
IMPACT OF FINANCIAL TECHNOLOGY ON POVERTY ALLEVIATION IN NIGERIA

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Abstract

This study explores the impact of financial technology (fintech) on poverty alleviation in Nigeria from 1986 to 2024. The Autoregressive Distributed Lag (ARDL) approach was adopted in analyzing the secondary data used for the study which were sourced from the World Bank database, National Bureau of Statistics and Central Bank of Nigeria. The results found that fintech, financial inclusion, literacy rate and urbanization have positive impact on poverty reduction, while financial deepening has negative, significant short run impact but insignificant long run impact on poverty alleviation. It was further shown that both in the long and short term, the estimated impact of literacy rate and urbanization were statistically significant, while fintech was insignificant. Also, financial inclusion was found to have considerable impact on poverty in the long run, though it tends to be negligible in the short run. Thus, it is recommended that government should collaborate with private organizations to develop and deploy fintech solutions that would improve financial access, thereby alleviating poverty in Nigeria.

Keywords: Fintech, Financial inclusion, Financial deepening, Poverty alleviation, Nigeria

Classification Codes: E44, I00, I32

INTRODUCTION

Poverty alleviation is one of the major goals of sustainable development and has very serious implications for the well-being of individuals, communities, and nations. It would mean addressing the root causes of poverty, while promoting strategies that empower individuals to break free from cycles of deprivation (Onah et al., 2024). Poverty reduction not only raises the standard of living for the affected but also contributes to economic stability, social cohesion, and long-term growth. Alleviation of poverty comes with better health outcomes, more educational opportunities, and higher productivity, which together create a positive feedback loop that benefits society at large (Ames et al., 2001).

The link between Fintech and the fight against poverty lies in its potential democratization of access to credit facilities, savings, and investment. Fintech can be quite instrumental in the process of alleviating poverty (Ashenafi & Dong, 2022). Through increased access to financial services, nurturing entrepreneurship, and building economic resilience, the impacts are wide-ranging. Since financial technology promotes financial inclusion and deepening, it can be used to drive sustainable growth that aims to lower the poverty rate. Access to financing for company investments can enhance the standard of living for people and reduce poverty, which is a target of

the Sustainable Development Goals (Udo, Sarma, & Siddik, 2023; Abamara et al., 2025).

Financial technology has a substantial impact on consumer expectations and financial inclusion (PricewaterhouseCoopers, 2018). In recent years, the banking services has undergone significant technological advancements. There are advancements in service delivery and product categories. For example, with financial technology (fintech), new payment methods such as mobile wallets and contactless payment systems may make it easier for people to spend money, so stimulating the economy (Joghee et al., 2022). Furthermore, peer-to-peer lending systems, which connect borrowers directly with lenders by eliminating middlemen, can make it easier for people to obtain loans, thus boosting economic activities. Financial technology is one of the disruptive developments of the twenty-first century that can improve nations' economic growth (World Economic Forum, 2023). An economy can grow through financial technology as it creates means for the populace to easily access financial services. This would help to create jobs, wealth and reduce inequality and poverty, increase standard of living and overall economic well-being (Central Bank of Nigeria, 2022).

Globally, the acceptance rate of financial technology increased since 2009 as investments in fintech globally increased from \$123.3 by 144% between 2020 and 2021 (Varian, 2021), and also reached \$99 billion in 2022 (Innovate Finance, 2023). Similarly, the Global FinTech Adoption Index found that two-thirds of consumers used at least two fintech services (PwC, 2023). The growing adoption of financial technology has resulted in impressive changes in how businesses are conducted. Customers can conduct almost all of their financial transactions from anywhere in the world using the internet and/or mobile devices (Nwogwugwu & Umeghalu, 2021; Islam et al., 2022).

Additionally, it is projected that financial technology investment in Africa grew by more than 58% between 2014 and 2018, reaching US\$800 million and US\$3 billion in 2020 (PwC, 2020). With the mobile economy employing over 3 million people and accounting for 7% of the continent's GDP, technological innovation is progressing. Nigeria and South Africa have been reported to have received a large amount of these investments, which is transforming financial services and improving financial inclusion (Sy et al., 2019). Fintech has gone a long way in impacting the sustainable development of Nigeria, a country battling structural economic challenges and seeking inclusive growth (CBN, 2022). Although the financial deepening indicator, that is, credit to the private sector, has been increasing year in and year out, the rate is still very low compared to some countries in Africa (CBN, 2022). For instance, the domestic credit to private sector in Nigeria stands at 8.4% in 2005, 10.6% in 2012 and 14.1% in 2022. However, the rate in 2005 was 26.3% for Kenya, and 31.5% in 2022, while for South Africa, the rate was 122.3% in 2005 and 92.2% in 2022. This clearly shows that Nigeria still lags behind in prioritizing the private sector which has the potential to stimulate the growth of the economy at a faster pace (Umeghalu et al., 2022; Umeghalu et al., 2025; World Bank, 2023).

Furthermore, the financial technology that drives the CBN to promulgate the law on cashless policy has been inefficient in Nigeria. This is because it increased the risk of cybercrimes such as identity theft, account cloning, fraudulent payments or transfers, and other similar crimes affecting financial services (Fatoki, 2023). Unplanned outages and security breaches are becoming a major concern for financial institutions as their dependence on technology grows. Nigeria was identified as one of the nations with the highest risk of cyber-attacks in Check Point Software Technologies Limited's May 2017 Global Threat Impact Index. This is a serious cause for concern as cyber-attack can be catastrophic to the banks, customers and the economy at large (PwC, 2018).

The major issues, apart from cybercrimes, that fintech in Nigeria faces in driving economic growth and development include weak institutional quality, which impedes regulatory efficiency that allows innovation and flexibility peculiar to the Nigerian context, and trust in financial systems (CBN, 2022). Urbanization increases the gap in access to FinTech services, mostly for rural areas with poor infrastructure. Low literacy rates also limit the reach and usability of digital financial services, while inadequate internet access and unreliable electricity impede connectivity and operational consistency. Additionally, limited access to affordable credit restricts innovation and adoption, particularly in underserved areas, further impeding its potential to foster inclusive economic development (Enhancing Financial Innovation and Access, EFINA, 2022; Umeghalu, Ezenekwe & Okoli, 2025).

The Nigerian government has implemented various policy initiatives to foster the growth of financial technology (FinTech), including the establishment of a regulatory framework through the Central Bank of Nigeria's (CBN) FinTech Roadmap. These policies aim to support innovation, enhance financial inclusion, and ensure the security of digital financial services. (CBN, 2022; Udo et al., 2023; Federal Ministry of Communications, Innovation and Digital Economy, 2020).

However, despite the efforts of the government to ensure that the adoption of Fintech contributes to the reduction of poverty in the country, the adoption of this initiative is still low, as 1 in 3 adults are still financially excluded. This means that about 47.6 million Nigerian adults still remain unbanked as at 2022, while 26% are financially excluded in 2023, as financial inclusion grows to 64% (EFInA, 2022). Since many are financially excluded, the rate of poverty has continued to increase. The National Bureau of Statistics (2022) estimates that 133 million Nigerians, which is equivalent to 63% of the population, live in multidimensional poverty. It is for these reasons that this study carried out empirical analysis on the impact of fintech on poverty alleviation in Nigeria.

REVIEW OF RELATED LITERATURE

Conceptual Review

Poverty Alleviation: Poverty is considered to be a measure of not having access to the necessities

that a person, household, or community needs to maintain a minimum quality of living. Poverty alleviation refers to the government's initiatives, methods, and policies aimed at decreasing or eradicating poverty. It is a strategy for accelerating poverty reduction through economic growth, redistributive programmes, and shared prosperity (Ministry of Budget and Economic Planning, 2021).

Financial Technology: Financial technology is based on computer programs and other technological applications oriented toward facilitating financial services, and this led to the development of diverse financial-related transactions (Nurlaela et al. 2020). Fintech, according to CBN (2022), is an industry that includes all types of tech devices used to provide financial facilities for businesses and households. It is one way to promote financial inclusion because it eases access to financial services and provides a variety of options for an organization.

Empirical Literature

There are several studies that pertain to the impact of fintech on poverty reduction across globe in the literature. Some of these works are reviewed hereunder. Using trend analysis and error correction econometric approaches, Andrew (2024) examined how these technologies contribute to poverty reduction in Nigeria's various areas and demographics between 2010 and 2022. The findings showed that ATMs and mobile payment systems considerably reduced poverty, mainly by improving access to financial services, encouraging economic engagement, and giving financial stability to low-income people. In contrast, POS systems failed to have a significant reducing effect on poverty, most likely due to restricted accessibility in rural areas and among the unbanked population. The report also emphasised the positive impact of financial deepening in poverty alleviation.

In a panel study of 29 African nations, Girma and Huseynov (2024) investigated the causal relationship. The study used structural equation models and pooled OLS regression on samples from 2011, 2014, and 2017. The results showed that financial inclusion and income inequality in African nations were positively and statistically significantly impacted by fintech. Using data over the period 1991 to 2021, Boloupremo and Ogege (2024) analyzed the implications on Nigeria. The evidence provided by employing multiple linear regression estimation techniques indicated a strong negative relationship between the financial innovation technology and poverty reduction.

Iwedi et al. (2024) conducted a study with Rivers State residents as their target population. A total of 223 individuals were selected using a combination of multiple-stage and purposive sampling approaches. The questionnaire was utilized to gather the data, and the hypotheses were tested with simple regression model. A strong positive correlation was shown between fintech and poverty reduction. Nopiah et al. (2024) used instrumental variable analysis to investigate the impact from 2019 to 2022, and the results showed that fintech lending exerted a negative impact.

Erondu et al. (2024) used cointegration method to study the impact between 1980 and 2020. It was found that investments made by the fintech public investments had a negative and substantial effect on reducing poverty in Nigeria, as indicated by the Human Development Index (HDI). Private fintech investments, however, were beneficial and a major factor in determining the HDI. Tidjani and Madouri (2024) empirically investigated the impact for 25 African countries from 2011 to 2019, while dynamic system GMM, panel OLS, fixed effect approaches were used. The findings revealed a considerable positive impact fintech on sustainable development.

Emara (2023) used annual data for the SSA region from 2004 to 2020 to examine the dynamic asymmetry relationship. The study used the generalized method of moments (GMM) approach and the results of the study indicated that advancements in fintech initially lower the rate of extreme poverty, which would thereafter lower the percentage of the people living in poverty overall.

Khaki et al. (2022) also employed a supervised machine learning (ML) approach for African countries and the results suggested that fintech has considerable impact on poverty alleviation. Using GMM for 127 emerging and developing economies. Emara and Mohieldin (2022) studied on the impact in Africa from 2004 to 2018. The study found a significant influence on poverty alleviation. Gautam et al. (2021) considered data from twenty-two Indian states from 2018 to 2020, using panel data analysis, and the results suggested a negative impact.

METHODOLOGY

Theoretical Framework

The argument made in this study is anchored on the Schumpeter's theory of innovation. The theory which was developed by Joseph Alois Schumpeter in 1949, is of the position that entrepreneurial ventures are the heartbeat of economic development. They bring new products, processes, and markets, driving innovation, and in the process, disrupt existing economic structures. Innovation, therefore, destroys old industries and creates new ones. This constant replacement of technologies and business models that are outdated works to stimulate long-term economic growth and bring new opportunities that create investments, thereby, improving the standard of living of people.

However, the theory was criticized. Schumpeter's focus on the disruptive, large-scale nature of innovations diverts attention from the fact that small, incremental improvements are important in driving sustained economic growth. Progress is not always brought about by "creative destruction"; gradual innovations also contribute much to productivity and economic development. The theory places too much emphasis on individual entrepreneurs as the main drivers of innovation, disregarding the role of collective efforts, government policies, research institutions, and larger corporations in fostering innovation and technological development. Despite the criticisms of this theory, Schumpeter's theory is still relevant in the sense that innovation which can be in form of financial technology/innovation can increase financial inclusion, financial

deepening which tends to improve standard of living of people, increase investments, improve output and help alleviate poverty.

Model Specification

This study adapts the model of Boloupremo and Ogege (2024) which expressed poverty as a function of financial technology, albeit, with a little alteration to allow for the arguments made in the study. The functional form of the model for this study is as specified hereunder.

$$POVR = f(\text{FINTEC}, \text{FINI}, \text{CRPS}, \text{LITR}, \text{URPG}) \quad (1)$$

Equation (1) is written in econometric term as thus;

$$POVR_t = \beta_0 + \beta_1 \text{FINTEC}_{t-1} + \beta_2 \text{FINI}_{t-1} + \beta_3 \text{CRPS}_{t-1} + \beta_4 \text{LITR}_{t-1} + \beta_5 \text{URPG}_{t-1} + \mu_{t1} \quad (2)$$

Where, $t-1$ = the lagged value of the variables; μ_{t1} = the stochastic error term; β_0 = constant term, β_1 to β_6 are the coefficients' slopes.

Where, POVR = poverty alleviation, the dependent variable, FINTEC = financial technology index, FINI = financial inclusion, CRPS = financial deepening, which are the explanatory variables, while LITR = literacy rate, and URPG = urban population growth, the control variables.

Data and Data Sources

The secondary data employed in the study were sourced from the World Bank development indicators, Nation Bureau of Statistics, and the Central Bank of Nigeria. Poverty head count ratio was used to measure poverty alleviation, while financial technology index which measures the development and use of financial technology was used to measure fintech. Financial institutions access index, which assesses the accessibility and use of financial services by the populace was used to measure financial inclusion. The proportion of urban population to total population was used to measure urbanization. The percentage of primary school enrolment to total education was used to measure literacy rate.

Estimation Technique and Procedure

The Augmented Distributed Lag (ARDL) technique was used to estimate the coefficients of the independent variables. The method estimates a model's long- and short-term dynamics even with mixed order of integration, that is, when the data of the study is stationary at both level and first difference, $I(0)$ and $I(1)$. Similarly, when the sample size is small, it also yields estimates that are more accurate. Before the estimation of the parameters, pre-estimation tests were carried out to check the properties of the time series data used for the study. The descriptive statistics, Augmented Dickey Fuller (ADF) unit root test, and the ARDL bounds test were used to measure the central tendencies, unit root, and long term relatedness of the data set respectively.

DATA ANALYSES AND RESULTS PRESENTATION

Table 1: ADF Unit Root Test

Variables	ADF Stats	Critical Value @5%	Order of Integration
POVR	-4.4212	-3.5529	I(1)
FINTEC	-5.3421	-3.5403	I(1)
FINI	-7.3804	-3.5529	I(1)
CRPS	-4.4424	-3.5403	I(1)
LITR	-5.7589	-3.5403	I(1)
URPG	-4.6065	-3.5806	I(0)

Source: Researchers' compilation using EViews 12

The results of the ADF test carried out which is summarized in Table 1 shows mixed order integration. The results show that POVOR, FINTEC, FINI, CRPS, and LITR are stationarity at first difference, while URPG becomes stationary at levels.

Table 2: VAR Lag Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	135.3828	NA	1.58e-11	-7.841381	-7.569288	-7.749830
1	435.7344	473.2813*	1.81e-18*	-26.86269*	-22.95804*	-24.22183*
2	507.9786	87.56880	2.54e-19	-23.05931	-21.52211	-23.86915

Source: Researchers' compilation using EViews 12

The result from the lag selection shows that the optimal lag length of the model is 1, as it is shown by Akaike Information Criterion (AIC) with the lowest absolute value. This implies that incorporating one lagged value reflects an appropriate balance between model complexity and goodness of fit.

Table 3: ARDL Bounds Test for Cointegration

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	3.408301	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Researchers' compilation using EViews 12

The F-statistic of 3.4083 is higher than the 5% significance level's upper critical value of 3.38. This signifies that there is a substantial long-term correlation among the variables. Consequently, ARDL-ECM regression was performed.

Estimation Results

Table 4: Long-run Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FINTEC	0.018924	0.031953	0.592231	0.5590
FINI	0.015300	0.019730	0.775441	0.0454
CRPS	-0.058170	0.029082	-2.000244	0.0564
LITR	0.003963	0.001417	2.796334	0.0098
URPG	0.685156	0.320628	2.136924	0.0426
C	-5.154855	2.548608	-2.022616	0.0539

Source: Researchers' compilation using EViews 12

The long run result shows that FINTEC, FINI, LITR and URPG contribute to POVR positively with 0.02%, 0.02%, 0.004% and 0.69% respectively, while CRPS has negative impact and it implies that 1% increase in CRPS decreases POVR by 0.06%. That is, CRPS does not help to alleviate poverty. The result further reveals that among all the variables, only FINTEC is not statistically significant at 5%.

Table 5: Short-run Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.374133	2.130667	-2.052941	0.0507
D(FINTEC(-1))	0.016058	0.027456	0.584849	0.5639
D(FINI(-1))	0.012982	0.016746	-0.775264	0.4455
D(CRPS(-1))	-0.049360	0.023877	-2.067227	0.0492
D(LITR(-1))	0.003363	0.001378	2.440256	0.0221
D(URPG)	21.56237	3.889472	5.543777	0.0000
CointEq(-1)*	-0.848546	0.156008	-5.439122	0.0000
R-squared	0.593407			
Adjusted R-squared	0.544382			
Durbin-Watson stat	2.349904			

Source: Researchers' compilation using EViews 12

From the results, FINTEC and FINI have positive impact on POVR. While FINTEC has coefficient of 0.016 and p value of 0.5639, FINI's coefficient is 0.013 and 0.4455 as p-value. This means that a 1% increase in FINTEC and FINI would increase POVR by 0.016%, and 0.013% respectively. However, the insignificance may suggest that the variables do not have an immediate impact on POVR.

The financial deepening D(CRPS(-1)) shows a coefficient of -0.049 with $p = 0.0492$, implying that for every 1% increase in financial deepening, POVR reduces by 0.049%. The LITR has a positive and significant coefficient of 0.003 ($p = 0.0221$), meaning that for a 1% increase in LITR, there is

a 0.003% increase in POVR. The largest positive effect is that of URPG, with a coefficient of 21.56, and highly significant p value of 0.0000. This indicates that a 1% increase in URPG leads to a 21.56% increase in POVR.

The ECM is -0.8485 and it indicates that about 85% disequilibrium in the previous year was adjusted for in the current period. The coefficient of determination (R^2) is 0.5934, which showed that the explanatory power of the variables was high and strong. That is, 59% variations in POVR are explained by the explanatory variables, while other possible determinants not captured in the model explained about 41% of the variations.

Post-Estimation Tests

Table 5: Breusch-Godfrey Serial Correlation LM Test

F-statistic	2.407483	Prob. F(2,23)	0.1124
Obs*R-squared	6.058747	Prob. Chi-Square(2)	0.0683

Source: Researchers' compilation using EViews 12

This finding implies that the model has no serial correlation because the probability F-statistic of 0.1124 is higher than 5%.

Test for Stability

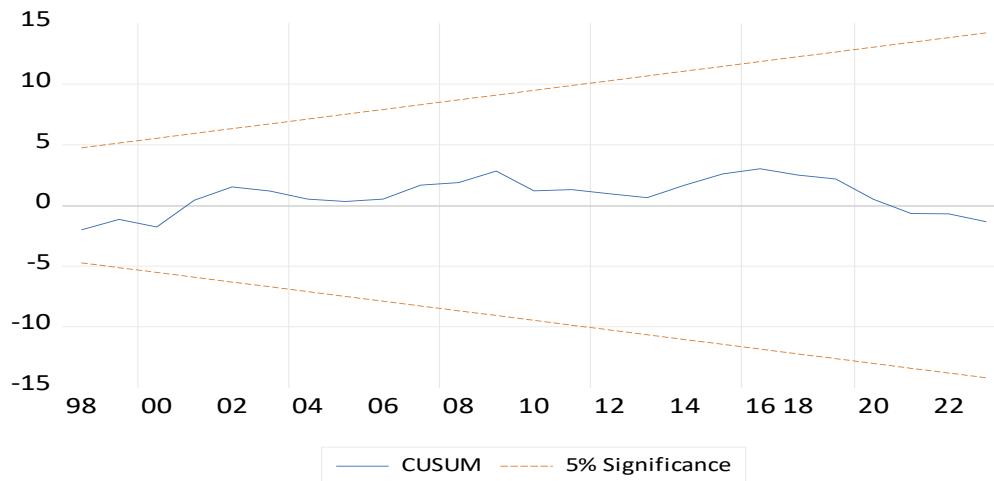


Figure 1: Cumulative Sum (CUSUM) Test

Source: Researchers' compilation using EViews 12

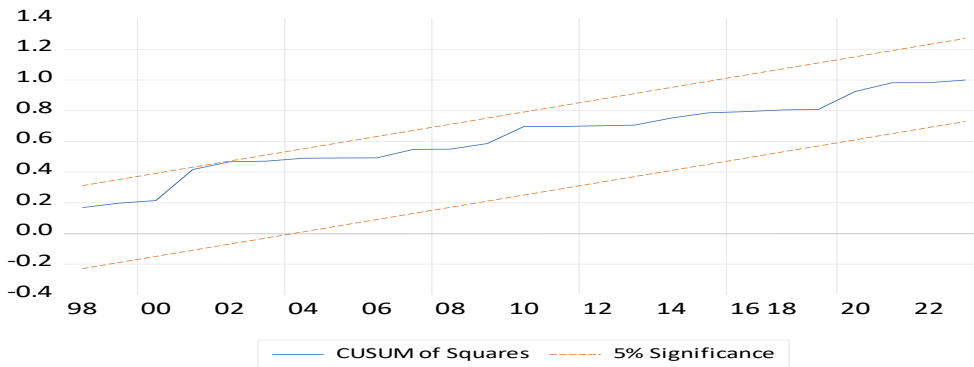


Figure 2: Cumulative Sum of Square (CUSUM of Squares) Test
Source: Researchers' compilation using EViews 12

The results in Figures 1 and 2 suggest that the residuals are stable owing to the fact that the base lines fall within the 5% boundary level.

Discussion of Findings

While financial technology and inclusion may contribute to reducing poverty both in the long and short run, their immediate impacts are quite limited, as evidenced by the positive but statistically negligible effect of FINTEC and FINI on poverty alleviation. This may be because it would take some time for the implementation of fintech and greater financial inclusion to show noticeable advancements in alleviating poverty. The finding is in tandem with that of Andrew (2024), Emara (2023), and Girma and Huseynov (2024), who observed that FinTech plays an important role in poverty reduction.

In addition, the short-term negative effect of financial deepening was due to the fact that many businesses could not access bank loans owing to high interest rates. Similarly, on the part of banks, high non-performing loans and diversion of loans to unproductive businesses limits the banks to further extend loans to economic areas that are productive. The findings support that of Nopiah et al. (2024) and Erondy et al. (2024) who found that CRPS is detrimental to poverty alleviation.

Literacy rate affects poverty alleviation very positively both in the long and short term, as expected. A more literate population often shows greater health awareness, higher economic productivity, and better decision-making. The finding supports Iwedi et al., (2024), and Khaki et al., (2022). On urbanization, the high coefficient would suggest that urban areas are likely to have more access to services, infrastructure, and job opportunities, hence, driving improvements in health, education, and economic conditions toward better living standards. While this conforms to the a priori expectation, it goes in tandem with what Tidjani and Madouri (2024) and Emara (2023) found.

CONCLUSION

This study, however, shows mixed findings on the effect of FINTEC on the reduction of poverty in Nigeria from 1986 to 2024. While FinTech and FINI show positive though insignificant short-term effects, FINI remains significant in the long-term. Financial deepening causes disruptions in alleviating the level of poverty. On the contrary, literacy and urbanization have a strong and direct positive impact, showing the importance of education and urban growth for poverty alleviation. As a result, it is recommended that;

- (i) Increase Fintech access through the growth of mobile money services, digital banking, and internet connectivity, particularly in rural areas, while promoting digital financial literacy to make digital financial services more readily available for use.
- (ii) If financial inclusion and deepening are to have the desired impact on human development, then there must be a strong monitoring and evaluation framework in place by the government. This framework will monitor progress in financial inclusion programs, adoption of digital payment systems, and socio-economic outcomes from these interventions.
- (iii) Encourage a closer collaboration between the private and government sectors by the Nigerian government in developing and deploying FinTech solutions: The initiatives may be through co-financing to increase access to financial services.
- (iv) Increased investment in infrastructure development, such as transport, health, housing, and clean water, should be undertaken by the government to ensure that urbanization leads to improved living standards for all. Particular attention should be paid to slums and informal settlements in order not to create urban poverty.
- (v) The government must increase its investment in education, not merely at the level of primary and secondary schooling but also in adult education and vocational training programs. The curricula for schools must be updated to provide digital literacy training to the students so that they can fit in with modern society.

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