

## **Macroeconomic Effects of Economic Digitalization in Oyo Township, Oyo State of Nigeria**

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### **Abstract**

The global economy has witnessed a profound transformation driven by the rapid advancement of digital technologies, with its attendant effects on various aspects of nations' economies. This research work investigates the macroeconomic effects of digitalization of Oyo township economy. The study adopts a descriptive survey. Four hundred and twenty-eight thousand, seven hundred and ninety-eight (428,798) respondents constitute the total population from Oyo and its environments, while three hundred and eighty-five (385) respondents are selected using simple random sampling. Macroeconomic Effects of Economic Digitalization in Nigeria Questionnaire (MEEDNQ) research instrument is a structured questionnaire having both open and closed ended questions used to collect data on the relationship between digitalization and employment, productivity and price level changes. The study uses test statistics such as frequency count, percentage and chi-square to assess the effects of digitalization on changes in the macroeconomic variables. Findings from the study reveals dual narratives in employment, emphasizing job displacement and creation of new opportunities. The impact of digitalization on productivity and pricing dynamics are also found to be significant. Based on these findings, the researchers recommended that there should be investment in digital infrastructure, enhanced cybersecurity measures, regulatory clarity and innovation, promotion of digital entrepreneurship, monitoring and evaluation.

**Keywords:** Commodity Prices, Digitalization, Employment, Job Displacement, Productivity

## **Introduction**

Nigeria's macroeconomic environment is importantly impacted by digitalization, which is changing several industries production technologies and promoting economic expansion. Information and Communication Technology (ICT) breakthroughs are driving the digital revolution, which is changing economic activity, increasing productivity, and promoting inclusive growth. Digitalization's effects on GDP growth, employment, financial inclusion, commerce, and public service delivery offer insights into Nigeria's macroeconomic effects.

It has made a favourable contribution to the GDP growth of Nigeria. One of the economic sectors with the quickest rate of growth is the ICT industry, which in the second quarter of 2021 accounted for 17.92% of GDP, up from 14.91% in the same period in 2020 (NBS, 2021). The rise of digital services like finance and e-commerce, as well as rising internet usage and mobile phone penetration, are the main drivers of this growth. Increased economic productivity has resulted from more Nigerians participating in the digital economy because of the widespread availability of smartphones and reasonably priced internet access.

Nigerian employment trends have been profoundly altered by the emergence of digital platforms. There are now more career options thanks to digitalization, especially in the gig economy. Particularly for young people, platforms like Bolt, Uber, and other freelance marketplaces have given rise to work alternatives. Furthermore, the ICT industry itself has grown to be a significant employer, with a large number of tech centers and startups springing up all throughout the nation. In 2020, there were approximately 2.5 million workers in the ICT sector, according to the National Bureau of Statistics (NBS, 2021).

Digitalization has come a long way in providing financial services to the unbanked people in terms of financial inclusion. Mobile money services like MTN's MoMo, Opay, and Paga have completely changed how Nigerians obtain financial services. These systems lessen the need for traditional banking infrastructure by enabling customers to conduct transactions using their smartphones. In large part because of digital financial services, the number of adults who are financially excluded dropped from 36.9 million in 2018 to 30.1 million in 2020, according to a report by Enhancing Financial Innovation & Access (EFInA, 2020). According to data released by the Central Bank of Nigeria (CBN, 2020), there were over 27 million mobile money users in 2020 compared to 11.5 million in 2018. The eradication of poverty and maintenance of economic stability are significantly impacted by this increase in financial inclusion.

Also, digitalization improves trade by making transactions easier and more effective. E-commerce sites such as Konga and Jumia have given Nigerian companies new ways to connect with customers both locally and abroad. These platforms have made it easier for small and medium-sized businesses (SMEs) to enter new markets and grow their businesses. A McKinsey Global Institute (2013) analysis estimates that by 2025, e-commerce might boost Nigeria's GDP by up to \$75 billion yearly (World Bank, 2021).

In addition to the GDP growth, employment generation, financial inclusion, digitalization enhances the delivery of public services by increasing the efficiency and accessibility of government services. The use of e-government programs, like the Integrated Payroll and Personnel Information System (IPPIS) and the Treasury Single Account (TSA), has improved public financial management transparency and decreased leakages. Each year, these solutions save billions of naira through streamlining procedures and reducing bureaucratic inefficiencies.

In fact, digitization has helped the economy in so many ways, these further include creating solutions in agricultural problems which increase efficiency and productivity, the e-learning platforms in education such as uLesson and Tuteria have given kids access to tutoring services and instructional materials and increasing access to healthcare through telemedicine services provided by websites like DoctorCare247 and Mobihealth International, especially in underprivileged and rural areas. Telemedicine according to a World Health Organization (WHO, 2019) study, can boost system efficiency in access to healthcare and cut costs associated with providing healthcare by as much as 30%.

Digitalization in Oyo township has significantly impacted employment, productivity, and price levels, driving changes across various sectors of the Oyo township's economy. These effects are critical in understanding the broader implications of digital transformation on Oyo and its environment and Nigeria's macroeconomic environment at large. Various individual institutions in Oyo and its environment have recorded an improvement or otherwise in their activities following the adoption of digitalization technology particularly in terms of employment creation, enhancing productivity, and efficiency leading to better prices to customers.

Regardless of these advantages, digitalization in Nigeria is not without its problems. With differences in internet connectivity and digital tool access between urban and rural communities, the digital divide is still a major problem. As of 2021, just approximately 40%

of Nigerians had internet connection, according to the World Bank, (2021). For a significant portion of the populace, this gap restricts the possible advantages of digitalization.

Cybersecurity poses yet another significant obstacle. The risk of fraud and cyberattacks has increased due to the rise in digital transactions and data interchange (Amali, et al., 2023). In order to coordinate cybersecurity measures, the Nigerian government identified this concern and formed the Nigeria Computer Emergency Response Team (ngCERT). To protect the users and operators however, stronger precautions and ongoing investment in cybersecurity infrastructure are required (FGN, 2021) but both the government and the private sectors are responding to these needs.

In this study, effort is made to examine the relationship between digitalization and macroeconomic variables such as employment, productivity and business efficiency, and consumer price level changes in Oyo township to determine if there is any relationship between digitalization and macroeconomic variables.

### **Research Hypotheses**

The study tests three hypotheses. They are stated hereunder:

- H<sub>1</sub>: Digitalization does not have a significant relationship with employment patterns and job creation in Oyo township.
- H<sub>2</sub>: The adoption of digital technologies does not significantly improve productivity and business efficiency in various sectors of Oyo township economy.
- H<sub>3</sub>: Digitalization does not significantly affect price level changes in Oyo township.

### **Literature and Empirical Review**

#### **Diffusion Innovation Theory**

A very relevant theory of digitalization of the economy is the diffusion innovation theory. The theory was developed by Rogers in 1962. It centers on the conditions which increase or decrease the likelihood that a new idea, product, or practice will be adopted by members of a given culture. Diffusion of innovation theory predicts that media as well as interpersonal contacts provide information and influence on opinion and judgment. Studying how innovation occurs, Rogers (1995) argued that it consists of four stages: invention, diffusion or communication through the social system, time and consequences. The information flows through networks. The nature of networks and the roles opinion leaders play in them determine the likelihood that the innovation will be adopted. Innovation diffusion research has attempted

to explain the variables that influence how and why users adopt a new information medium, such as the digitalization and internet.

Opinion leaders exert influence on audience behavior via their personal contact, but additional intermediaries called change agents and gatekeepers are also included in the process of diffusion. Five adopter categories are: innovators, early adopters, early majority, late majority, and laggards. These categories follow a standard deviation-curve, very little innovators adopt the innovation in the beginning (2.5%), early adopters making up for 13.5% a short time later, the early majority 34%, the late majority 34% and after some time finally the laggards make up for 16%. This theory has been used successfully in many fields including communication, agriculture, public health, criminal justice, social work, economics and marketing.

### **Empirical Review**

There are many studies on digitalization and the economy. These studies differ in their approach, in their methodology etc. Some of these studies are reviewed here.

Enebeli-Uzor and Mukhtar (2024) investigated the impact of monetary policy and digitalization on the Nigerian banking sector. The study focused on how the Central Bank of Nigeria's regulation of money supply and digitalization (measured by mobile cell subscriptions) affect banks' financial performance, particularly bank credit and liquid assets, while accounting for inflation and exchange rates. Using time series data from 1996 to 2022 and an interactive multiple regression model, the study found that stringent monetary policies can reduce bank performance by tightening credit and liquidity. However, digitalization can mitigate these effects by enhancing operational efficiency. Successful digital integration requires adequate investment, regulatory support, and alignment with banks' strategic goals.

Also, Austin-Olowo et al. (2023) examined the impact of digital financial services on the Nigerian economy, focusing on Nigerian deposit money banks (DMBs) between 2009 and Q4 of 2017, was investigated. Using data of 2017 Central Bank of Nigeria (CBN) Statistical Bulletin, an expo-facto analysis was conducted on independent variables of digital financial services: volume of ATM transactions (VATM), volume of POS transactions (VPOS), volume of WEBPAY transactions (VWBP), and volume of mobile banking (VMOB), regressed on Gross Domestic Product (GDP) as the dependent variable. Ordinary least square regression (OLS) was used for analysis. The findings revealed that the volume of mobile banking, point of sales, and volume of automatic teller machines transactions positively impact the Nigerian

economy, with ATM transactions having the highest impact on GDP, while web services volume has a negative impact.

Amali, Alymkulova, and Ejila (2023) studied the moderating effect of digitalization on the relationship between private sector credit and economic growth in Nigeria from 2009 to 2021. Using the Autoregressive Distributed Lag (ARDL) approach, they found that private sector credit positively impacts economic growth in the short term but is insignificant in the long term. Digitalization did not moderate this relationship during the period studied. The research supports the Central Bank of Nigeria's efforts to integrate digitalization into the financial sector, emphasizing the strategic role of financial intermediation by deposit money banks.

Gniniguè and Ali (2022) studied the impact of migrant remittances (MRs) on economic growth in ECOWAS countries, focusing on the role of digitalization. Using simultaneous equations and seemingly unrelated regression methods with data from 1980 to 2017. The study's endogenous variable is Gross Domestic Product (GDP) and the exogenous variables are Migrant Remittances (MRs), Inflation rate (INF), Access to the interest (INT), Population Growth Rate (TCPOP), while Trade Openness (OUV), Financial System Development (CREDIT), Foreign Direct Investment (FDI), Access to a Telephone (TELE), are used as control variables. The findings show that the elasticities of lagged value of real GDP per capita and remittance are positive and significantly affecting economic growth of ECOOWAS countries. However, digitalization enhances the impact of MRs on economic growth in non-WAEMU countries, but not in WAEMU countries. In WAEMU, remittances contribute to human capital accumulation, investment, and consumption. The study suggests that policies to strengthen digitalization would enhance the economic impact of MRs in ECOWAS, particularly in WAEMU.

Myovella, Karacuka, and Haucap (2020) analyzed digitalization's impact on economic growth in Sub-Saharan Africa (SSA) compared to OECD countries. They aimed to see if digitalization effects vary by development level. In SSA, new technologies improved communication, mobile banking for the poor, and SME participation in e-commerce, despite causing premature deindustrialization. Using data from 2006-2016 for 41 SSA and 33 OECD countries and generalized linear methods of moments (GMM) estimators, they found digitalization positively impacts growth in both regions. Broadband's effect was smaller in SSA, while mobile telecom had a higher impact. Using an Augmented Solow Model and a Structural Vector Autoregressive (SVAR) framework, they assessed responses to digital technology shocks. They found short-term negative impacts on growth and productivity,

turning positive from the fifth quarter onward. The study also revealed a one-way causality from digital technology to economic growth and productivity.

Stella and Imafidor (2020) observed the impact of digital technology adoption on economic growth and labour productivity in Nigeria from 1990 to 2019. Using an Augmented Solow Model, a positive relationship between digital technology adoption and economic growth is hypothesized. The study employs a Structural Vector Autoregressive (SVAR) framework to analyze the Impulse Response Function (IRF), measuring the response of economic growth and labour productivity to a shock in digital technology adoption. However, Forecast Error Variance Decomposition (FEVD) is examined to determine the proportion of movement in economic growth and labour productivity attributed to innovations in digital technology. Furthermore, a VAR Granger Causality test is conducted to ascertain the direction of causality between variables. The findings indicate a negative and significant short-term impact of digital technology adoption shocks on economic growth and labour productivity within the first four quarters. However, in the medium term and beyond (from the fifth quarter onward), the impact becomes positive. The study also identifies a unidirectional causality from digital technology to economic growth and labour productivity.

Stremousova and Buchinskaia (2019) investigated the impact of digitization indicators on per-capita GDP growth from 1999 to 2017 using fixed-effects panel regression. The study found that fixed and mobile subscriptions were the most critical factors for GDP growth. The study's limitations include its general analysis method, which necessitates more detailed country-specific research. Practically, the findings can guide detailed analyses of digitization effectiveness and support investment decisions. The study's originality lies in identifying key digitization factors affecting per-capita GDP. One thing that is common to these studies is that they focus on the economy as a whole. But it must be known that in some instances, there are specific characteristics of the people and their relationship that make them unique. This characteristic and the relationship do have effects on the way macroeconomic variable relates to one another. It is therefore pertinent to look into the case of a particular community. This is really what this study is set out to achieve in Oyo town.

## **Methodology**

### **Research Design**

The study uses a case study as the strategy of investigation. Questionnaires were used to collect information from the respondents as the use of questionnaires is the best practice of data

collection as far as primary data is concerned. Questionnaires, well-structured are used to allow the same type of information to be collected from a large number of people in the same way and for the data to be systematically analysed quantitatively. Both quantitative and qualitative data were collected for analysis.

### **Population of the study**

This study is conducted in three institutions in Oyo township and its environment. Oyo is a town centrally located in Oyo State, Nigeria, it is in Oyo Central senatorial district, along Ibadan-Ilorin road. Oyo has four local government areas with a total population of 428, 798 going by 2006 Nigeria national population census, and a land area of 2427 square kilometers. The economy of Oyo is predominantly agriculture and handicrafts. But modern Oyo is a location of many higher institutions. The town also has many primary and secondary schools and local government headquarters with many civil servants. Banks and a few of industries are also located in Oyo. However, the population of this study comprises of active population age, i.e. all men and women of working age drawn from the vicinity of Oyo and its environments.

### **Sample and Sampling Techniques**

The study adopts simple random sampling selection procedure to select members who were offered questionnaires with structured questions to fill. Oyo town has a population 428,798 going by the 2006 national census, Cochran sample formula is used to determine the sample size and this is found to be 385. The 385 questionnaires were administered and obtained in all the areas covering Oyo and its environment. Information sought and collected from the respondents through the questionnaires include socio-economic characteristics of the respondents, basically their age, sex, income level, number of households, educational attainment and so on.

### **Instrumentation and Data collection**

The instrument used for data collection was a structured questionnaire tagged MEEDNQ. It was used to collect primary data for the study. The questionnaire was of four (4) points scale: (i) Strong Agree (SA) (ii) Agree (A) (iii) Disagree (D) (iv) Strongly Disagree (SD). The instrument consisted of two (2) sections, sections A and B. Section A dealt with the demographic information while section B dealt with the variables i.e macroeconomic effects of economic digitalization in Oyo township. The questionnaire was assessed using the test re-test method to establish the reliability of the instrument at 0.75 level.

To test for the overall macroeconomic effects of economic digitalization on employment, productivity and price level changes in Oyo township, simple percentage and chi-square parameters were computed to test the hypothesis that digitalization does not affect each of the variables. There was a total of fifteen (15) question items. The respondents were instructed to tick the option of their choice on each question. The completed copies of the questionnaire were collected from all the respondents on the spots.

### **Data Analysis Technique**

The data collected for analysis involves both quantitative and qualitative, hence two types of statistical techniques were used in analyzing the data. These are descriptive statistics involving frequency counts and percentages and inferential statistics, mainly chi-square. In order to have the background information of the respondents of these institutions, we examined the socio-economic characteristics of respondents using frequency counts and percentages. The variables of interest include age, sex, income level, and educational level. Frequency counts and percentages of impact of digitalization on employment patterns and job creation were also found to measure the amount of people who gets new job or lost jobs due to digitalization. Furthermore, the same frequency counts and percentages of impact of digitalization on productivity and price movement as measures of the effects of digitalization in these different areas were found.

Finally, a chi-square analysis of the impact of digitalization on employment patterns and job creation, productivity and price dynamics to examine whether the effect of digitalization on these variables are significant or not. In carrying out the analysis, Statistical Package of Social Sciences (SPSS) statistical software was employed in computing different statistics used in the study. The choice of SPSS was informed by its advantages in handling primary data effectively over other statistical software.

### **Results**

The analysis of data carried out by the study is mainly in two parts. The first is the analysis of the socio-economic characteristic of the respondents. Second is the measure of the significance of the effects of digitalization on employment, productivity and price dynamics.

- **Socio-Economic Characteristics of the Respondents**

Table 1 summarizes the result of the analysis of the socio-economic characteristics of respondents in the institutions of the study population.

**Table 1: Sex Distribution of Respondents**

Sex	Frequency	Percentage
<b>Male</b>	144	37.40
<b>Female</b>	241	62.60
<b>Total</b>	<b>385</b>	<b>100</b>

Source: Authors Computation, (2024)

The table indicated distribution of respondents by gender in a sample of 385 participants. Male comprises of 144 (37.40%) while female comprises of 241 (62.60%). This representation ensures a gender approach in examine the macroeconomic effects of economic digitalization in Oyo township.

**Table 2: Age Distribution of Respondents**

Age	Frequency	Percentage
<b>Below 15 year</b>	85	22
<b>16-20 years</b>	146	38
<b>21-25 years</b>	123	32
<b>Above 26 years</b>	31	8
<b>Total</b>	<b>385</b>	<b>100</b>

Source: Authors Computation, (2024)

This table 2 revealed a diverse age distribution among 385 respondents in the study. The majority, 38%, fall within the 16-20 age group, while 22% are below 15 years. A smaller percentage includes individuals aged above 26 years (8%) and those between 21-25 years are 32%.

- **Analysis of the significance of the impact of digitalization on Employment, Productivity and Price dynamics**

### **Test for Hypotheses**

**Analysis on impact of digitalization on employment patterns and job creation in Oyo township**

**Research Hypothesis: 1**

H0<sub>1</sub>: Digitalization does not have a significant impact on employment patters and job creation in Oyo township.

**Table 3: X<sup>2</sup>-Test Analysis Showing Impact of Digitalization on Employment Patterns and Job Creation in Oyo Township**

Responses/Questions	SA	A	D	SD	Agreed	Disagreed	Total
<b>1</b>	173	50	92	69	223(228.7)	162(156.3)	385
<b>2</b>	142	85	65	92	227(228.7)	158(156.3)	385
<b>3</b>	200	35	54	96	235(228.7)	150(156.3)	385
<b>4</b>	154	123	62	46	277(228.7)	108(156.3)	385
<b>5</b>	123	58	104	100	181(228.7)	204(156.3)	385
<b>Total</b>	<b>793</b>	<b>350</b>	<b>377</b>	<b>404</b>	<b>1143</b>	<b>782</b>	<b>1925</b>

Group	Size	Degree of Freedom	X <sup>2</sup> Cal	X <sup>2</sup> Tab	Remark
Agreed	1144				Reject Null Hypothesis
Disagreed	781	04	26.59	9.49	

Significant at 0.05 level (2-tailed)

Source: Authors Computation, (2024)

The decision rule is that if X<sup>2</sup>-calculated is greater than the tabulated value, then we reject the null hypothesis (H0<sub>1</sub>) and accept the alternative hypothesis. Therefore, from the table 3, since the calculated value (26.59) is greater than the tabulated value (9.49). Hence, the null hypothesis (H0<sub>1</sub>) is rejected; this means that there is significant difference between employment patterns and job creation in Oyo township is accepted.

**Research Hypothesis: 2**

- **Analysis on effect of digitalization on productivity and business efficiency in various sectors of Oyo township economy**

H0<sub>2</sub>: The effect of digital technologies does not significantly improve productivity and business efficiency in various sectors of Oyo township economy.

**Table 4: X<sup>2</sup>-Test Analysis Showing the Effect of Digitalization on Productivity and Business Efficiency in Various Sectors of Oyo Township Economy.**

Responses/Questions	SA	A	D	SD	Agreed	Disagreed	Total
<b>6</b>	39	62	114	171	100(189.8)	285(195.2)	385
<b>7</b>	92	64	87	142	156(189.8)	229(195.2)	385
<b>8</b>	196	39	58	92.4	235(189.8)	150(195.2)	385
<b>9</b>	158	127	60	40	285(189.8)	100(195.2)	385
<b>10</b>	125	48	129	83	173(189.8)	212(195.2)	385
<b>Total</b>	<b>610</b>	<b>339</b>	<b>447</b>	<b>529</b>	<b>949</b>	<b>976</b>	<b>1925</b>

Group	Size	Degree of Freedom	X <sup>2</sup> Cal	X <sup>2</sup> Tab	Remark
Agreed	949				Reject Null Hypothesis
Disagreed	976	04	110.89	9.49	

Significant at 0.05 level (2-tailed)  
 Source: Authors Computation, (2024)

Table 4 indicates the analysis of authors on the effect of digitalization on productivity and business efficiency in various sectors of Oyo township economy. The calculated value (HO<sub>2</sub>) is rejected; this means that there is significant relationship between digitalization and productivity and efficiency in various sectors of Oyo township economy. In view of this, the hypothesis which state that there is no significance difference between the digitalization and productivity and efficiency in various sectors of Oyo township economy is rejected.

**Research Hypothesis: 3**

- **Analysis on the influence of digitalization on Price Movement in Oyo township.**

H<sub>03</sub>: Digitalization does not significantly enhance Price Movement in Oyo township.

**Table 5: X<sup>2</sup>-Test Analysis On The Influence Of Digitalization On Price Movement In Oyo Township.**

Responses/Questions	SA	A	D	SD	Agreed	Disagreed	Total
<b>11</b>	98	121	90	75	219(202.9)	166(182.1)	385
<b>12</b>	89	125	94	77	214(202.9)	171(182.1)	385
<b>13</b>	106	117	83	79	223(202.9)	162(182.1)	385
<b>14</b>	83	98	123	81	181(202.9)	204(182.1)	385

<b>15</b>	87	90	123	85	177(202.9)	208(182.1)	385
<b>Total</b>	<b>462</b>	<b>552</b>	<b>514</b>	<b>397</b>	<b>1014</b>	<b>911</b>	<b>1925</b>

<b>Group</b>	<b>Size</b>	<b>Degree of Freedom</b>	<b>X<sup>2</sup> Cal</b>	<b>X<sup>2</sup> Tab</b>	<b>Remark</b>
Agreed	1014				Reject Null Hypothesis
Disagreed	911	04	9.58	9.49	

Significant at 0.05 level (2-tailed)

Source: Authors Computation, (2024)

Table 5 shows the degree of freedom to be 4. X<sup>2</sup>, calculated value was (9.58) and the tabulated value for X<sup>2</sup> (0.05) was 9.49. Since the calculated value i.e 9.58 was greater than tabulated value i.e (9.49). Therefore, null hypothesis H<sub>03</sub> is rejected, this means that there is significant influence of digitalization on price dynamics in Oyo township is accepted.

### **Discussion of Findings**

The analysis of the hypotheses revealed interesting insights. In relation to the first hypothesis, the X<sup>2</sup> calculated value was 29.8 which was greater than tabulated value 9.49. (X<sup>2</sup> cal.= 26.59 > tabulated value 9.49), indicating a positive impact on employment patters and job creation in Oyo township. Responses from the respondents also indicated that while some people lost their jobs following digitalization process, a lot of other new jobs are created through the digitalization process especially in the communication and financial sectors of Oyo economy. Moving on to the second hypothesis, the X<sup>2</sup> calculated value was 24.9 which was greater than tabulated value 9.49. (X<sup>2</sup> cal.= 110.89 > tabulated value 9.49), signifies a significant relationship between digitalization and productivity. This outcome sheds light on improvement of productivity and efficiency in various sectors of Oyo township economy as a result of digitalization. Hypothesis three further underscores these findings, as X<sup>2</sup> calculated value was 9.58 which was greater than tabulated value 9.49. (X<sup>2</sup> cal.= 9.58 > tabulated value 9.49), demonstrates the influence of digitalization on price changes in Oyo township.

These results emphasize the importance of macroeconomic effects of economic digitalization in Oyo township. This study aligns with the research of Adedoyin, et al. (2020), which marks dual impact of digitalization on employment. Similarly, the result is line with Şükranlı (2020) on ‘Digital Technologies and Productivity’, which stresses the need for improvement in productivity and business efficiency in various sectors of the economy through digitalization.

## **Conclusion**

The empirical evidence highlights the significant impact of economic digitalization on Oyo township's macroeconomic landscape. Digitalization has transformed employment, productivity, and price level changes across various sectors, contributing to economic growth and development. However, challenges like the digital divide, cybersecurity risks, and regulatory uncertainties persist and require attention to fully capitalize on digitalization's benefits. Furthermore, while digitalization offers opportunities, it also risks job displacement and income inequality. Thus, proactive policy interventions are essential to mitigate these risks and ensure equitable distribution of digitalization's benefits.

## **Recommendations:**

Based on the discerned findings, the following recommendations are put forth to enhance efficacy of macroeconomic effects of economic digitalization in Oyo township.

The government should prioritize investment in digital infrastructure, including broadband internet access and digital literacy programs, to bridge the digital divide and ensure equitable access to digital technologies across urban and rural areas. Robust cybersecurity measures are essential to safeguard digital infrastructure and protect against cyber threats. The government should work closely with the private sector to develop and implement cybersecurity frameworks that address emerging risks and vulnerabilities.

Clear and predictable regulatory frameworks are necessary to foster innovation and investment in the digital economy and hence encouraging lower commodity price level. Policymakers should engage with industry stakeholders to develop regulations that balance innovation with consumer protection and market stability.

Encouraging digital entrepreneurship through incentives, access to financing, and supportive ecosystems can stimulate job creation and economic growth. Government support programs should target digital startups and SMEs, providing them with the resources and support needed to scale and succeed. Regular monitoring and evaluation of digitalization initiatives are essential to assess their effectiveness and identify areas for improvement. The government, in collaboration with relevant stakeholders, should establish mechanisms for measuring the impact of digitalization on key economic indicators and adjusting policies accordingly.

## References

- Adedoyin, F. F., Ozturk, I., Abubakar, I., & Agboola, M. O. (2020). The impact of digitalization on economic growth in Nigeria. *Journal of Economic Studies*, 47(5), 1171-1184.
- Amali, E., Alymkulova, N., & Ejila, S. A. (2023). Banks' credit to the private sector and economic growth in Nigeria: The moderating role of digitalization. *Journal of Global Economics and Business*, 4(13), 17-35.
- Arntz, M., Gregory, T., & Zierahn, U. (2017). Revisiting the risk of automation. *Economics Letters*, 159, 157-160.
- Audu, S. I., & Ishola, K. (2021). Digital economy and tax administration in Nigeria. *GSSJ*, 9(9), 1251-1262.
- Austin-Olowo, O.A., Ailemen, I. O., Oladipo, A. O., & Monday, I. M. (2023). The impact of digital financial services on the Nigerian economy. *African Journal of Accounting and Financial Research*, 6(1), 1-20
- Benlian, A., Hilkert, D., & Hess, T. (2015). How open is this platform? The meaning and measurement of platform openness from the complementors' perspective. *Journal of Information Technology*, 30(3), 209-228.
- Boakye, A., Nwabufo, N., & Dinbabo, M. (2022). The impact of technological progress and digitization on Ghana's economy. *African Journal of Science, Technology, Innovation and Development*, 14(7), 1981-1986.
- Brynjolfsson, E., & McAfee, A. (2014). *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. W. W. Norton & Company.
- Bughin, J., Catlin, T., Hirt, M., & Willmott, P. (2018). "Why Digital Strategies Fail." McKinsey & Company. Retrieved from <https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/why-digital-strategies-fail>
- Catalini, C., Gans, J. S., & Goldfarb, A. (2020). *Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction*. Princeton University Press.
- Central Bank of Nigeria (CBN). "Financial Inclusion Newsletter." CBN, 2020.
- Davenport, T. H., & Harris, J. (2007). *Competing on Analytics: The New Science of Winning*. Harvard Business Press.
- Enebeli-Uzor, S., & Mukhtar, A. (2024). Monetary policy, digitalisation and banking industry performance in Nigeria. *Journal of Scientific Research and Reports*, 30(6), 459-468.
- Enhancing Financial Innovation & Access (EFInA) (2020). "Access to Financial Services in Nigeria 2020 Survey." EFInA, 2020.

- Federal Government of Nigeria. (2021) "Treasury Single Account (TSA) and Integrated Payroll and Personnel Information System (IPPIS) Reports." 2021.
- Food and Agriculture Organization (FAO) (2021). "Digital Agriculture Report: Rural e-commerce development experience from China."
- Gai, K. (2019). A survey on mobile payment research. *Journal of Internet Banking and Commerce*, 24(1), 1-19.
- Gniniguè, M., & Ali, E. (2022). Migrant remittances and economic growth in ECOWAS countries: Does digitalization matter? *The European Journal of Development Research*, 34(5), 2517-2542.
- International Monetary Fund (IMF). (2018). *Taxing the Digital Economy*. IMF.
- International Monetary Fund (IMF). (2020). "Nigeria: Selected Issues."
- International Telecommunication Union (ITU). "Measuring digital development: Facts and figures 2021." ITU, 2021.
- Kagermann, H., Wahlster, W., & Helbig, J. (2013). Recommendations for implementing the strategic initiative INDUSTRIE 4.0: Final report of the Industry 4.0 Working Group.
- Lozić, J., & Čiković, K. F. (2021). The impact of digital transformation on the business efficiency of the New York times. *UTMS Journal of Economics* 12(2), 225-239.
- Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., & Roxburgh, C. (2011). Big data: The next frontier for innovation, competition, and productivity. McKinsey Global Institute.
- McKinsey Global Institute. (2013). "Lions go digital: The Internet's transformative potential in Africa." McKinsey & Company, 2013.
- Myovella, G., Karacuka, M., & Haucap, J. (2020). Digitalization and economic growth: A comparative analysis of Sub-Saharan Africa and OECD economies. *Telecommunications Policy*, 44(2), 101856.
- National Bureau of Statistics (NBS). (2021). "Nigeria's ICT Sector Report Q2 2021." NBS, 2021.
- Nigeria Computer Emergency Response Team (ngCERT). (2021). "Annual Cybersecurity Report." ngCERT, 2021.
- Ozili, P. K. (2020). Digital finance, financial inclusion and development in Africa. *International Journal of Development Issues*, 19(1), 77-100.
- PwC. (2021). The Impact of Digital Transformation on Productivity.

- Stella, C., & Imafidor, O. M. (2020). An assessment of the impact of digital technology adoption on economic growth and labour productivity in Nigerian NETNOMICS, *Economic Research and Electronic Networking*, 21(1), 103-128
- Stremousova, E., & Buchinskaia, O. (2019). Some approaches to evaluation macroeconomic efficiency of digitalisation. *Business, Management and Economics Engineering*, 17(2), 232-247.
- Şükranlı, D. (2020). *The effect of company's level of digitalization on employee satisfaction and productivity* (Master's thesis, Sosyal Bilimler Enstitüsü).
- UNESCO. (2021). Global Education Monitoring Report 2021. UNESCO, 2021.
- World Bank. (2021). Nigeria Digital Economy Diagnostic Report. World Bank, 2021.
- World Economic Forum. (2020). *Global Competitiveness Report 2020*. World Economic Forum.
- World Health Organization (WHO). (2019). Telemedicine: Opportunities and Developments in Member States. WHO, 2019.
- Wu Yunxia & Ma Yech (2023). The Effect of digital economy development on labour employment: Empirical evidence from listed companies in China, *Journal of Global Information Management*, 31(6), 27