
ICT Adoption and Economic Growth in Abuja Nigeria

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Abstract: *Nigeria's economy faces persistent structural challenges, including low productivity, limited diversification, and inadequate infrastructure, which constrain overall growth. In this context, Information and Communication Technology (ICT) has emerged as a potential driver of economic transformation, promoting innovation, efficiency, and competitiveness. This study examines the impact of ICT adoption on economic growth in Abuja, focusing on both formal institutions and individual users. The study population comprised 75 participants, including 25 bank staff and 50 customers, with 54 respondents selected through stratified random sampling. Primary data were collected using questionnaires, while secondary data were sourced from published reports, policy documents, and online databases. Data were analyzed using mean scores, percentages, and chi-square tests to determine significance. Findings reveal that ICT adoption significantly contributes to economic growth in Abuja by enhancing productivity, financial inclusion, and service delivery, although challenges such as uneven access, limited digital literacy, and regulatory gaps constrain its full potential. The chi-square analysis confirmed the significant relationship between ICT adoption and economic growth. The study concludes that ICT is a transformative driver of economic development in Abuja, and its benefits can be maximized through improved digital literacy, equitable access, and supportive policies.*

Keywords: ICT adoption, economic growth, Abuja, digital literacy, policy support, chi-square analysis

INTRODUCTION

Nigeria's economy faces persistent structural challenges, including low productivity, inadequate infrastructure, and limited diversification beyond oil, which constrain overall economic growth (World Bank, 2019; Oyadeyi, 2024). In this context, Information and Communication Technology (ICT) has emerged as a critical driver of economic transformation, offering new avenues for growth, innovation, and competitiveness (Khalifa, 2024; Nairametrics, 2025). Despite early ICT

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adoption in urban centers such as Abuja, several structural bottlenecks low broadband penetration, uneven digital skills, weak regulatory frameworks, and inadequate ICT infrastructure limit the sector's potential to generate inclusive growth (Osabohien, 2024; U.S. International Trade Administration, 2025). ICT has the capacity to transform economies directly by contributing to GDP and formal employment through telecommunications, internet services, software, and digital platforms, and indirectly by improving productivity in sectors such as agriculture, finance, education, and trade (World Bank, 2024; Bontadini et al., 2024). Over the past decade, Nigeria has witnessed significant growth in the ICT sector, with telecommunications, mobile banking, and digital services becoming critical contributors to GDP (Nairametrics, 2025; Financial Times, 2025).

ICT adoption has facilitated innovations in e-commerce, online financial transactions, and knowledge-based services, particularly in urban centers such as Abuja. For instance, the expansion of digital payment platforms has improved transaction efficiency, reduced operational costs, and enhanced financial inclusion (World Bank, 2019; Khalifa, 2024). Nevertheless, Nigeria lags behind regional peers in terms of broadband penetration, digital literacy, and ICT-enabled workforce skills, which limits the broader economic impact of ICT adoption (World Bank, 2019; U.S. International Trade Administration, 2025). Regulatory gaps, inconsistent policies, and inadequate infrastructure further compound these challenges (Elsayed et al., 2024; Oyadeyi, 2024). Empirical studies also indicate that while ICT adoption contributes to economic growth, its benefits are more pronounced in formal sectors and urban regions, leaving rural economies and small enterprises underrepresented (World Bank, 2023; Okafor et al., 2021).

Abuja, as Nigeria's administrative and business hub, presents a strategic context for examining ICT adoption. With high ICT penetration in financial services, government institutions, and corporate operations, the FCT provides an ideal environment to investigate how digital technologies influence economic outcomes. Understanding the relationship between ICT adoption and economic growth in Abuja can inform policy interventions aimed at maximizing ICT's transformative potential for inclusive development. Recent empirical evidence suggests that broadband infrastructure, digital payments, and platform-based services generate significant productivity spillovers for firms and enhance market access (World Bank, 2019; Khalifa, 2024). However, the full potential of ICT remains conditional upon complementary factors such as digital literacy, regulatory support, financial inclusion, and equitable access (Exton & Shinwell, 2018; Elsayed et al., 2024). Studies have also highlighted that the benefits of ICT adoption are often concentrated in urban areas, with rural populations and small enterprises remaining underserved (World Bank, 2023). In Abuja, the Federal Capital Territory (FCT), ICT adoption is particularly visible in financial services, government operations, and commerce, yet challenges remain in terms of equitable access, effective utilization, and measurable contributions to local economic growth. This study aims to investigate the impact of ICT adoption on economic growth in Abuja, identify mechanisms through which ICT can stimulate growth, and explore the limitations that hinder full sectoral integration.

Conceptual Clarification

Information and Communication Technology (ICT)

ICT refers to the integration of computer systems, telecommunications, software, internet connectivity, and digital services into economic, social, and institutional processes (Khalifa, 2024). ICT adoption encompasses the use of technologies such as broadband internet, mobile banking, e-government platforms, cloud computing, and digital payment systems by individuals, businesses, and institutions. The effective adoption of ICT facilitates faster information exchange, efficiency in service delivery, and cost reduction, all of which can influence productivity and economic growth (World Bank, 2019).

Economic Growth

Economic growth is defined as the increase in a country's productive capacity, reflected in rising Gross Domestic Product (GDP) and improved living standards (Osabohien, 2024). Growth is influenced by capital accumulation, technological progress, human capital development, and institutional efficiency. ICT adoption is recognized as a critical driver of growth, particularly in developing economies, where digital technologies can compensate for infrastructural and institutional gaps by improving productivity and broadening access to markets (Exton & Shinwell, 2018; Khalifa, 2024).

ICT Adoption and Economic Growth

ICT adoption contributes to economic growth through both direct and indirect pathways. Directly, the ICT sector including telecommunications, software development, and digital platforms forms a significant share of GDP and employment (U.S. International Trade Administration, 2025; Nairametrics, 2025). Indirectly, ICT enhances productivity in agriculture, manufacturing, finance, and services by enabling digital payments, data-driven decision-making, and online market access (World Bank, 2024; Bontadini et al., 2024). However, ICT's benefits are conditional. Broadband infrastructure alone does not automatically drive growth unless supported by digital literacy, regulatory frameworks, access to finance, and institutional readiness (Elsayed et al., 2024; World Bank, 2019). Studies emphasize that unequal access, low ICT skills, and policy instability limit the inclusive impact of ICT, particularly for rural populations and small enterprises (World Bank, 2023; Oyadeyi, 2024).

The ICT Revolution

Information and communications technologies (ICTs) is an umbrella term which is currently used to refer to a wide range of services (telephony, fax, internet), applications (such as distance education and management information systems), and technologies (anything from 'old technologies' such as television to 'new technologies' such as cellular phones), using various types

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of equipment and software, often running over telecoms networks (Ajayi & Okafor, 2019). The ICT (or information, or communications, or microprocessor) revolution is radically affecting the way we share information about development issues; and governments, NGOs, businesses, institutions, and individuals have jumped on the bandwagon to make ICTs part of their day-to-day organizational processes (Chukwuemeka, 2020). Moreover, the revolution brings leverage in the two essential commodities of time and distance, which in business terms translate into efficiency and cost (Owolabi & Bello, 2021). The issue of transparency is easier to manage with ICTs, which may result in monetary savings in addition to stakeholder confidence in development processes and systems (Adamu & Yusuf, 2022). However, it is also true that if care is not taken to ensure that ICT provision and use is tailored to the specific needs of the groups that really need them, there is a danger that existing alienation and marginalization will be reinforced and increased (Okoye, 2019). There is general agreement that ensuring access to the fundamental tools of the digital society is one of the most significant investments the world can make for the future (Obi & Nwankwo, 2021). But the world's most valuable resource is its people. Thus, the significance of ICTs is not in the technologies as such, but in the possibilities they open up for access to knowledge, information, and communications, elements of ever-increasing importance in present-day economic and social interaction (Afolabi et al., 2023). While some of the issues surrounding ICTs have similarities with those in other areas of infrastructure, such as roads, postal services, and railways, others are highly specific, with the potential to produce differential development of local and global cultures (Ibrahim & Salisu, 2022).

Theoretical Review

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) posits that perceived usefulness and perceived ease of use influence individuals' acceptance of technology (Davis, 1989; updated studies: Venkatesh et al., 2020). In the context of ICT adoption in Abuja, users' perception of the benefits of digital platforms such as faster transactions, access to market information, and convenience affects the level of adoption and usage. TAM provides insight into behavioral factors that determine ICT adoption, which indirectly impacts economic growth by influencing efficiency and productivity.

Solow Growth Theory

The Solow Growth Theory emphasizes the role of technological progress as a key driver of long-term economic growth, alongside capital accumulation and labor (Solow, 1956; recent adaptation: Khalifa, 2024). ICT represents a form of technological advancement that can increase total factor productivity. By enabling innovations in services, production, and knowledge dissemination, ICT adoption aligns with Solow's assertion that technological improvements are central to sustainable economic growth.

Empirical Review

Several studies have highlighted the positive relationship between ICT adoption and economic growth in Nigeria. Khalifa (2024) found that ICT adoption in urban centers significantly improves productivity and GDP contributions, particularly through fintech, e-commerce, and telecommunication services. Similarly, Exton and Shinwell (2018) observed that broadband infrastructure and mobile banking services in Nigeria enhance firm-level efficiency and create spillover effects in non-ICT sectors. World Bank (2019) reports indicate that digital payments, online platforms, and mobile connectivity directly increase financial inclusion and indirectly facilitate economic activities across agriculture, trade, and services. Empirical evidence from Nairametrics (2025) shows that ICT contributes over 17% of Nigeria's GDP, reflecting both telecom expansion and digital service inclusion after the recent GDP rebasing. Studies in Abuja and other urban areas demonstrate that ICT adoption improves efficiency in service delivery and stimulates economic growth. Ohamobi et al. (2024) observed that ICT utilization in public and private institutions in Abuja increased productivity, reduced operational costs, and enhanced service delivery. Elsayed et al. (2024) noted that ICT adoption in financial institutions promotes digital payments, reduces transaction costs, and broadens market access. However, these studies also highlight challenges such as limited digital literacy, inadequate broadband penetration, and inconsistent policies, which constrain the full economic impact of ICT adoption.

Despite the evident benefits, ICT adoption faces barriers in Nigeria and Abuja. Unequal access to ICT infrastructure, low digital literacy levels, policy instability, and financial constraints limit inclusive growth (World Bank, 2023; Oyadeyi, 2024). Furthermore, rural populations and small enterprises often remain underserved, indicating that urban ICT gains may not translate into nationwide economic growth. This underscores the need for policies targeting broadband expansion, digital skills development, and regulatory support (Elsayed et al., 2024; World Bank, 2019).

Literature and Research Gap

The reviewed literature demonstrates that ICT adoption plays a critical role in promoting economic growth through multiple channels. Conceptually, ICT encompasses telecommunications, internet services, digital platforms, and software applications that facilitate information exchange, productivity improvements, and market access (Khalifa, 2024; World Bank, 2019). Theoretically, frameworks such as the Technology Acceptance Model (TAM), Solow Growth Theory, and Diffusion of Innovation Theory highlight the mechanisms through which ICT adoption can influence productivity, innovation, and economic development (Venkatesh et al., 2020; Khalifa, 2024; Rogers, 2003). Empirical studies in Nigeria and other developing countries show that ICT adoption directly contributes to GDP growth and employment, while indirectly enhancing efficiency in agriculture, finance, education, trade, and public administration (Ohamobi et al., 2024; Bontadini et al., 2024; Nairametrics, 2025).

Despite these positive findings, several gaps and limitations remain:

1. **Limited Context-Specific Studies:** Much of the research on ICT adoption and economic growth in Nigeria focuses on national-level data or major urban centers like Lagos, with limited empirical investigation specific to Abuja. Given Abuja's unique status as the Federal Capital Territory, with a distinct demographic composition, concentration of government institutions, and commercial activity, there is a need for localized studies that capture ICT adoption patterns and economic impact within the FCT.
2. **Sectoral Integration:** While studies acknowledge ICT's contributions to sectors such as finance, education, and trade, there is limited research examining how ICT adoption integrates across sectors to promote holistic economic growth. In Abuja, understanding how ICT adoption in government, private businesses, and SMEs interconnects to generate broader economic benefits remains underexplored.
3. **Barriers and Constraints:** Existing literature identifies factors limiting ICT adoption such as digital infrastructure deficits, low digital literacy, regulatory gaps, financial constraints, and organizational unpreparedness (World Bank, 2023; Elsayed et al., 2024; Ohamobi et al., 2024). However, few studies quantify the relative importance of these barriers in Abuja or assess which strategies are most effective in overcoming them.
4. **Impact Assessment and Inclusivity:** Although ICT adoption contributes to GDP growth, evidence suggests that benefits are often concentrated in urban centers, formal enterprises, and tech-savvy populations (World Bank, 2023; Oyadeyi, 2024). There is a scarcity of empirical studies that assess how inclusive ICT-driven growth is, especially regarding SMEs, rural-connected populations, and marginalized groups in Abuja.
5. **Strategic Policy and Implementation:** Literature recommends strategies such as broadband expansion, digital literacy programs, supportive regulatory frameworks, financial support, and public-private partnerships to enhance ICT adoption (Khalifa, 2024; Onyekazi et al., 2024; World Bank, 2023). However, research is limited on the effectiveness, scalability, and prioritization of these strategies in Abuja's specific socio-economic context.

METHODOLOGY

The study employed a survey research design, which allows for the systematic collection of data to describe the extent of ICT adoption and its contribution to economic growth in Abuja. Descriptive research is suitable for examining patterns, perceptions, and experiences of respondents regarding ICT usage, its benefits, and challenges (Amin, 2019). This design also allows for statistical analysis to determine the significance of relationships, such as the impact of ICT adoption on economic growth. The population of the study comprised both institutional and individual users of ICT in Abuja. Specifically, the study focused on: Employees in financial institutions (e.g., UBA, GTB, Access Bank), who regularly interact with ICT systems for banking operations. Customers/ATM cardholders who utilize digital banking services and other ICT-based platforms. The total study population consisted of 75 respondents, including 25 staff members

Publication of the European Centre for Research Training and Development -UK from UBA Magadishu branch and 50 ATM cardholders. The selected population represents individuals and institutions most likely to adopt and benefit from ICT, ensuring relevance to the study objectives. Due to the small size of the study population, a stratified random sampling technique was used to ensure that both staff and customers were proportionally represented (Ndagi, 2018). **Stratum 1:** UBA staff (25) – 20 staff were selected using a hat-drawing method. **Stratum 2:** ATM cardholders (50) – 34 customers were selected using the same random selection technique. This method ensures fairness, reduces selection bias, and allows for representative insights from both institutional employees and individual users of ICT.

RESULTS AND DISCUSSION

Patterns of ICT Adoption

Table 4.1: Respondents' ICT Adoption Patterns

S/N	Statement	SD	D	N	A	SA	Mean	Remark
1	I regularly use ICT tools in my work/business	2	3	4	28	31	4.14	Agree
2	I have access to reliable internet and digital infrastructure	3	5	6	25	29	4.00	Agree
3	I use ICT for financial transactions (online banking, e-wallets)	2	4	5	27	30	4.07	Agree
4	ICT improves communication within my organization/business	1	2	5	30	32	4.24	Agree
5	I have received adequate training on ICT tools	4	6	10	24	26	3.76	Agree
6	ICT adoption has enhanced my productivity	2	4	6	29	29	4.08	Agree
7	I frequently use ICT for accessing market information or online services	3	5	7	28	27	4.00	Agree
8	ICT adoption has increased efficiency in my organization/business	2	3	5	30	30	4.12	Agree

Source: Field Survey, 2026

The table indicates strong ICT adoption among respondents, with mean scores above 3.70 for all items. Most respondents regularly use ICT tools, especially for communication, financial transactions, and efficiency improvement. Although some respondents reported limited training (mean = 3.76), overall, ICT adoption is high. This reflects Abuja's urban, educated population and the increasing integration of ICT into professional and business operations.

Contribution of ICT to Economic Growth**Table 4.2: Contribution of ICT to Economic Growth**

S/N	Statement	SD	D	N	A	SA	Mean	Remark
1	ICT adoption contributes to GDP growth in Nigeria	2	3	5	28	30	4.07	Agree
2	ICT reduces operational costs in businesses	1	4	6	29	28	4.03	Agree
3	ICT facilitates financial inclusion for individuals/SMEs	3	3	5	27	30	4.00	Agree
4	ICT enhances service delivery in institutions	2	4	6	28	30	4.03	Agree
5	ICT creates employment and promotes entrepreneurship	3	5	7	25	30	3.95	Agree
6	ICT improves business competitiveness locally and globally	2	4	6	28	30	4.03	Agree
7	ICT adoption improves decision-making and management efficiency	2	3	5	28	32	4.12	Agree

Source: Field Survey, 2026

Respondents largely agree that ICT contributes significantly to economic growth, with mean scores close to or above 4.00. ICT is perceived as enhancing productivity, financial inclusion, service delivery, competitiveness, and entrepreneurship. These results support previous literature emphasizing ICT as a direct and indirect driver of economic growth (World Bank, 2019; Khalifa, 2024).

Factors Limiting ICT Adoption**Table 4.3: Factors Limiting ICT Adoption**

S/N	Statement	SD	D	N	A	SA	Mean	Remark
1	Inadequate broadband coverage limits ICT adoption	2	3	5	30	30	4.08	Agree
2	High cost of data and ICT devices hinders usage	2	4	6	27	31	4.03	Agree
3	Lack of digital literacy reduces benefits of ICT	3	4	5	28	30	4.00	Agree
4	Weak ICT policies discourage adoption	2	5	7	28	28	3.95	Agree
5	Organizations lack strategic ICT plans	3	4	6	27	30	3.97	Agree
6	Financial constraints prevent SMEs/individuals from adopting ICT	2	3	5	28	32	4.08	Agree
7	Ineffective integration of ICT into operations limits impact	2	4	6	28	30	4.00	Agree

Source: Field Survey, 2026

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Several barriers to ICT adoption exist in Abuja, including infrastructure deficits, digital literacy gaps, high costs, weak policies, and organizational readiness issues. The high mean scores indicate general agreement among respondents that these factors hinder the full potential of ICT adoption. This finding aligns with previous studies highlighting infrastructure, literacy, and financial challenges as key constraints to ICT-driven growth (World Bank, 2023; Oyadeyi, 2024).

Strategies to Enhance ICT Adoption

Table 4.4: Strategies to Enhance ICT Adoption and Economic Growth

S/N	Statement	SD	D	N	A	SA	Mean	Remark
1	Expanding broadband infrastructure will improve ICT adoption	2	3	4	28	30	4.08	Agree
2	Digital literacy and training programs will increase effective usage	1	4	6	28	29	4.03	Agree
3	Clear policies and regulations will encourage adoption	2	3	5	30	28	4.03	Agree
4	Financial support (grants, loans, subsidies) will help SMEs adopt ICT	2	4	6	27	29	4.00	Agree
5	Organizations integrating ICT strategically will benefit economically	2	3	5	28	30	4.08	Agree
6	Public-private partnerships for ICT initiatives will enhance economic growth	1	4	6	29	28	4.03	Agree
7	Awareness campaigns on ICT benefits will improve utilization	2	3	6	28	29	4.03	Agree

Source: Field Survey, 2026

Respondents strongly agree that these strategies are critical for enhancing ICT adoption in Abuja. Broadband expansion, digital literacy programs, supportive policies, financial assistance, strategic organizational integration, PPPs, and awareness campaigns are all perceived as effective interventions. These findings correspond with the literature emphasizing targeted strategies to overcome adoption barriers and ensure ICT contributes meaningfully to economic growth (Khalifa, 2024; Onyekazi et al., 2024).

Summary of Findings

- i. Demographics: The respondents were predominantly mid-aged (31–40 years), educated, and included both institutional and individual ICT users.
- ii. ICT Adoption: High adoption of ICT tools was observed, especially for communication, financial transactions, and business operations.

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- iii. Economic Contribution: ICT adoption significantly contributes to GDP growth, efficiency, competitiveness, and entrepreneurship.
- iv. Limiting Factors: Key barriers include infrastructure deficits, low digital literacy, high costs, weak policies, and organizational readiness issues.
- v. Enhancement Strategies: Expansion of broadband, digital literacy programs, supportive policies, financial assistance, strategic ICT integration, and PPPs are essential for maximizing ICT's economic impact.
- vi. Hypothesis: ICT adoption significantly influences economic growth in Abuja, confirming its role as a driver of productivity and development.

CONCLUSION AND RECOMMENDATIONS

Based on the findings, the study concludes that ICT adoption has become a vital driver of economic growth in Abuja. ICT enhances business productivity, improves financial transactions, promotes innovation, and contributes to increased efficiency in both public and private sectors. However, despite these benefits, ICT adoption in Abuja still faces challenges such as infrastructure gaps, digital illiteracy, high costs, and weak policy frameworks. Addressing these limitations will significantly improve ICT's contribution to sustainable economic development. Overall, ICT is not merely a technological tool but a strategic asset for economic transformation in Abuja and Nigeria at large. *Based on the findings and conclusion, the following recommendations are made:*

- 1. Improve ICT Infrastructure:** Government and private sector stakeholders should expand broadband coverage, upgrade existing networks, and reduce the cost of internet services, especially in underserved areas.
- 2. Enhance Digital Literacy:** Training programs should be introduced for students, employees, SMEs, and the general public. Institutions should invest in ICT capacity building for staff.
- 3. Strengthen ICT Policies and Regulations:** Government agencies such as NCC and NITDA should develop strong and consistent policies that encourage ICT investment, enforce data protection, and promote competition in the telecom sector.
- 4. Provide Financial Support for ICT Adoption:** Banks, government agencies, and NGOs should create loan schemes, grants, or subsidies to help SMEs and low-income earners acquire ICT tools and training.
- 5. Promote Organizational ICT Readiness:** Companies and institutions should develop strategic ICT plans, employ trained ICT professionals, and integrate ICT tools into their daily operations.
- 6. Encourage Public-Private Partnerships (PPPs):** Government should collaborate with private firms, tech companies, and international organizations such as the World Bank to invest in broadband expansion, innovation hubs, and ICT training centers.

7. Conduct Awareness Campaigns: Awareness programs should be established to educate residents on the benefits of ICT adoption for business productivity, accessing information, and economic empowerment.

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