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EFFECT OF DIGITAL GOVERNANCE ON SUSTAINABLE ECONOMIC DEVELOPMENT IN NIGERIA

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Abstract

This study examined the effect of Digital Governance on Sustainable Economic Development in Nigeria. The specific objectives are to; examine the effect of Digital infrastructure on Sustainable Economic Development in Nigeria, and evaluate the effect of Cybersecurity on Sustainable Economic Development in Nigeria. A survey research design was used for the study where a primary source of data was adopted for the study. A structured questionnaire designed with a five-point Likert scale design was used to collect the data. Descriptive statistics, which comprise basic percentages, the mean, and the standard deviation of the measurement items, were the statistical tools employed for the data analysis. To answer the hypothesis as stated in this study, we continued with chi-square analysis. The study revealed that Digital Infrastructure has a significant positive effect on Sustainable Economic Development with a probability value of 0.000 ($\chi 2 = 13.71$, $p = 0.001$), also Cybersecurity has a significant positive effect on Sustainable Economic Development a probability value of 0.000 ($\chi 2=42.81$; P-value=0.000) in Nigeria. The study concluded that Digital Governance has a significant positive effect on Sustainable Economic Development in Nigeria. The study recommended among others an increase in investment in broadband infrastructure to ensure widespread and affordable internet access, particularly in rural and underserved areas. This will facilitate greater participation in the digital economy and bridge the digital divide.

1.1 Introduction

Digital governance is the application of digital technology to improve the efficacy, efficiency, and transparency of government processes and the provision of public services. It is increasingly recognized as a key component in fostering sustainable economic growth (Seemma et al, 2018). In Nigeria, a country with a fast-growing population and a complex socioeconomic environment, the integration of digital governance holds significant promise for boosting economic growth and development (Twizeyimana & Andersson, 2019). The implementation of digital transformation in governance institutions has the potential to enhance citizen engagement, reduce corruption, optimize administrative processes, and optimize service delivery. Nigeria needs digital governance to

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overcome significant challenges and take advantage of new opportunities as it moves toward sustainable economic development (UN, 2015).

The Nigerian government is putting various digital technology initiatives into action to improve the transparency and responsiveness of the public sector. Among these initiatives are digital identity systems, the implementation of e-government platforms, and the use of ICT (information and communication technology) in public administration (Kumar et al. 2017). These programs offer several benefits, such as the ability to reduce operational costs, streamline the delivery of government services, and create an environment that inspires innovation and investment. Digital governance may also enhance inclusivity and equity in Nigeria's economic development. Bridging the digital divide ensures that marginalized communities have access to essential services and job opportunities (Twizeyimana & Andersson, 2019).

This inclusive approach is critical to addressing regional disparities and advancing more equal economic growth across the country. There are challenges associated with the transition to digital governance, nevertheless. Numerous issues exist, such as inadequate infrastructure, differences in digital literacy, cybersecurity threats, and resistance to change in governmental institutions (Twizeyimana & Andersson, 2019). Collaboration between the public, corporate, and civil society sectors is necessary to address these problems and build a robust digital ecosystem. The sustainable economic development of Nigeria is significantly impacted by digital governance. It could lead to changes in governance practices, better public service delivery, and the development of a dynamic, inclusive economy (Dwivedi and Bhattacharya 2017). By utilizing digital technologies, Nigeria might ensure equitable and inclusive economic growth and accelerate the achievement of sustainable development goals.

1.2 Statement of the Problem

Although Nigeria has worked hard to include digital governance, the anticipated advantages of sustainable economic development have not yet been realized. Digital governance initiatives have the potential to enhance operational processes, enhance service delivery, and foster transparency. However, several noteworthy impediments impede their effectiveness in fostering sustainable economic growth. These challenges include a weak digital infrastructure, broad cybersecurity threats, low levels of digital literacy, and institutional resistance to change. Furthermore, because impoverished people usually lack access to the information and resources needed to take advantage of the digital government, Nigeria's digital divide exacerbates socioeconomic inequality.

The lack of comprehensive and inclusive digital policy hinders the equitable distribution of economic advantages, hence negatively impacting rural and neglected populations. In addition to these difficulties, putting in place digital governance systems also requires overcoming bureaucratic inertia, corruption, and insufficient funding for ICT infrastructure. All of these issues combined reduce the potential of digital governance to promote sustainable economic development in Nigeria. Therefore, this research aims to assess critically the impact of digital governance on Nigeria's sustainable economic development, identifying key challenges and proposing strategic adjustments to enhance the efficacy of digital governance initiatives. To properly leverage digital technology in supporting fair, open, and long-term economic development in Nigeria, these challenges need to be resolved.

1.3 Objective of the Study

The main objective of the study is to examine the effect of Digital Governance on Sustainable Economic Development in Nigeria. The specific objectives are to;

i. Examine the effect of Digital infrastructure on Sustainable Economic Development in Nigeria.
ii. Evaluate the effect of Cybersecurity on Sustainable Economic Development in Nigeria.

1.4 Hypotheses of the Statement

i. Digital infrastructure has no significant effect on Sustainable Economic Development in Nigeria.
ii. Cybersecurity has no significant effect on Sustainable Economic Development in Nigeria.

Review of Related Literature

2.1 Conceptual Review

Digital Governance

The legal duty of properly elected government bodies to exercise authority over residents within their borders, including the ability to impose regulations, define policies, establish goals, monitor performance, and use police power, is known as governance. Digital governance, as defined by Dwivedi and Bhattacharya (2017), is the application of digital technology to enhance public administration and citizen participation. As governments everywhere attempt to use technology to improve the efficiency, transparency, and accountability of their policies and services, this concept has received a lot of attention lately (Kumar et al., 2017). The use of information technology in government operations to improve public service delivery to citizens and other government service users, individuals, and organizations is known as digital governance (Twizeyimana & Andersson, 2019). E-government, or the delivery of governmental services through the Internet, is a component of digital governance (OECD, 2003). According to Kumar et al. (2017), this includes services like online tax filing, license renewal, and healthcare service access portals. Dwivedi and Bhattacharya (2017) claim that by providing user-friendly digital platforms, e-government aims to reduce bureaucratic barriers and increase citizen comfort. By allowing citizens to participate in the policy-making process, digital engagement promotes a more inclusive and responsive governance structure (Ubaldi, 2013). Open data, or the sharing of publicly available information in machine-readable formats to promote citizen access and reuse, is another crucial component of digital governance (Ubaldi, 2013).

Open data initiatives promote accountability, transparency, and creativity by enabling citizens to view and utilize government data (Dwivedi & Bhattacharya, 2017). The European Union (2014) asserts that secure online authentication and effective online identity verification are fundamental elements of digital governance. Digital governance comes with a variety of benefits. Process automation and less paperwork result in higher productivity and efficiency, claim Kumar et al. (2017). Digital governance, according to Dwivedi and Bhattacharya (2017), increases accountability and transparency by facilitating easier access to information and promoting citizen participation. Making inclusive decisions also benefits from combining multiple points of view through digital involvement (Macintosh, 2004).

There are still many challenges associated with implementing digital governance, nevertheless. The digital divide and unequal access to technology are barriers to inclusive digital governance initiatives (OECD, 2003). Cybersecurity risks and data privacy issues need to be properly evaluated and forcefully handled if the integrity of digital governance systems is to be preserved (EU, 2014). Digital governance holds great potential to transform public government and citizen participation. Governments can use digital technologies to improve transparency, accountability, and efficiency. However, for digital governance to be successful, its flaws and challenges must be addressed.

Digital infrastructure

According to Kumar et al. (2017), digital infrastructures are the underlying digital systems, networks, and technologies that facilitate the provision of digital services and the operation of digital societies. According to Dwivedi and Bhattacharya (2017), these infrastructures are essential to the functioning of the digital economy, government, and social interactions. An interdisciplinary examination of the organizational, social, economic, and environmental factors influencing the information technology (IT) that surrounds these networks is provided by Digital Infrastructures. Digital infrastructure is the foundation of any networked business. People become globally linked, prosperous, and transforming as a result of it.

Network infrastructures, data infrastructures, software infrastructures, and cybersecurity infrastructures are among the components that make up digital infrastructures (Kumar et al., 2017). Broadband services, internet access, and telecommunication networks are examples of network infrastructures (OECD, 2011). Data centers, cloud computing, and data storage systems are all included in data infrastructures (Ubaldi, 2013). Operating systems, apps, and software frameworks are examples of software infrastructures (Kumar et al., 2017). Firewalls, intrusion detection systems, and encryption technologies make up cybersecurity infrastructures (EU, 2014). The capacity of digital infrastructures to improve productivity, efficiency, and innovation makes them crucial (Kumar et al., 2017). They make it easier to supply digital services including e-health, e-government, and e-commerce (Dwivedi & Bhattacharya, 2017).

According to the OECD (2011), digital infrastructures facilitate the growth of digital economies and societies by granting citizens the ability to access information, engage in online activities, and conduct digital transactions. But there are drawbacks to digital infrastructures as well, like interoperability problems, cybersecurity risks, and data breaches (EU, 2014). According to OECD (2011), the inclusion of digital infrastructures is impeded by the digital divide and uneven access to digital technology. Significant risks also arise from reliance on vital infrastructure and the possibility of systemic failures (Dwivedi & Bhattacharya, 2017). For digital economies and societies to function, digital infrastructures are necessary. While tackling the obstacles and constraints, investing in strong digital infrastructures is essential for improving productivity, creativity, and inclusivity.

Cyber security

Cybersecurity is the umbrella term covering procedures, methods, and practices used to guard against unauthorized access to, use of, disclosure of, interruption of, alteration of, or destruction of digital data, networks, and systems (Kumar et al., 2017). As society depends more and more on digital technologies and the internet, this idea has grown in significance (OECD, 2011). Ransomware, malware, phishing, hacking, and distributed denial-of-service (DDoS) attacks are examples of cyber security concerns (EU, 2014). Cybersecurity includes protecting data availability and integrity as well as confidentiality and privacy, all of which are essential for the standard and safety of healthcare. According to Dwivedi and Bhattacharya (2017), these risks have the potential to compromise sensitive information, interfere with vital infrastructure, and harm social and economic well-being. Another tactic that's typically described in public papers is cyber-security, which aims to protect an organization's or user's online environment. It oversees the collection of methods used to prevent unwanted access to networks, software, and data integrity. It can also be known as information technology security and refers to the collection of technologies and procedures (Seemma et al, 2018). Over the past ten years, cyber-security has grown in importance in the IT industry. Everyone in the modern world is dealing with a great deal of issues related to cybercrime. Today, the infrastructure with the quickest growth is the Internet. Modern technology is transforming humanity through the development of numerous new technologies.

But because we can't effectively protect our personal information thanks to this new technology, the number of cybercrimes is rising sharply every day. Since most business and personal transactions take place online, it's critical to have a specialist who can maintain superior security standards, improve transparency for all parties, and ensure safer transactions. Cybersecurity is thus the most recent problem. Technological, administrative, and physical controls are all necessary for effective cyber security measures (Kumar et al., 2017). Firewalls, intrusion detection systems, and encryption technologies are examples of technical controls (EU, 2014). Policies, practices, and training initiatives are all included in administrative controls (Dwivedi & Bhattacharya, 2017). Secure data centers and access restrictions are examples of physical controls (Kumar et al., 2017).

There are several reasons why cyber security is essential. It guards confidential data and deters identity theft (OECD, 2011). According to Kumar et al. (2017), it also guarantees the dependability and integrity of digital

systems and networks. Cybersecurity also protects vital infrastructure and averts large financial losses (EU, 2014). Cybersecurity can be used to mitigate risk and help stop identity theft, data breaches, and cyberattacks. A company is more capable of thwarting significant attacks when it possesses a robust network security awareness and an efficient incident response plan. Nonetheless, there are still issues with putting into practice efficient cyber-security measures. Vulnerabilities arise from the complexity of digital systems and networks (Dwivedi & Bhattacharya, 2017).

Effective cyber-security practices are hampered by users' lack of understanding of and training in cyber-security (Kumar et al., 2017). Furthermore, because cyber security risks are constantly changing, cyber security measures must also be updated and innovative (EU, 2014). In the current digital era, cyber security is an essential idea. It guards private data, guarantees the dependability of electronic systems, and averts large financial losses. Effective cyber-security procedures include addressing the obstacles and constraints related to cyber-security.

Sustainable Economic Development

The process of maximizing the capacity to meet human needs both now and in the future through coordinated and harmonized resource exploitation, investment direction, technology development direction, and institutional change or reform is known as sustainable economic development. A development strategy that strikes a balance between economic growth and social and environmental concerns is referred to as sustainable economic development. Sustainable economic development aids in the construction of an economic foundation that concurrently raises living standards lowers income disparities, boosts the local economy's environmental performance, and adds new jobs and enterprises to the community. It seeks to satisfy current needs without endangering the capacity of future generations to satisfy their own needs (WCED, 1987).

Three components are included in the notion of sustainable economic development: social, environmental, and economic (UN, 2015). Producing growth, jobs, and revenue is part of the economic component (UN, 2015). Promoting fairness, lowering poverty, and improving human well-being are the main goals of the social dimension (UN, 2015). Protecting the environment, cutting pollution, and conserving natural resources are all part of the environmental component (UN, 2015). For several reasons, sustainable economic development is essential. It safeguards the environment while fostering economic progress. By lowering inequality and poverty, it enhances human well-being. Additionally, it minimizes waste and pollution by ensuring resource conservation and effective usage (UN, 2015). There are obstacles in the way of attaining sustainable economic development, nevertheless. It necessitates striking a balance between social and environmental concerns and economic progress (WCED, 1987).

Initiatives for sustainable economic development benefit an area in several ways. However, they also pose difficulties for a conventional economic development process because they call for high degrees of coordination and integration across conventional "silos." Concerns including resource depletion, social injustice, and climate change also need to be addressed (UN, 2015). To ensure a successful future, sustainable economic development is important. It promotes fairness, lowers poverty, and conserves natural resources by striking a balance between economic growth and social and environmental concerns.

2.2 Theoretical Framework

Digital Governance Theory

Dwivedi and Bhattacharya (2017) introduced the Digital Governance theory, a framework that investigates the interplay between digital technologies and public governance. It offers an all-encompassing comprehension of the possible advantages and obstacles of digital governance in advancing sustainable development. According to the notion, digital governance may enhance citizen participation in government processes, accountability, and transparency, all of which can contribute to better development outcomes. Digital governance, according to

Dwivedi and Bhattacharya (2017), is the application of digital technology to improve public governance and citizen participation. Three fundamental elements form the basis of the theory: digital engagement, digital services, and digital infrastructure. According to this theory, there are a number of advantages to digital governance, such as increased efficiency, better decision-making, increased transparency, and increased citizen participation.

2.3 Empirical Review

African Development Bank (2022) conducted a study on the effects of digital infrastructure and sustainable economic development using evidence from 20 African countries. With an emphasis on economic growth, the alleviation of poverty, and environmental sustainability, the study attempts to look into how digital infrastructure affects sustainable economic development in South Africa, Nigeria, and Egypt. Data from 2010 to 2020 were used in the panel data regression analysis investigation. The findings show that digital infrastructure significantly and favorably influences Africa's ability to expand economically sustainably.

Kanamugire (2022) conducted a study on the impact of cyber security on sustainable economic development in 30 developing countries including Nigeria, Brazil, and Indonesia. With an emphasis on economic growth, poverty reduction, and environmental sustainability in several developing nations, the study attempts to ascertain how cyber security affects sustainable economic development in these nations. For this study, cross-sectional data analysis was employed. The findings show that cybersecurity has a major and positive influence on the sustainable economic development of emerging nations.

Grienberger (2022) conducted a study on cybersecurity and sustainable economic development in the United States, Germany, and Japan. Investigating the connection between cyber security and sustainable economic development in high-income countries, the study focuses on innovation, economic growth, and environmental sustainability. Longitudinal data analysis was used for this investigation. The results show that cyber security has a positive and considerable impact on high-income countries' capacity to develop their economies sustainably.

Lee et al (2022) conducted a study on the impact of digital infrastructure on sustainable economic development in Asia. With an emphasis on economic growth, innovation, and environmental sustainability, the project intends to investigate the relationship between digital infrastructure and sustainable economic development in 15 Asian nations, including China, India, and Japan. This study used a meta-analysis and systematic review of thirty empirical papers that were published between 2015 and 2022. The findings demonstrated the favorable and noteworthy influence of digital infrastructure on Asia's sustainable economic development. Additionally, a moderate to substantial effect size ($r = 0.45$) between digital infrastructure and outcomes related to sustainable economic development is shown by the meta-analysis.

3. Methodology

The study's target group was mostly made up of personnel, staff, or workers who work for the governmental organizations that are the subject of the research, such as the civil service and government parastatals in all categories. A survey research design was used for the study. 156 employees and staff members from twelve (12) organizations in southeast Nigeria made up the study's sample size. Cost factors and the fact that this kind of study doesn't need to be precise played a role in the choice of sample size. It was proven by Cbstis (1972) that the results would be nearly the same regardless of sample size. Owing to the scope of the research, data was gathered via a structured questionnaire. The researcher gave copies of the questionnaire to each respondent in person. There were twenty-one items on the questionnaire. In the chosen organization in southeast Nigeria, 156 questionnaires were issued; 134 of them were returned, representing an 85.9% return rate. A Likert scale was used to measure the study's variables. A five-point Likert scale, ranging from (1) strongly agree to (5) strongly disagree, was used to rate each item. The effect of Digital Governance on Sustainable Economic Development in Nigeria is reflected

in this construct. Descriptive statistics, which comprise basic percentages, the mean, and the standard deviation of the measurement items, were the statistical tools employed for the data analysis. To answer the hypothesis as stated in this study, we continued with chi-square analysis.

4. Result and Discussion

The presentation and analysis of the data collected for this study are covered in this part. The different study aims present and discuss the study's findings. The outcomes of the goals and the hypothesis test are also included in this section. To show and examine the collected data, tables and other common statistical methods like chi-square analysis and descriptive statistics were also used. Furthermore, brief explanations are included in tables to enhance understanding and lucidity. For this study, SPSS 28.0 was utilized for data analysis.

Demographic Presentation and Descriptive Statistics

The profile of the survey respondents is shown using Table 1 below, and the tables, percentages, mean, and standard deviations following illustrate this;

Table 1: Demographic Profile of the Respondents (n = 115)

Characteristics	Category	Frequency	Percentage
Gender	Male	83	62%
	Female	51	38%
Age	18-24	17	13%
	25-34	30	22%
	35-44	44	33%
	45-54	33	25%
	>55	10	7%
Department	Audit	43	32%
	Marketing/Management	70	52%
	Human Resource	21	16%
Experience	< 2 years	28	21%
	2-5 years	44	33%
	6-9 years	35	26%
	>10 year	27	20%
Academic Qualification	PhD	09	6%
	M.Sc.	47	35%
	B.Sc./HND	75	56%
	Secondary	03	2%

Of the research participants, 38% were female (51), and 62% were male (83). Males made up a larger proportion of the research participants than females, which may be explained by the fact that many men are employed by the chosen firms in southeast Nigeria. The age group comprising the majority of participants, which is roughly 33% (44), is followed by the second age group, which is approximately 25% (33) of the respondents and is between the ages of 45 and 54. Roughly 22% (30) of the respondents were participants under the age range of 25 to 34.

18 to 24-year-olds made up the fourth age group, which made up around 13% (17) of the sample. Ultimately, around 7% (10) of the sample consisted of group members who were older than 55. As may be observed, most of the employees fall between the 35–44 age range. With roughly 52% (70), 32% (43) from the audit department, and 16% (21) from the human resource department, the majority of research participants were from the marketing/management department. The study included a greater number of participants from public sector marketing and management departments. About 33% of participants had experience ranging from two to five years, which makes up the majority of the group (44).

The second group, which makes up about 26% (35) of the respondents, has experience ranging from six to nine years. roughly 21% (28) of the participants belonged to the third category, which had less than two years of experience, and roughly 20% (27) of the respondents had more than ten years of work experience. It should be mentioned that the majority of the employees have two to five years of job experience. B.Sc./HND was held by nearly 56% of participants (75). A master's degree certificate was held by about 35% of participants (47). Nine or roughly 6% of the respondents belonged to the third category of participants, who were PhD holders. At last, 2% (3) of the workforce in the fourth group of employees held secondary school diplomas.

Reliability Test

The initial step in ensuring proper analysis of the quantitative result was testing the reliability of data from the questionnaire. One test, the Cronbach's alpha test, was used at this point. The analysis advances to step 2, where the most suitable statistical tests were run, using this test.

Table 2: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha based on standardized Items
0.814	0.814

The effect of Digital Governance on Sustainable Economic Development in Nigeria is measured by two things in the above table; the result of Cronbach's alpha is >0.7, indicating adequate internal reliability. As a result, in our instance, it is 0.814, leading us to conclude that the study's instruments are trustworthy.

Table 3: Does Digital Infrastructure affect Sustainable Economic Development in Nigeria?

	Measurement item	**SA (%)**	**A (%)**	**UN (%)**	**D (%)**	**SD (%)**
1	Our operations now have fewer manual errors thanks to automation.	86 (64%)	26 (19%)	02 (1%)	11 (8%)	09 (7%)
2	Our organization's decision-making process is now moving more quickly thanks to automation.	53 (40%)	47 (35%)	09 (7%)	15 (11%)	10 (7%)
3	In our company, employees have adapted to the usage of automated technologies quite effectively.	66 (49%)	43 (32%)	05 (4%)	08 (6%)	12 (9%)
4	In our organization, the automated systems that have been trained for and supported have worked well.	48 (36%)	71 (53%)	06 (5%)	04 (3%)	05 (4%)
5	After introducing automation, our company's productivity has increased.	40 (30%)	69 (51%)	14 (10%)	05 (4%)	06 (5%)

Source: Field survey 2024

According to Table 3, A significant majority of respondents (83%) either strongly agree (64%) or agree (19%) with the statement "The use of Digital infrastructure has reduced manual errors in our operations," the survey results for the first measurement item. This indicates that there is a generally positive perception of Digital infrastructure's effectiveness in reducing manual errors. Merely 1% of the respondents expressed indecision, indicating that the majority of participants had well-defined beliefs. A smaller percentage (15%) disagrees (8%) or disagrees strongly (7%) with the assertion, indicating some doubt or varying opinions about the contribution of Digital infrastructure to operational error reduction.

The majority of survey participants (75%) had a favorable opinion of the influence of Digital infrastructure on Sustainable Economic Development on efficiency, strongly agreeing or agreeing that Digital infrastructure has accelerated decision-making inside their firm. Nonetheless, a sizeable minority (18%) disagreed, was unsure, or strongly disagreed with this statement, indicating varying perspectives or experiences with Digital infrastructure's

ability to facilitate decision-making. Additional investigation into these opposing viewpoints can provide insightful information about the variations in the ways that Digital infrastructure is viewed and applied in the context of organizations.

The results of the third assessment item show that a sizable majority of respondents—81% of the total—strongly agree or agree that their staff has done a good job of adjusting to the usage of Digital infrastructure in their workplaces. The good perception indicates that employees have a high degree of comfort and support for Digital infrastructure. Nonetheless, a small portion (4%) is still unsure, suggesting that further information or experience is required. However, 15% of respondents disagreed or strongly disagreed with the statement, indicating that there is a minority that may be resistant to Digital infrastructure systems or have unfavorable impressions of them. Though the majority's perspective is generally favorable, it is imperative to comprehend and attend to the apprehensions of the minority to successfully integrate and employ Digital infrastructure methods within the company.

Regarding the fourth assessment item, the survey findings show that a sizable majority of participants—representing 89% of the total—strongly agree or agree that their organization's Digital infrastructure system assistance and training have been successful. Employee satisfaction with the assistance and training they receive in using Digital infrastructure is reflected in this favorable opinion. A little portion (5%) is still unsure, indicating that training programs need to be improved or more clarified. Conversely, a minority of respondents—7 percent, to be exact—expressed dissatisfaction or severe disagreement with the statement regarding the efficacy of the training and support.

The results show that employees have a generally positive opinion of the training and support they receive from Digital infrastructure systems, however, there is always an opportunity for focused improvements to address any issues and guarantee that the program continues to be effective in assisting staff members in using Digital infrastructure systems. In conclusion, regarding the fifth measurement question, the results of the survey indicate that a significant proportion of participants, comprising 81% of the sample, strongly agree or agree that their business has experienced a rise in productivity after the use of Digital infrastructure. This favorable opinion reflects the consensus among workers that digital infrastructure has raised productivity levels. Nonetheless, a significant proportion (10%) is still unsure, suggesting that further information or clarification is required regarding the precise effects of Digital infrastructure on Sustainable Economic Development. Conversely, 9% of participants indicated dissent or severe disagreement, indicating a minority opinion that digital infrastructure has not improved productivity or may have even had the opposite effect. These findings highlight the significance of ongoing assessment, dialogue, and resolution of any issues to guarantee a thorough grasp of the true effect of digital infrastructure on Sustainable economic development efficiency.

Table 4: What is the effect of Cybersecurity on Sustainable Economic Development in Nigeria?

	Measurement Item	**SA (%)**	**A (%)**	**UN (%)**	**D (%)**	**SD (%)**
6	Workers receive frequent training on best practices and protocols for data security.	63 (47%)	47 (35%)	08 (6%)	05 (4%)	11 (8%)
7	In our organization, access controls and encryption are used efficiently.	54 (40%)	56 (42%)	01 (.7%)	13 (10%)	10 (7%)
8	The industry's favorable reputation has been sustained in part via organizational data security.	50 (37%)	43 (32%)	13 (10%)	17 (13%)	11 (8%)
9	Within our organization, data security procedures have improved the decision-making processes.	48 (36%)	67 (50%)	===	09 (7%)	10 (8%)
10	Over time, cost savings have been realized from the investment in data protection.	29 (22%)	86 (64%)	===	09 (7%)	10 (8%)

Source: Field survey 2024

Table 4 presents the results of the sixth measurement item, which shows that 82% of the total respondents strongly agree or agree that personnel in the firm receive frequent training on data security policies and best practices. This favorable impression is a reflection of the firm conviction held by staff members that cybersecurity training is a top priority for the company. Six percent, however, are still unsure, indicating a need for more information or understanding regarding the frequency and efficacy of cybersecurity training.

However, 12% of respondents overall expressed unfavorable opinions or disagreement with the statement, suggesting that to guarantee thorough and efficient training throughout the company, there may be issues or holes in the current cybersecurity training programs. based on measurement item 7. According to the survey's findings, a sizable majority of participants—82% of the total—strongly agree or agree that the company uses encryption and access restrictions successfully. Employees strongly believe that security measures, including encryption and access controls, are working effectively and adequately protecting business data and systems, as seen by this positive perspective.

Furthermore, the remarkably low proportion of respondents who were unsure of their decision (0.7%) implies that they have a high degree of confidence or contentment with the security mechanisms that are currently in place. It's crucial to remember that a total of 17% of respondents express unfavourable opinions or disagree with the statement, highlighting the necessity of ongoing assessment and development to resolve any possible weaknesses or issues with security implementation and guarantee thorough data protection. According to the survey results for measurement item 8, a sizable majority of participants—69% of the total—strongly agree or agree that organizational data security has helped the company keep a good reputation in the industry. This favourable impression is a reflection of the general employee notion that the organization's industry perception is positively impacted by strong data security procedures. Nonetheless, a sizeable portion (10%) is still unsure, indicating a need for more knowledge or communication on the relationship between reputation management and data security. In contrast, a total of 21% of respondents disagree or have unfavourable opinions of the statement, demonstrating a minority opinion that casts doubt on the impact of data security on the standing of the company. These findings demonstrate the value of clear communication as well as the advantages of data security procedures in establishing a favourable reputation for the sector.

Measurement item 9 of the survey reveals that a resounding majority of participants, or 86% of the total, either strongly agree or agree that data security procedures have improved the organization's decision-making processes. Employees strongly believe that strong data security measures have a favourable impact on the calibre and efficacy of decision-making, as seen by this positive perspective. 15% of respondents, on the other hand, disagree or have unfavorable opinions about the statement, raising doubts about how data security procedures affect choices. Despite this minority opinion, the consensus emphasizes the value of maintaining and enhancing data security measures and the role that strong data security practices play in supporting knowledgeable and effective decision-making processes inside the company.

Finally, based on measurement item 10, According to the poll results, a sizable majority of participants—86% of the total—strongly agree or agree that investing in data protection has eventually led to cost savings. Employees' strong conviction that the funds allotted to data security activities have ultimately resulted in cost savings is reflected in this favorable opinion. 15% of respondents, on the other hand, express unfavorable opinions or disagree with the statement, raising concerns about the long-term cost-effectiveness of data security efforts.

Notwithstanding this minority opinion, the consensus emphasizes the significance of making strategic investments in data security measures to achieve long-term cost efficiencies within the organization. It also emphasizes the necessity of addressing any concerns and guaranteeing that the advantages of data security investments are clearly understood.

Hypothesis Testing

Hypothesis one

H_1: Digital infrastructure has no significant effect on Sustainable Economic Development in Nigeria.

Table 5: Chi-Square Result for Hypothesis One

Item	SA	A	UN	D	SD	Mean	Std.Dev	X^2	Sig.	df
1	86	26	02	11	09	3.99	0.977	27.92	0.000	4
2	53	47	09	15	10					
3	66	43	05	08	12					
4	48	71	06	04	05					
5	40	69	14	05	06					

Source: Field survey 2023

Interpretation and decision

Table 5 displays the outcome of the Chi-Square ($\chi 2$) test for the first hypothesis. With a chi-square value of 27.92 and a probability value of 0.000 ($\chi 2 = 13.71$, $p = 0.001$), the Chi-square analysis results show a statistically significant correlation between digital infrastructure and sustainable economic development in Nigeria. The comparatively big chi-square value of 27.92 indicates that there is a significant divergence between the observed and anticipated frequencies, which is unlikely to have happened by accident. The statistical significance of the association is further supported by the probability value of 0.000, which is less than the traditional significance limit of 0.05.

Thus, we can infer from this Chi-square research that digital infrastructure significantly affects how well sustainable economic development in Nigeria. This suggests that the economic development outcomes of the government that has adopted digital infrastructure are probably going to differ from those of those that have not, underscoring the significance of digital infrastructure in influencing sustainable economic development in Nigeria.

Hypothesis Two

H_2: Cybersecurity has no significant effect on Sustainable Economic Development in Nigeria.

Table 6: Chi-Square Result for Hypothesis Two

Item	SA	A	UN	D	SD	Mean	Std.Dev	$\chi 2$	Sig.	Df
6	63	47	08	5	11	4.04	0.023	42.81	0.000	4
7	54	37	01	13	10					
8	50	43	13	17	11					
9	48	67	===	09	10					
10	29	86	===	09	10					

Source: Field survey 2024

Interpretation and decision

Table 5 displays the outcome of the second hypothesis's Chi-Square ($\chi 2$) test. The findings of the Chi-square study show a statistically significant correlation between cybersecurity and Sustainable Economic Development in Nigeria, with a chi-square value of 42.81 and a probability value of 0.000. The comparatively big chi-square value of 42.81 indicates a considerable divergence between the observed and anticipated frequencies, which is unlikely to have happened by accident. The statistical significance of the association is further supported by the probability value of 0.000, which is less than the traditional significance limit of 0.05. Thus, we can infer from this Chi-square analysis that cybersecurity significantly affects how well Sustainable

Economic Development in Nigeria. This suggests that there is a significant difference in the economic development outcomes of businesses with strong cybersecurity procedures and those with inferior practices, underscoring the significance of cybersecurity in influencing Sustainable Economic Development in Nigeria.

Discussion of findings

The purpose of this study was to investigate how sustainable economic development in Nigeria is affected by digital governance. The study specifically aimed to determine the effect of digital infrastructure on Sustainable Economic Development in Nigeria and to assess the impact of cybersecurity on the same. The Chi-squared method was utilized to analyze the data, and a survey study design was used. According to the study's findings, digital infrastructure and cybersecurity, at a 5% level of significance, have a statistically significant effect on how well Sustainable Economic Development in Nigeria (Mean = 3.99; Std. Dev =.977; $\chi 2$=27.92; P-value=0.000, Mean = 4.04; Std. Dev =.023; $\chi 2$=42.81; P-value=0.000], each.

5. Conclusion

In conclusion, the implementation of digital governance in Nigeria has demonstrated a significant positive effect on sustainable economic development. Digital infrastructure, as a critical component, provides the necessary technological backbone that supports efficient public service delivery, enhances business operations, and facilitates economic activities across various sectors. This infrastructure enables seamless connectivity, data management, and digital transactions, which collectively contribute to economic growth, increased productivity, and improved quality of life.

Additionally, the emphasis on cybersecurity is crucial in sustaining these advancements. A robust cybersecurity framework protects digital assets, ensures data privacy, and builds trust among citizens and businesses. By mitigating risks associated with cyber threats and ensuring the integrity of digital systems, cybersecurity fosters a secure environment conducive to economic activities and innovation.

Together, digital infrastructure and cybersecurity form the pillars of digital governance, driving Nigeria towards sustainable economic development. Their synergistic impact not only propels economic growth but also aligns with broader goals of sustainability by promoting transparency, inclusivity, and resilience in the digital economy. Consequently, continued investment and policy focus on enhancing digital infrastructure and cybersecurity are imperative for Nigeria's sustained economic prosperity and development. The study concluded that Digital Governance has a significant positive effect on Sustainable Economic Development in Nigeria.

Recommendation

To effectively enhance the positive effects of digital governance on sustainable economic development in Nigeria, it is recommended that the following actions be prioritized:

i. Increase investment in broadband infrastructure to ensure widespread and affordable internet access, particularly in rural and underserved areas. This will facilitate greater participation in the digital economy and bridge the digital divide.

ii. Implement a national cybersecurity strategy that outlines clear policies, guidelines, and protocols for protecting digital assets and data privacy.

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