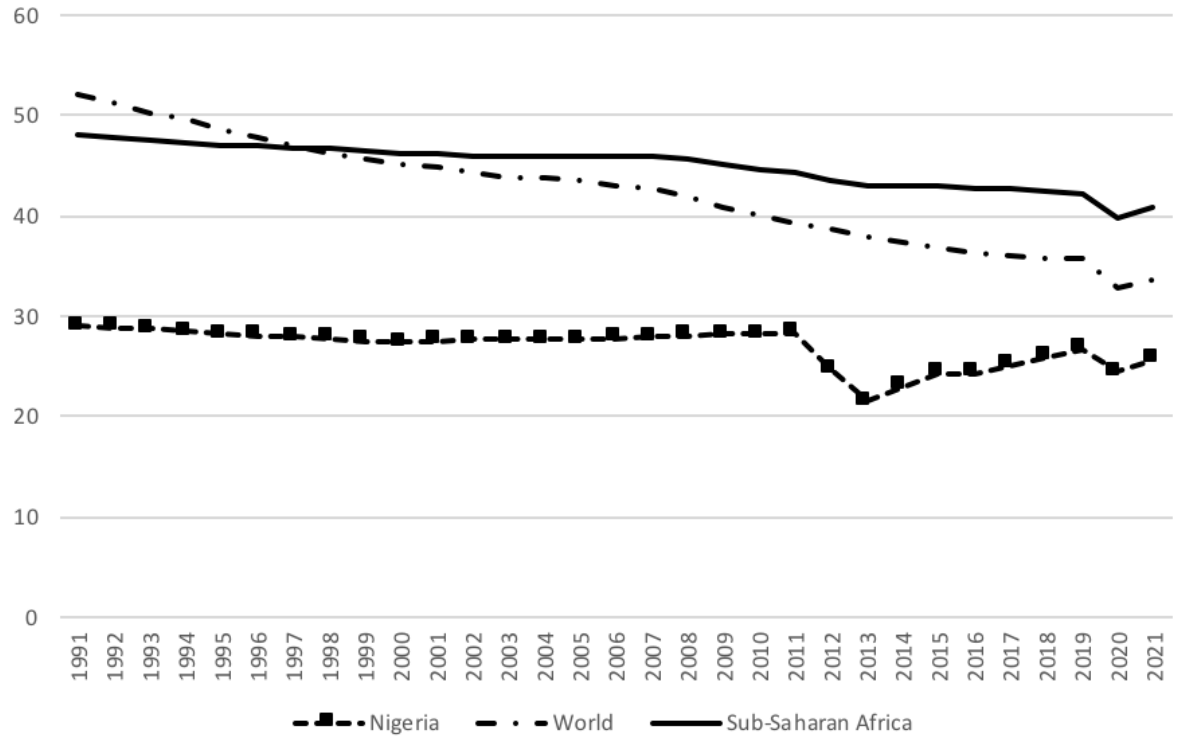
Another survey module requires respondents to estimate the severity of the skill gap of youth hires for each skill category. That is, respondents would consider a variety of skills (e.g., basic skills) and compare the required level of these skills to the level of the skill exhibited by youth hires in the firm (see Allen et al. 2021). The skill deficit is now measured on a 5-point scale by comparing the two ratings, such that the value is from 1 to 5. A score of 1 represents that most of the employees met the skill requirements, and as a result, there was little to no skill gap present, and 5 indicates that most employees did not meet the skill requirements and that there was a critical gap present for the relevant skill. Respondents

were not required to estimate the skill gap once the identified skill did not apply to a particular occupation.
The subsequent subsections present and discuss the results obtained from the interviews. The current and future youth employment (in all sectors), followed by skill requirements, are discussed. To conclude, the current skill deficits are examined.

Youth employment: Current and expected

To begin, youth employment as a share of total population employment for Nigeria is compared to the sub-Saharan African and world averages to provide an initial overview of the trend from 1991 to 2021. The statistics in figure 17 suggest that youths (ages 15-24) employed as a proportion of the total population in Nigeria have remained relatively lower than the sub-Saharan African and world averages over the periods considered. In 2013, the proportion declined to approximately 22 percent, compared to 38 percent for the world and 43 percent for sub-Saharan Africa. These statistics only show gaps in the proportion of youths employed in Nigeria compared to the regional and global averages and the need for a possible intervention to improve youth employment in this context. In line with this, the study's focus is on skills development for youths.

Figure 17: Employment to total population, ages 15-24



Source: Computation from World Bank Development Indicators

To assess the future employment prospects for youths in all the surveyed sectors, this study begins by identifying the current roles of youths in each of the sectors. In the formal trade

sector, the three most common occupations identified by the surveyed firms as relevant to youths were media and publicity, ICT, and work related to science, technology, engineering, and math (STEM). The enterprise interviewed in this sector is engaged in general formal trade and trade in commodities related to information technology (IT)-. Such a focus may explain the reason for the specific job descriptions related to ICT skills and STEM-related disciplines. The enterprise engages in digital marketing to improve its industry competitiveness, as the larger share of its export is targeted to the U.S. market. Such an export destination requires a high digital marketing engagement for market penetration, which could be another reason for an IT-focused job description for youths in this enterprise.

In the ICT sector, three firms were interviewed and are primarily engaged in ICT-related business, software development, and ICT service delivery. All three companies indicated that they employ youths in their workforce, mainly for top job operations related to customer operations or services, web development, and information processing. The second top job operations for youths in these companies were technical officer, business analyst, and customer service roles. The third job roles for youths in the surveyed companies were marketing, fiber engineering, and front-end development. The job descriptions for the positions included engaging in automated software or invoicing roles, including monitoring clients in case of network failure and software installation. The roles also engaged in functions related to technological advancement, software coding, and software development and program updating skills.

The financial and business sector respondents comprised four firms that were primarily engaged in construction and real estate services, finance, and fintech businesses. These enterprises had an average employee size of 47 individuals, most of whom were youths aged 15 to 35 years. The top labor engagement for youths in these companies were accounting (comprising 4 youths), project management (comprising 10 youths), customer care executive (comprising 4 youths), and growth strategies (comprising 3 youths). The second highest labor engagement for youths in the sampled companies were interior design, marketing and sales, business development, and resource analysis. The third most common roles for youths in the sampled firms were administration, social media presence and expansion, technical support for operations, and digital marketing skills.

In summary, one common factor for all the surveyed firms was that they all agreed that the top three main occupations identified within their organizations required digital skills. Such a conclusion implies that young labor entrants will have higher chances of working in these enterprises with improved digital skills. The respondents noted that the relevant digital skills for obtaining a job in these companies included data analytics, artificial intelligence, data analysis, strategic planning, data and information visualization, digital design, social media management and engagement, knowledge of administrative software, and automated software or invoicing, among others.

All the enterprises noted that digital skills are the future of their business competitiveness. They also highlighted that the project department will need to be equipped with data analysis skills and the use of software for design and construction. The reason for their submission, apart from being competitive, was that the companies intended the totality of

their tasks to go digital owing to the need for an improved level of accuracy in carrying out tasks. They also underscored time-saving efficiency for task completion in a fast-moving business environment.

Skill requirements for youths

Formal education requirements

Table 15 shows the minimum level of education required to occupy job roles across the surveyed firms from the three selected sectors. In general, none of the occupations had pre-secondary education qualification as a minimum requirement. Instead, only one of the occupations in the ICT sector had secondary education completion as a minimum requirement. Post-secondary education was a relatively more desirable educational qualification for the listed occupations in the sampled firms. Three of the occupations (one in the ICT and two in the financial and business sector) required this qualification for work. There was no occupation in the trade sector requiring this educational qualification. On the other hand, the majority of jobs were reserved for those with university degrees (99 jobs across all three sectors). Consequently, the evidence shows that there is low potential for job creation for youths with non-university educational attainment, particularly in the trade and financial and business services sectors. Of all the interviewed firms, those in the ICT sector presented as having the most potential for skill-intensive occupations. Most of its occupations were open to youths with university and postgraduate degrees. At the same time, firms from the other industries (trade and financial and business services) had occupations that required higher levels of degree attainment.

Table 15: Minimum educational requirements for current occupations, all firms

Educational level	Number of distinct occupations requiring this specific educational qualification		
	Trade	Information and communication technology	Financial and business services
Pre-secondary	0	0	0
Secondary	0	1	0
Post-secondary	0	1	2
Degree	14	62	23
Post-graduate	0	4	2

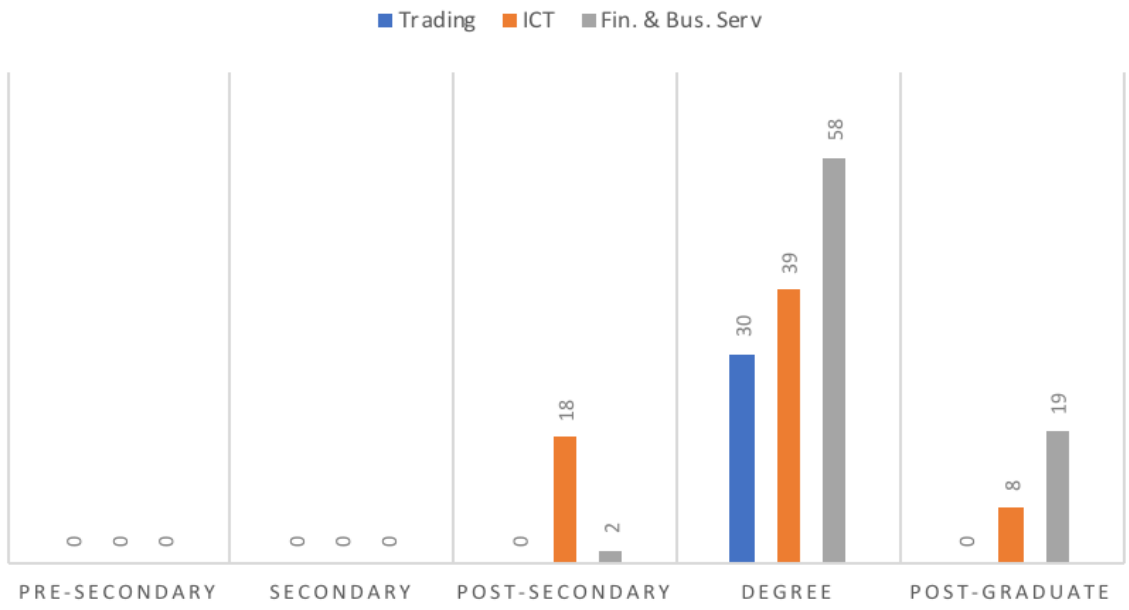
Source: Authors' field survey

Shifting focus to the future occupational skill requirements, Table 15 shows the minimum expected educational requirements for new occupations that will be created in the surveyed firms over the next five and ten years. Regarding the projected job creation of these enterprises and the required academic qualifications for the next five years, figure 18 presents the respondents' opinions by sector.

Respondents indicated that they expected an increase in youth employment in the next five years. (The aggregate potential job creation for all industries and all academic requirements was about 174 positions, lower than the potential job creation by South African companies, 458 jobs.) One feature from the responses is that most companies did not seek to engage youths with only pre-secondary and secondary education in the next five years. As a matter of fact, none of the respondents reported any potential position for youths with such a degree in the next five years. Most of the top jobs demanding high educational qualifications were required mainly by the financial and business sector compared to the ICT and trade sectors. The finance and business service sector also reports a potential demand for youths with education qualifications of a university degree and a postgraduate degree in the next five years, higher than the likely demand by enterprises in the ICT and trade sectors.

Overall, the findings reveal that most new jobs in these sectors are likely to come from existing occupations, which is consistent with the expansion plans outlined by firms across all sectors. In general, surveyed companies were interested in expanding their market reach and improving competitiveness, and as a result, they were of the opinion that their operations would require the absorption of youths in their workforce, most of whom should have higher education qualifications.

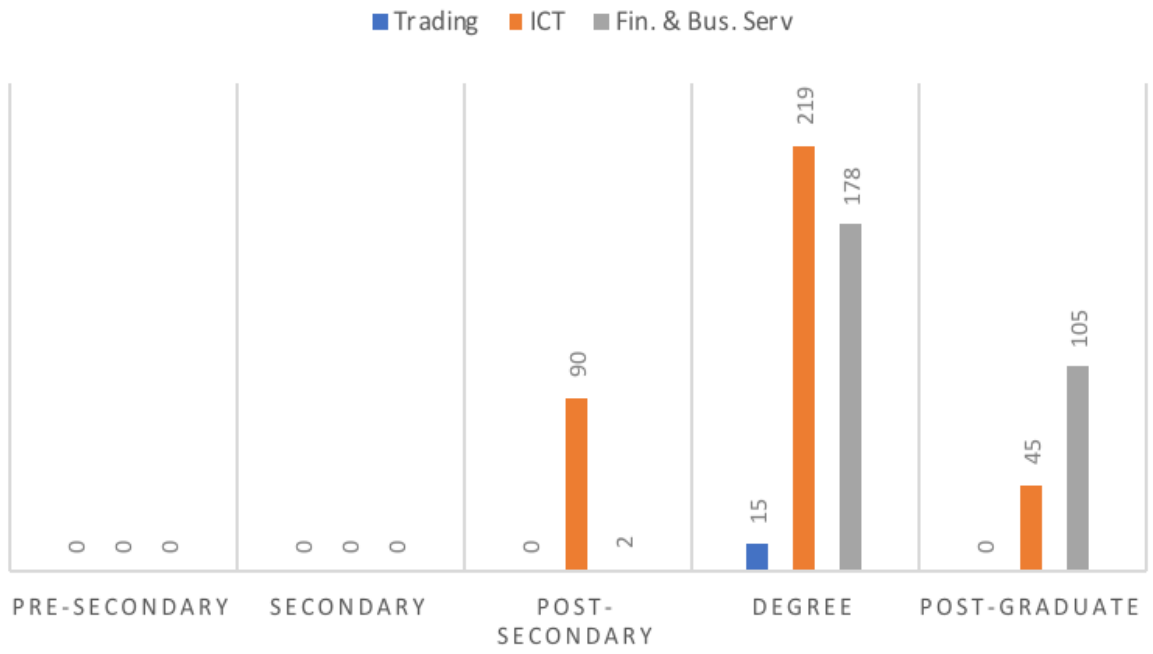
Figure 18: Business expansion and potential employment by degree (5-year projection)



Source: Authors' field survey

Figure 19 presents the sampled enterprises' education level requirements for new occupations in the next ten years. This result is consistent with earlier projections showing that companies in the ICT and finance and business service sectors need a higher-skilled workforce even in the ten-year future. Youths with secondary education and lower than secondary education may not be able to seek employment in all the surveyed sectors. The demand for post-secondary (non-university) education in the ICT sector is worth acknowledging. Unlike companies in other sectors, those in the ICT sector state they can potentially absorb youths for a projected 90 job occupations, even though they do not have university degrees. This category of academic qualification may include those youths with technical educational training apart from formal university degrees. In Nigeria, such degrees may include an Ordinary Diploma Degree or a Higher Diploma Degree, which contains components of technical knowledge that may be relevant for enterprises in this sector.

Figure 19: Business expansion and potential employment by degree (10-year projection)



Source: Authors' field survey

Hard, soft, and digital skill requirements

This section examines firm responses regarding hard, soft, and digital skill requirements for the three identified sectors in which the surveyed enterprises operate. Following Allen et al. (2021), the skill set of employees in the sample firms were categorized as hard and soft skills, defined based on the Occupational Information Network organizing framework.[21] These skill sets were assessed based on their importance to the available occupation in the company. All questions were based on the three main domains for youths (15-30 years) in the surveyed company, and the responses were based on the perception of the respondent, whether they perceived that the specific skills are less important (a score of 1) or very important (5). Therefore, the importance of a skill represents how critical it is that an individual has this skill to complete their daily tasks.

The result of the survey is reported in table 16. The table presents the level and importance of each skill grouping across the three sectors from which the surveyed firms operated. On average, the outlook in table 16 reveals that the importance of skills is higher than the level at which a specific skill is required. On average, the companies in the trade sector show the highest skill importance, but those in the ICT sector show the highest skill levels compared to those in the other sectors. The finance and business services sector companies record the lowest skill importance and level. These results indicate that the finance and business

[21] This framework is a standardized database of skill requirements from the United States for over 1,000 occupations, such that it provides information on numerous measures of skill sets, including knowledge, abilities, and education levels required for a particular occupation.

service sector may be best placed to absorb low-skilled labor, unlike companies in the other sectors.

Table 16: Average importance and level of hard and soft skills, all sectors

	Trade		ICT		Financial and business services	
	Importance	Level	Importance	Level	Importance	Level
Basic skills	4.3	3.7	4.43	4.3	3.7	3.6
Social skills	4.6	4.3	4.1	4	3.4	4
Problem solving skills	4.7	4.3	4.6	4.4	3.6	4
Technical skills	3.9	3.9	4.5	4.6	2.4	2.3
Systems skills	4.7	4.4	4.8	4.8	3.1	2.6
Resource management skills	4.6	4.1	3.8	3.5	3.5	3.3
Aggregate	4.5	4.1	4.4	4.3	3.3	3.3

Source: Authors' field survey

Of all the skill sets displayed in table 16, respondents in the trade and ICT industries ranked systems skills of the highest importance and highest level in their operations. Respondents considered basic skills the most important in the finance and business sector. This skill set includes active learning and listening, critical thinking, learning strategies, mathematics, monitoring, speaking, reading, and writing. Companies in the finance and business sector further ranked social and problem-solving skills with a high level of relevance for their operation.

Focusing on the most minor required skills across industries, employers in the trade sector indicated that technical skills were the least critical to their firms. The other skill sets were generally ranked above the value of 4. Similarly, technical skills were the least important for enterprises in the financial and business services sector. For those enterprises in the ICT sector, the least required skill set was resource management skills, mainly those related to human resource and administrative endeavours.

Skill gaps of the employed youth

This section analyzes the firms' responses on skills gaps relating to the different categories of hard and soft skills described in the survey. The skill deficit is scaled from 1 to 5, such that 1 indicates most employees meet the majority of the skill requirements of their roles, while 5 indicates most employees do not meet the skill requirements. The respondents were required to perform this rating on only youths already employed in the firm. Putting this survey in context, it implies that a formal education skills gap exists for youth in a particular sector. It could also mean that unemployed youths in such a sector may as well be disadvantaged with skill deficits in competencies.

Areas of skill deficiency show people interested in joining the sector the skills they need to acquire. In other words, the results highlight areas that currently unemployed youths may improve on. The assessment of the skill deficiency is from the perspective of employers. They describe skills current employers are lacking or job seekers rarely possess and are very important for the role they are occupying or seeking to fill. For instance, a synthesis paper on IWOSS in African countries shows that youth in African countries lack soft skills (Coulibaly and Page 2021). Our study findings, presented in table 17, suggest that for all the three sectors, the score for basic skills is lower than the average. This suggests that although firms are likely to hire people with some skill deficit, those hired are most likely to have basic skills. In addition, the results indicate that financial and business services had significant variability across the skills compared to the other sectors. Trade appears not to be experiencing a skill deficit in all of the identified skills, with a score of 1 out of 5—which is low when compared to ICT (1.4 out of 5) and financial and business services (2.4 out of 5). The results suggest that recruitment by the trade firm targets people with the advertised skills.

Out of the three sectors considered in the study, the skills gap was higher for financial and business services, with a score of 2.4 out of 5. The skill deficit was most prominent for resource and management skills, followed by technical skills. However, the findings suggest that people working in the financial and business services sector have high social and systems skills. The low deficiency of these skills could be related to the presence of these skills among the majority of the youth population. In other words, young people recruited into these sectors are most likely to have social and systems skills even if they have some deficiency in other skills such as technical skills. Firms in the financial and business services are likely using on-the-job training for new hires to address skills deficit in the area of technical skills and problem-solving skills.

Table 17: Skill deficit (all sectors)

Skill category	Skills deficit value by sectors		
	Trade	ICT	Financial and business services
Basic skills	1.0	1.0	2.1
Social skills	1.0	1.6	1.8
Problem solving skills	1.0	1.9	2.6
Technical skills	1.0	1.2	2.9
Systems skills	1.0	1.4	1.8
Resource management skills	1.0	1.4	3.4
Aggregate	1.0	1.4	2.4

Source: Authors' field survey

Note: As earlier explained, the skills deficit rating used in this table ranges across a 5-point scale, with 1 indicating most employees have met most skill requirements of their roles, while 5 means most employees did not meet the skill requirements.

Brief insights from the field survey

The results presented in the previous section suggest that the types of jobs created in the three target industries are not varied, mainly because of the low absorption of youths with lesser educational attainment. In summary, the industries are more likely to employ youths with higher educational attainment. Also, the study shows digital skills are important in roles occupied by youth. This suggests that young people entering the labor market have higher chances of securing jobs when they have improved digital skills. Hence, structural transformation in Nigeria would entail equipping youth with new and emerging skills to enhance their employability.

Policy recommendations

The study's recommendation is split into two, the general and sector-specific recommendations. This is important because some constraints, such as infrastructural deficit and lack of access to finance, cut across all the IWOSS sectors. However, for the attainment of employment potential in each of the sectors, there is a need for sector-specific interventions. For instance, the trade sector is underperforming because of the poor condition of trade-facilitating infrastructure, which increases the cost of doing business and cross-border trade. On the other hand, the ICT sector is faced with a shortage of skilled manpower in the face of a high global demand for the limited number of skilled ICT professionals in the country.

Broad recommendations

Increased investment in infrastructure

The growth and performance of IWOSS sectors largely depend on the availability of suitable infrastructure. As noted in Signe (2022), infrastructure comprises physical and soft infrastructure, and both are highly needed; without them, the growth projection for the IWOSS sector would be significantly affected. For instance, the erratic nature of power supply has increased the cost of operation of firms particularly as most firms are reliant on power generators. As such, addressing the power challenges in Nigeria would greatly enhance the performance of IWOSS sectors. Relatedly, developing and rehabilitating transport infrastructure is key to enhancing the performance of IWOSS sectors. An adequate road, rail, water, and air transport system is necessary for transporting goods and people efficiently and effectively. Furthermore, deploying communication infrastructure would eradicate the barriers to ICT uptake. On soft infrastructure, the weak education and health systems will have to be improved upon in order to enhance the productivity of the country. This is because innovation and creativity are premised on good and quality education and a healthy workforce.

The major obstacle to improved infrastructure outcomes in Nigeria is financing. To close the infrastructure financing deficit, funds must be mobilized. This can be done through institutionalizing appropriate regulations, targeting public financial support, and active involvement by private and institutional investors. Putting in place appropriate investment regulations such as taxation and licensing incentives and assigning maintenance contracts to private sector actors are among the various measures that can improve infrastructure investment. Also, setting up effective infrastructure investment promotion agencies is essential for investment facilitation. In targeting public financial support, finding alternative long-term debt sources is critical, both in terms of amounts, maturity, and pricing conditions. Government skewing toward private debt arrangements such as private placement will be vital in accessing alternative long-term debt sources. There is a need to also look toward institutional investors such as pension and insurance providers in sourcing for alternative capital markets. Public-private partnerships in funding infrastructure projects should be supported and promoted through the provision of tax incentives among other policies.

Strengthening development financial institutions and commercial banks to render loan services

Lack of access to finance has been a recurring constraint highlighted by business owners. The situation is further complicated by the high interest rate charged on loans obtained from nondevelopment financial institutions including commercial banks. The interest rates are usually higher than 20 percent (PwC 2020). As a result, (small) businesses depend more on personal savings and loans from friends and family members, which are usually small, to support their expansion into large-scale businesses capable of creating a significant number of jobs. The Nigerian Incentive-Based Risk Sharing System for Agricultural Lending (NIRSAL) was developed in 2013 and has helped in reducing the risk exposure of commercial banks to farmers and, in turn, increased their lending to the agricultural sector (Szebini et al. 2021). The lessons from the NIRSAL risk sharing framework could be adopted in other sectors to expand lending to small businesses.

Also, there is a need for commercial banks to create innovative financing solutions that would increase the volume of funds available to start-ups. The innovative financing could entail linking start-ups with established firms that require their output in their production processes. In other words, the innovative financing solution would capitalize on the value chain of businesses and ensure that start-ups have a ready market for their products. Even though the start-ups might not have the required collateral to secure the needed loan, the guarantee of a ready market can be used as collateral. This is possible since the banks act as a bridge between the start-up businesses and the established businesses, and the established businesses would purchase the products of the start-ups whenever available. This innovative financing solution ensures that start-ups in IWOSS sectors have access to long-term finance.

Improvement in governance

The growth of the private sector has been adversely affected by poor governance and a feeble regulatory framework. For example, the cost of doing business ranking, which captures several important dimensions of the regulatory environment as it applies to local firms, shows Nigeria's poor performance in 2020 with a ranking of 131 (of 190 economies). The poor performance stems from the ease of registering property, resolving insolvency, enforcing contracts, and access to infrastructure to facilitate business (i.e., electricity). Improving the governance landscape in Nigeria, including facilitating business and property registration by taking advantage of the computerization of access to government services, may be one way to go. This approach has been recommended in extant studies as an avenue to achieve efficiency in accessing government services while addressing the rising public sector corruption issue (Okunogbe and Santoro 2022). Noting the low ranking of Nigeria in contract enforcement and resolving insolvency, one policy recommendation for improving the governance framework would be to improve the judicial system, particularly by promoting better transparency in the appointment of judges and possibly including term limits. This reform could be a step in the right direction.

Weak governance results in partial adherence to the rule of law and diversion of funds that should be used for socio-economic development, resulting in deficiencies in infrastructure and high social vices. Businesses thrive when rule of law is enforced, as investors know that the judicial systems have the ability to protect their rights and provide sound judgement in cases of business dispute. For instance, embracing technology in judicial processes would speed up and strengthen judicial systems. Furthermore, a more efficient judicial system would go a long way in curbing corruption as offenders are punished.

Also, efforts at reducing the cost of doing business are more effective when the governance system is strengthened. A strong governance system suggests that the government is keen on participatory governance. This, in turn, provides the private sector with the opportunity to inform the government on areas that are hindering their performance, as well as collaborate with the government in providing solutions.

Better socio-economic policies

In the 2023-2025 Medium Term Expenditure framework, the government aims at facilitating employment and job creation as part of its macroeconomic objectives within the medium term. The expenditure framework includes a Special Public Works Programme designed to provide work opportunities to at least 774,000 youths across the 774 local government areas of the federation. In addition, the framework includes the ₦75 billion Nigerian Youth Investment Fund. Effective implementation of these job intervention programs is expected to enhance youth employability and tackle high youth unemployment in the country. However, there is a need for active involvement of civil society organizations in the implementation of the programs to ensure transparency and accountability.

One aspect that was not effectively addressed in the NDP for improving formal trade in Nigeria is the issue of quality standards and their harmonization with other African peers for better trade relations and competitiveness. This issue could be addressed in the country's systematic approach toward the implementation of the AfCFTA. This issue is of significant concern, particularly in the light of studies that have emphasized the need for harmonizing standards among member countries of the Economic Community of West African States.

Sector-specific recommendations

ICTs

The actualization of the growth and employment potential in the ICT sector would entail three practical steps:

- integrate IT into school curriculum,
- strengthen higher education institutions and IT industry collaboration, and
- improve IT infrastructure.

Integration of IT into school curriculum

At present, schools are yet to fully integrate IT into their students' curriculum. As a result, students are graduating from school without significant IT skills, making them less

competitive and unqualified for jobs in the ICT industry. Currently, there is increased demand for graduates with knowledge of artificial intelligence, cloud computing, and the Internet of Things, but only a fraction of tertiary institutions offer such courses/programmes. In line with the submission in Signe (2022), regular updating of school curriculum would help in ensuring that IT courses are well integrated into students' learning modules. This would require a partnership between government and private organizations to fund the provision of IT facilities, especially for public schools. Also, collaboration between IT leaders and school curriculum developers and implementers would ensure that students are constantly provided with cutting-edge, practical information and knowledge at both basic and tertiary levels of education, thereby increasing their employability and making them suitable for new and emerging jobs.

Strengthening higher education institutions and IT industry collaboration

In the current dispensation, industry to a large extent shapes the kind of knowledge and skills that are important and relevant. A student can spend about four years in school without acquiring basic knowledge required to work effectively because there is no synergy between higher education and industry. This synergy could be achieved in two ways—internships and teaching collaboration.

For courses that are designed to prepare students for jobs in the ICT sector, the students should be mandated to engage in IT activities in the classroom and other practical sessions. Other industrial training with IT companies is another way forward, as this could create opportunities for students to learn practical skills through work engagement with these firms for periods of 3 to 6 months to understand how IT knowledge is applied to solve problems. Through this learning-working structure, students would be able to assess to what extent the learning in the classroom fits work demand, as well as provide opportunities for students to audit their ability to integrate what they are taught in school to what is in demand in the job marketplace.

The other form of synergy might require a paradigm shift in teaching in Nigerian higher education institutions. It entails inviting professionals in the IT industry to have classroom interactions with the students. Through this structure, the students are provided with a combination of the theoretical and practical aspects of what they are learning. This learning structure would ensure that the teaching curricula are updated on a regular basis, as the practitioner helps in providing new perspectives to recent thinking and development in the industry.

Collaboration will enable the pooling of resources between higher education institutions and the IT industry, which would ensure that more IT infrastructure and facilities are provided from the combined funds from both sectors. Economies of scale could also arise from efficiently utilizing the facilities available. This collaboration could lead to accelerated progress in innovation and entrepreneurship, which would, in turn, boost economic growth, capital formation, and other attendant benefits.

Improvement in IT infrastructure

The success of the ICT sector depends largely on the adequacy of infrastructure. While the National Digital Economy Policy and Strategy plan provides a roadmap of the government's intentions toward addressing the infrastructural deficit in the sector, there is a need for actions to accompany the plan. This is necessary in ensuring that ICT companies do not migrate to neighboring countries due to the unavailability of infrastructure in Nigeria. In addition to core IT infrastructure, constant power supply would significantly boost growth in the ICT sector, as it would drastically reduce the overhead cost of alternative power supply, which increases companies' costs of operation and lowers their profit margin.

The strategies that are proposed in this report are incorporated into different policy initiatives by the Nigerian government to develop further the ICT sector, including the NDP (2021-2025), the National Digital Economy Policy and Strategy (2020-2030), the Nigerian National Broadband Plan (2020-2025) and E-Government Masterplan. These policy strategies focus on issues related to the strengthening of the legal framework for the safety of the digital environment, investing in infrastructure development, prioritizing skill development of the populace, and increasing financial or technical support in the digital economy ecosystem, all aimed at ensuring sustainable development of the ICT sector. Therefore, the policy recommendations in this report are based on the ICT national plan and policy on ICT skills development and reducing the ICT infrastructural deficit, which are relevant tools to improve the demand and supply of labor in the ICT sector of Nigeria.

There is contemporaneous evidence from sub-Saharan African countries showing that improving mobile technologies and service infrastructure has generated 1.7 million direct formal and informal jobs, contributed to $144 billion (equivalent to 8.5 percent of sub-Saharan Africa's GDP), and contributed $15.6 billion to the public sector through taxation (Nchake and Shuaibu 2022). Apart from these economic benefits, improving this sector through infrastructure development has also been projected to have an economy-wide spillover impact by resolving information asymmetry problems in the financial system and labor market and by increasing efficiency, certainty, and security hinged on information flow that are critical for economic growth and job creation (Ndungu and Signe, 2020).

Despite the urgency for Nigeria's government to boost digital infrastructure, the weak fiscal structure that exists in the economy has hindered such investment. However, there are a variety of investment alternatives the government may focus on. National and international donors, for example, might provide funds for digital infrastructure. Other prospective sources of funding include digital bonds issued in national and regional capital markets, as well as diaspora bonds, which target affluent Nigerians in diaspora, including those involved in technology-based businesses who may be interested in investing in digital infrastructure in Nigeria. Additionally, the removal of rights-of-way charges can serve as an incentive for businesses in the digital space to expand their infrastructure in rural areas where digitalization is less commercially feasible.

Financial and business services

The financial and business services sector in Nigeria has the potential of achieving double digit growth rates and could create more than 3 million jobs over the next one and a half

decades. However, the realization of this potential depends on the availability of an enabling environment. The following four interventions are crucial:

- strengthening cybersecurity,
- improvement in regulation,
- alleviating concerns about digital harms through improved data governance, and
- expansion of bank outreach.

Strengthening cybersecurity

Actors in the financial and business services sector are highly vulnerable to cyberattacks. As a result, a significant share of resources are lost. Skills upgrades and legislation on cybersecurity is expected to safeguard firms operating in the sector from cyberattacks. Although the Nigeria Cybercrimes Act 2015 is in place, compliance to the legislation is problematic as local enforcement agencies are unable to enforce compliance and sanction offenders. Furthermore, there is a need for coordinated exchange of information among actors in the sector on improved ways to secure their information from cyberattacks. This is important because the future of business transactions is via the internet, and financial institutions are crucial in this development.

Improvement in regulation

The 2004 and 2009 reforms in Nigeria's banking sector, including increasing minimum capital requirements and improving corporate governance, have greatly improved the banking system. Nevertheless, the high level of nonperforming loans is likely to result in a bank crisis with depositors suffering the effect of the crisis. As such, improved regulation will ensure that banks strengthen their credit management systems and develop strategies that increase the safety of deposits held with them. Further, the absence of strong regulation in the real estate sector, which transacts with people’s funds in exchange for housing facilities, has made people victims of fraud, which in turn has impacted the growth of the sector. A robust regulation that ensures that landed properties can be centrally verified could be the beginning of reducing fraudulent activities in the real estate sector.

Alleviating concerns about digital harms through improved data governance

About 45 percent of adults in Nigeria have access to financial products (Demirguc-Kunt et al. 2022). Digitalization is a viable tool to increase financial inclusion, but it is also hindered by concerns about digital harms (Goh 2022). However, the pandemic suggests that strengthening the data privacy act and national cybersecurity plan would not only alleviate concerns about digital harms but would also increase the adoption of digital financial innovations (Nathan 2022). These innovations have the capacity to enhance financial adoption. This benefit is also applicable to real estate businesses as housing products are increasingly sold through the internet. Improved data governance entails trust-building, which in turn lowers concerns about digital harms (Adeniran 2022). The regulators should work closely with financial and real estate businesses or institutions to ensure that consumer data are handled with high levels of professionalism and are not used in ways that hurt the providers of the data.

Expansion in bank outreach

The impacts of the financial sector on the economy depend largely on the coverage of the banking services. As of 2020, about 45 percent of adult Nigerians had financial accounts. Meanwhile, the uptake of insurance is about 2 percent. Both proportions of Nigerians with financial accounts and insurance are much lower than the targets in the National Financial Inclusion Strategy (EFInA 2021). Limited financial education about the importance of insurance, especially non-life insurance products, contributes in part to the low level of financial inclusion.

Extensive and innovative financial education by both regulators and financial institutions are urgently required to increase outreach and uptake. Regulators can foster this effort by providing incentives to financial providers to engage in these activities. The incentives can be in two forms: monetary and nonmonetary rewards. Monetary rewards would entail swapping a fraction of tax payment for rendering consumer financial education programs. Nonmonetary rewards include recognizing and showcasing banks' innovative consumer financial education at industry-leading events.

The current government policy within the NDP 2021-2025 framework aims to expand this sector's product space to align with recent developments in fintech. Recently, the U.S. Securities and Exchange Commission released rules and regulations on warehousing and collateral management, robo-advisory, crowdfunding, and digital trading platforms. This study's recommendations, in alignment with the policy framework of the Nigerian government, is centered on addressing issues related to the security of transactions and data protection. These are essential elements in a connected and digitalized world, with increasing cross-border financial and economic transactions that require more secure platforms.

In implementing policies that strengthen data security, improve data regulation, and protect users against harm, operators in this sector are likely to significantly gain, particularly with regards to enhancing their operational budget. Up to 90 percent of current IT budgets are spent on managing internal complexities related to data protection and cybersecurity, money that otherwise could go to data innovation that improves either productivity or the customer experience (Rahnama and Pentland 2022).

Formal trade

The growth in the trade sector is hindered by several factors including high congestion at the port, weak transportation facilities, and volatility in the exchange rate. The following recommendations are likely to help in boosting the performance of the sector:

- the creation of new ports and use of technology in existing ports,
- improvements in logistics, and
- strengthening the local currency.

Creation of new ports and use of technology in existing ports

Nigeria has about seven ports, but only two are in high demand—the Apapa and Tin Can Island ports. As a result, there is a concentration of shipments in these two ports, which leads to congestion. While establishment of new ports is likely to reduce the pressure on the two most used ports, the integration of technology into the operation of existing ports would help in reducing the time spent in scanning goods, which contributes to the congestion of the port.

Improvement in logistics

Trade entails movement of goods from one location to another, and logistics is critical to facilitate trade. Poor logistics infrastructure such as roads, ports, and rail networks contribute to the high cost of goods, which in turn makes the price of some products higher than normal. Hence, efforts need to be made by both the government and the private sector to upgrade logistics infrastructure, to aid ease of doing business in Nigeria. Logistics infrastructure is a public good, thus the need for government involvement. However, the private sector is an enabler in the process, because the government may not have the ability and capacity to construct and maintain logistics infrastructure. In 2021, a 43-kilometer Obajana- Kabba road, which is one of the strategic highways in Nigeria, was constructed by Dangote Industries Limited, a prominent private sector player in Nigeria. This highway connects southern and northern Nigeria and has influenced the ease of doing business in the country. This effort is part of Dangote Industries Limited's corporate social responsibilities.

Nevertheless, there is the need for the government to increase allocation to the maintenance of existing infrastructure as well as the development of alternative transportation including railway and water transport. In recent times, loan facilities were secured by the Nigerian government to establish rail networks in Nigeria. Giant strides have been made in that regard; however, insecurity in Nigeria has left some rail networks redundant due to the train attack by bandits and kidnappers in 2022. This points to the need for the government to ensure the security of infrastructure and more importantly, lives and properties within the country. With a safe and secure logistics system, there would be an improvement in service delivery and a decline in the challenges faced by traders in moving their goods from one place to another. The magnitude and frequency of damaged products would be minimal, which in turn would increase the competitiveness of Nigerian traders in the global market.

Strengthening the domestic currency

A weak domestic currency increases the cost of imported intermediate and finished goods. Further, high volatility in the domestic currency market makes it difficult for traders to accurately fix their prices. A stable domestic currency is important as it allows traders to effectively plan how to price their products. Stable domestic currency is a function of the CBN; however, the bank has been unable to actualize this important responsibility due to low export earnings arising from the nondiversification of the export base. In order to support the growth of the trade sector, there is a need to expand the export base to include non-resource commodities. A stable currency is vital in international trade and should be prioritized by the government in a bid to support and promote the trade sector.

Conclusion

This report presents Nigeria's case study on IWOSS. The central message is based on empirical evidence that Nigeria has had a poor track record in terms of employment creation, owing to the poor performance of the manufacturing sector. With high unemployment, especially among young people, the country's attention must be redirected toward identifying and bolstering sectors with employment prospects. The emphasis on job creation, although essential, should be accompanied with prioritizing low-carbon-emitting sectors. Financial and business services, ICT, and trade are the specific IWOSS sectors identified for Nigeria in this research, based on their features and the unique nature of Nigeria's development issues. The ICT sector, in particular, was more resilient to shocks during the pandemic.

The recognized IWOSS sectors (financial and business services, ICT, and trade) have numerous benefits over non-IWOSS sectors, including higher productivity. Furthermore, these three sectors also exhibit a positive employment-to-growth elasticity, confirming their vital role in creating jobs with expansion in output. The findings portray that IWOSS has a role to play in Nigeria in generating employment, which is critical to addressing youth unemployment. The ICT and financial and business services sectors appear to be particularly well positioned in this regard among the sectors evaluated. In addition, the study shows that female employment is high in IWOSS sectors, particularly in the trade and financial and business services sectors. It is estimated that about 40 percent of the female workforce in the near future would be absorbed in the IWOSS sector.

However, both from the standpoint of the individual sectors and the general economy, challenges persist. Nigeria's performance must be improved, and challenges must be addressed, particularly those connected to skill and infrastructure deficiencies and access to credit, in order for IWOSS sectors to achieve their potential of generating employment opportunities.

With regard to the skills shortage, the study proposes that an integrated approach between industry actors and higher education management is vital in ensuring that students are exposed to in-demand skills and not outdated knowledge with little or no relevance at the workplace. This is similar to the mentorship proposed in the synthesised ten studies on IWOSS by Coulibaly and Page (2021). The current practice where students have limited access to industry experience while undertaking their study is a contributing factor to the current mismatch at the workplace resulting in high unemployment. For this proposal to work, there is the need for a commitment by the industry actors to provide learning opportunities to the students. Also, there is the need for a commitment by the school management to nurture relationships with industry stakeholders and seek their input in curriculum development.

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Annex 1. Survey instrument for sectoral consultations

Baseline Information

Name	
Industry	
Type of Business	
Number of Employees	

Background Information

1. In what year did the Establishment begin operations?	
2. What is the firm's current legal status?	
3. What proportion of the firm is owned by private foreign individuals, companies, or organizations?	
4. Does this firm export any of its products either directly or indirectly?	1. Yes 2. No
5. If yes, what are the main export destinations?	
6. If yes, what is the proportion of total exports out of total sales?	

Global Value Chain Activities

What are the current work activities that you are undertaking? Brief bullet points

Identifying Occupations in the Business

Questions are based on the three main occupations for youth (15-30 years) in your firm.
Post-secondary would be a certificate or diploma – anything that is not a degree or a higher diploma.

Occupation No.	Occupation (Job Title)	No. of employees
1		
2		
3		

Occupation No.	Pre-secondary	Secondary	Post-secondary	Degree	Post-graduate
1					
2					
3					

Occupation No.	Training period (days, weeks, months)
1	
2	
3	

Identifying Skills in the Business

All questions are based on the three main occupations for youth (15-30 years) in your firm.

A. The following questions concern the skills that you feel are required for each occupation, not those skills that your employees have:

Importance: 1 Not important – 5 Very important
Level: 1 Lowest – 5 Highest

The level of a skill refers to how complex the application of the skill is in the occupation's daily course of events. On the other hand, the importance of a skill represents how critical it is that an individual has this skill in order to complete their day to day tasks.
If a skill does not apply leave the block blank.

Note:
OCC 1 = Occupation 1
OCC 2 = Occupation 2
OCC 3 = Occupation 3

	Skill	Definition	Importance (1-5)			Level (1-5)		
			OCC 1	OCC 2	OCC 3	OCC 1	OCC 2	OCC 3
Basic Skills	Active Learning	Understanding the implications of new information for both current and future problem-solving and decisionmaking.						
	Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.						
	Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.						
	Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things						
	Mathematics	Using mathematics to solve problems.						
	Monitoring	Monitoring/assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.						
	Reading Comprehension	Understanding written sentences and paragraphs in work-related documents.						
	Science	Using scientific rules and methods to solve problems.						
	Speaking	Talking to others to convey information effectively.						
	Writing	Communicating effectively in writing as appropriate for the needs of the audience.						
Social Skills	Coordination	Adjusting actions in relation to others' actions.						
	Instructing	Teaching others how to do something.						
	Negotiation	Bringing others together and trying to reconcile Differences.						
	Persuasion	Persuading others to change their minds or behavior.						
	Service Orientation	Actively looking for ways to help people.						
	Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.						

	Skill	Definition	Importance (1-5)			Level (1-5)		
			OCC 1	OCC 2	OCC 3	OCC 1	OCC 2	OCC 3
Problem Solving	Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.						
Technical Skills	Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.						
	Equipment Selection	Determining the kind of tools and equipment needed to do a job.						
	Installation	Installing equipment, machines, wiring, or programs to meet specifications.						
	Operation and Control	Controlling operations of equipment or systems.						
	Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.						
	Operations Analysis	Analyzing needs and product requirements to create a design.						
	Programming	Writing computer programs for various purposes.						
	Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.						
	Repairing	Repairing machines or systems using the needed tools.						
	Technology Design	Generating or adapting equipment and technology to serve user needs.						
	Troubleshooting	Determining causes of operating errors and deciding what to do about it.						
Systems Skills	Judgement and Decisionmaking	Considering the relative costs and benefits of potential actions to choose the most appropriate one.						
	Systems Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.						

	Skill	Definition	Importance (1-5)			Level (1-5)		
			OCC 1	OCC 2	OCC 3	OCC 1	OCC 2	OCC 3
	Systems Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.						
Resource Management Skills	Management of Financial Resources	Determining how money will be spent to get the work done and accounting for these expenditures.						
	Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.						
	Management of Personnel Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.						
	Time Management	Managing one's own time and the time of others.						

B. The following question concerns the differences between the skills that you have identified as being required for each occupation and the skills that your employees have:

Skill deficit: 1 Meets skill requirements – 5 Does not meet skill requirements at all

Skill category	**Skill deficit (1-5)**		
	OCC 1	OCC 2	OCC 3
Basic skills			
Social skills			
Problem solving skills			
Technical skills			
Systems skills			
Resource management skills			

C. Do any of the three main occupations identified require digital skills?
If yes, what type of digital skills are required? (List activities requiring digital skills.)

Brief bullet points

D. How do you foresee digital skills becoming more important in the future, especially with regards to the occupations we have discussed?

Brief bullet points

Future Occupational and Skills Needs

A. Turning to the plans for the future of the business: Based on the activities identified in Section II, do you have any plans to grow/expand your business in . . .

1. the medium-term (next 5 years)?	Yes	No
If yes, what do these plans entail?		
2. the long-term (next 10 years)?	Yes	No
If yes, what do these plans entail?		

Enumerator note: The plans for growth and expansion need not be too detailed, as firms may not want to discuss their business plans openly. But short bullet points such as “open more franchised restaurants” or “acquire new premises to expand current business operations” would be sufficient.

If “No” to both A1 and A2:
Why do you not plan on expanding your business in the future?

Short bullet point answers.

Only answer questions B to E if “Yes” to A1 and/or A2.

Consider the expansion path of your business in the medium term (next 5 years):

B. Assume that your business' expansion plans outlined above are realized. How would employment numbers for each of the three main identified occupations for youth be affected? In other words, how many more of each type of employee do you expect to hire in the next 5 years, and what would the required educational attainment level of these employees be?

Enumerator note: Table should be completed with numbers indicating the number of employees (or respondent's best estimate) required in a given cell. If respondents cannot give numbers, the cell should simply be marked with an "X" to indicate that there will be individuals needed.

Occupation No.	Pre-secondary	Secondary	Post-secondary	Degree	Post-graduate	Total
1						
2						
3						

Consider the expansion path of your business in the long term (next 10 years):

C. Assume that your business' expansion plans outlined above are realized. How would employment numbers for each of the three main identified occupations be affected? In other words, how many more of each type of employee do you expect to hire in the next 10 years, and what would the required educational attainment level of these employees be?

Enumerator note: Table should be completed with numbers indicating the number of employees (or respondent's best estimate) required in a given cell. If respondents cannot give numbers, the cell should simply be marked with an "X" to indicate that there will be individuals needed.

Occupation No.	Pre-secondary	Secondary	Post-secondary	Degree	Post-graduate	Total
1						
2						
3						

D. Still assuming that your business' expansion plans outlined above are realized, do you expect there to be any new occupations created within your company that would provide employment opportunities to the youth? If so, what are the three main new occupations you can identify?

New Occupation No.	Description (if needed)
1	
2	
3	

E. What level of education would you expect the employees in these new occupations to have?

Enumerator note: New occupation table should be completed with numbers indicating the number of employees (or respondent's best estimate) required in a given cell. If respondents cannot give numbers, the cell should simply be marked with an "X" to indicate that there will be individuals needed.

New Occupation No.	Pre-secondary	Secondary	Post-secondary	Degree	Post-graduate	Total
1						
2						
3						

Business Environment

Which of the following business environment measures currently represent the three most severe obstacles faced by this firm? (Please list the most important obstacles first; followed by those of least importance)

1. Access to credit
2. Access to land
3. Business licensing and permits acquisition
4. Corruption
5. Court delays
6. Crime, theft, and disorder
7. Customs and trade regulations
8. Labor regulations
9. Electricity supply
10. Inadequate skilled labor
11. Political instability
12. Practices of informal competitors
13. Tax rates, policies, and administration
14. Transport
15. Competition from imports
16. Uncertainty about government industrial policies.

Annex 2. Distinct occupations from surveyed firms

Job Position	Number of employees reported
Accountant	4
Project manager	10
Customer care executive	4
Customer operations	5
Web developer	8
Media and publicity	5
Growth sales	3
Back-end developer	5
Interior design	3
Marketing and sales	4
Business developer	2
Technical fficer	11
Business analyst	5
ICT	2
Resources analyst	3
Customer success agent	15
Administration officer	3
Social media and expansion	3
Technical support staff	4
Marketer	7
Fiber engineer	2
STEM	6
Digital marketer	2
Front-end Developer	10

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