

Original Research Article

Digital Divide in Remote Work among Employees and Organizational Effectiveness in South-South Nigeria

Lawretta Adaobi Onyekwere^{1*} 

¹Department of Sociology, Rivers State University, Nigeria

*Corresponding Author: Lawretta Adaobi Onyekwere
Department of Sociology, Rivers State University, Nigeria

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Abstract: The study grounded in Technology Acceptance Model utilized a descriptive research design to investigate the impact of digital divide among employees engaged in remote work and organizational effectiveness in South-South Nigeria. The population of the study comprised employees working remotely in various organizations across the South-South region of Nigeria. A sample size of sixty-three (63) employees was selected from the study's population using stratified random sampling to ensure fairness in representation across different organizational sizes and sectors within the South-South region. One self-structured questionnaire was used for data collection: the "Digital Divide for Remote Work Employees and Organizational Effectiveness in South-South Nigeria (DDRWEOESSN)". The validity and reliability of the instruments was ensured through expert validation and pilot testing. The reliability index was calculated using Cronbach's alpha, and an index of .852 was realized indicating high internal consistency. Descriptive statistics: mean and standard deviation, were calculated to answer the research questions. Mean scores provided insights into the average level of digital divide, while standard deviation indicated the variability of responses within the sample. One-way analysis of variance was employed to test the null hypotheses at .05 level of significance. The ANOVA Analysis models were constructed to examine the impact between the independent variable (digital divide) and the dependent variables (organizational effectiveness), with the ANOVA coefficients indicating the strength and direction of the impact. The data analysis was conducted using SPSS statistical software. The findings reveal significant difference in access to digital technology among employees engaged in remote work, with some employees facing challenges such as limited internet connectivity and access to reliable devices. However, the study also identifies strategies employed by organizations to mitigate the digital divide, including digital skills training, investment in technology infrastructure, and flexible work arrangements. In conclusion, addressing the digital divide not only enhances organizational effectiveness but also contributes to broader societal goals such as economic development and social inclusion. Moving forward, continued efforts are needed to monitor and evaluate progress in bridging the digital divide and ensuring that remote work remains accessible and beneficial for all employees in South-South Nigeria.

Keywords: Digital divide, Remote Work, Employee well-being, Organizations Effectiveness, and Economic development.

INTRODUCTION/BACKGROUND OF THE STUDY

In the contemporary terrain of work, the integration of digital technologies has significantly transformed the traditional notions of workplace dynamics, particularly with the widespread adoption of remote work arrangements. This paradigm shift, while offering unprecedented flexibility and accessibility, has also exposed the inherent disparities in digital access and proficiency among employees, commonly referred to as the digital divide (Obaseki, 2015). In recent years, the concept of remote work has gained significant traction, particularly in response to the global COVID-19 pandemic.

This shift towards remote work has highlighted the importance of digital technologies and resources in facilitating work outside traditional office environments. However, the ability to effectively engage in remote work is not evenly

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distributed, leading to what is known as the digital divide. The digital divide refers to the gap between those who have access to digital technologies and the internet and those who do not (Ezeani, 2017). This divide is influenced by various factors, including socioeconomic status, geographical location, and educational background.

In South-South Nigeria, the digital divide among employees engaged in remote work is a pressing issue that has implications for organizational effectiveness. Baridakara (2019) in their exploratory to staff technological utilization competency and the future of remote work posited that the region is characterized by its rich cultural diversity and economic potential, faces unique challenges in bridging the digital divide. Factors such as limited access to reliable internet connectivity, inadequate digital infrastructure, and a lack of digital skills among employees contribute to this divide. As a result, organizations in South-South Nigeria may struggle to fully leverage the benefits of remote work, impacting their overall effectiveness and competitiveness.

The level of the digital divide among employees engaged in remote work in South-South Nigeria is significant, with a large proportion of the workforce facing challenges in accessing and utilizing digital technologies. Furthermore, a study by Oluwaseyi *et al.*, (2019), revealed that 40% of employees in the south-south region have access to reliable internet connectivity, compared to the national average of 55%. This disparity is further exacerbated by the high cost of digital devices and limited availability of technical support services in the region. Such limitations can severely impede the ability to perform their tasks efficiently, communicate effectively with colleagues, and access essential information in a timely manner (Oluwuo *et al.*, 2016).

The impact of the digital divide on organizational effectiveness cannot be overstated. Employees who lack access to essential digital tools and resources are often unable to fully engage in collaborative efforts, hindering the flow of communication and collaboration within the organization (Adeniyi, 2020). On an individual level, employees may experience limitations in their ability to perform tasks effectively, communicate with colleagues, and access information and resources necessary for their work. This can lead to feelings of isolation, frustration, and reduced job satisfaction. On an organizational level, the digital divide can hinder collaboration, innovation, and productivity, ultimately affecting the overall effectiveness and performance of the organization.

Obaseki (2015) noted that digital divide can eliminate the existing inequalities within the workforce, creating barriers to career advancement and professional development for those who are digitally disadvantaged. To tackle the challenges of digital divide among employees engaged in remote work especially in South-South Nigeria, organizations can implement various strategies to ensure their problems are mitigated. Organizations must adopt a delicate approach that encompasses both technological and socio-cultural interventions (Okafor, 2020). Providing employees with access to affordable and reliable internet services, equipping them with the necessary digital literacy skills through targeted training programs, and ensuring the availability of essential digital tools are crucial steps in bridging the digital divide.

Several scholars, such as Okafor (2020), Obaseki (2015), and Baridakara (2019), have discussed the concept of the digital divide and the factors responsible for its formulation in the workforce. However, none of these studies have addressed the digital divide in remote work among employees and organizational effectiveness in South-South Nigeria. Therefore, there is a gap in the literature regarding the level of the digital divide in Nigeria, the impact of the digital divide, strategies for mitigating the digital divide, and other themes that are yet to be explored in this study context.

Additionally, Oluwuo *et al.*, (2016) suggested in their handbook "Managing School for Productivity: Emerging Perspectives" that by providing training and capacity-building programs geared towards staff and organizational productivity, employees' digital skills and literacy could be strengthened. This approach fosters a culture of inclusivity and empowerment, where all employees feel valued and supported in their use of digital technologies to mitigate the negative impact of the digital divide on organizational effectiveness. These programs can include training on how to use digital tools and platforms productively, as well as educating employees on best practices for remote work.

Furthermore, organizations can invest in improving digital infrastructure, such as expanding access to high-speed internet and providing employees with the necessary digital devices and software. The digital divide in remote work among employees in South-South Nigeria is a complex issue that requires careful consideration and targeted interventions. By addressing the underlying factors contributing to this divide and implementing strategies to bridge the gap, organizations can enhance their effectiveness and competitiveness in an increasingly digital world.

Statement of the Problem

The digital divide refers to the gap between individuals who have access to digital technologies and those who do not, as well as the skills needed to effectively utilize these technologies. In the context of remote work, the digital divide can manifest in various ways, including disparities in access to technology, digital skills, and reliable internet connectivity. These disparities can hinder employees' ability to perform their tasks efficiently and effectively, thereby impacting

organizational productivity and performance. Additionally, there is limited research on the strategies organizations employ to mitigate the digital divide among their remote workforce in the South-South region of Nigeria.

This study addresses the gaps in understanding the digital divide phenomenon among employees engaged in remote work in South-South Nigeria. It aims to examine the level of digital divide, explore its impact on organizational efficiency and effectiveness, and identify strategies for mitigating the divide. Through these efforts, the study seeks to provide insights that can inform policies and practices aimed at bridging the digital divide to enhance organizational performance in remote work settings. Despite the increasing adoption of remote work arrangements, there is a lack of comprehensive understanding of the digital divide phenomenon in this context.

Aim and Objectives of the Study

The aim of this study was to investigate the influence of digital divide in remote work among employees and organizational effectiveness within organizations in south-south Nigeria. Specifically, the following objectives of the study sought:

- To assess the level of digital divide amongst employees engaged in remote work and organisations in South-South Nigeria.
- To examine the impact of the digital divide amongst employees engaged in remote work and organisational effectiveness in South-Nigeria.
- Identify strategies employed towards mitigating the digital divide amongst employees engaged in remote work and organizational effectiveness in South-South Nigeria.

Research Questions

Based on the study objectives, the following corresponding research questions were raised to guide the study:

- What is the level of digital divide among employees engaged in remote work in organizations in South-South Nigeria?
- How does the digital divide amongst employees engaged in remote work impact organizational effectiveness in South-South Nigeria?
- What strategies are employed towards mitigating the digital divide amongst employees engaged in remote work in organizational effectiveness in South-South Nigeria?

Null Hypotheses

The following research hypotheses were raised to test the significant relationship between the variables at .05 level of significance:

- The level of digital divide among employees engaged in remote work does not significantly impact organizational effectiveness in South-South Nigeria.
- The digital divide amongst employees engaged in remote work does not significantly impact organizational effectiveness in south-south Nigeria.
- The strategies employed in mitigating digital divide amongst employees engaged in remote work do not significantly impact organizational effectiveness in south-south Nigeria.

THEORETICAL UNDERPINNING

The Technology Acceptance Model (TAM), as posited by Fred D. Davis in 1989 (Ananyi & Somieari-Pepple, 2023), stands as a cornerstone in the understanding, predicting, explaining, and the adoption of new technologies. This model has been widely used in various fields to examine how individuals perceive and adopt technology. TAM suggests that an individual's intention to use a technology is influenced by two main factors: perceived usefulness and perceived ease of use. Perceived usefulness refers to the degree to which an individual believes that using a particular technology would enhance their job performance, while perceived ease of use refers to the degree to which an individual believes that using the technology would be free of effort.

The application of the Technology Acceptance Model (TAM) in the context of the digital divide in remote work among employees in South-South Nigeria, is for understanding how employees perceive and adopt digital technologies for remote work, and the role of organizational culture and leadership in shaping employees' perceptions and adoption of digital technologies. Organizational culture refers to the shared values, beliefs, and practices that characterize an organization. In the context of remote work, organizational culture plays a crucial role in shaping employees' attitudes towards technology adoption. A culture that values innovation, collaboration, and flexibility is likely to foster a positive attitude towards digital tools and platforms for remote work.

Similarly, leadership plays a critical role in influencing followers' perceptions and behaviors towards organizational practices (Ololube, 2024). Transformational leadership, emphasizes inspiring and motivating employees to achieve their full potential. Transformational leaders are often effective in promoting the adoption of new vision for the

future, building trust, and providing support and resources for implementation (Ololube, 2024). In the context of remote work, transformational leaders can play a key role in bridging the digital divide by promoting a culture of innovation and collaboration, and by providing the necessary support and resources for employees to effectively utilize digital technologies for remote work.

On the other hand, a culture that is resistant to change or lacks trust in technology may hinder employees' willingness to adopt new technologies. The application of TAM, could contribute to researchers assess employees' perceptions of the usefulness and ease of use of digital tools and platforms, thereby gaining insights into the factors influencing their adoption. This can help organizations in the region identify strategies to promote the use of digital technologies among employees, ultimately enhancing organizational effectiveness in remote work settings.

The measurable significance of TAM to this study is profound, as it provides a theoretical framework that allows a systematic analysis of the factors influencing the adoption of digital technologies for remote work, thereby enabling researchers to develop strategies to mitigate the negative effects of the digital divide. Moreover, TAM can also help researchers explore the impact of the digital divide on the adoption of digital technologies for remote work. By examining how perceptions of usefulness and ease of use vary among employees with different levels of access to digital resources, researchers can gain a better understanding of the barriers faced by those on the wrong side of the divide. This can inform the development of targeted interventions to bridge the divide and ensure that all employees have equal opportunities to benefit from remote work arrangements.

Therefore, the TAM offers a valuable theoretical framework for studying the digital divide in remote work among employees and organizational effectiveness within organizations in South-South Nigeria. By focusing on perceived usefulness and perceived ease of use, TAM helps to identify the key drivers of technology adoption among employees, providing valuable insights for organizational leaders seeking to enhance organizational effectiveness in remote work settings. Through provision of a systematic approach to understanding the factors influencing technology adoption, TAM can help researchers develop targeted interventions to bridge the divide and enhance organizational effectiveness in remote work settings.

CONCEPTUAL CLARIFICATIONS

Digital Divide

The digital divide, a complex and multifaceted issue, refers to the gap between individuals or communities that have access to information and communication technologies (ICTs) and those that do not. It encompasses disparities in access to hardware, such as computers and smartphones, as well as access to the internet and digital literacy skills (Gangwar *et al.*, 2018). This divide is influenced by various factors, including socioeconomic status, geographic location, education level, and infrastructure development.

In the context of remote work, the digital divide can significantly impact individuals' ability to participate in the digital economy, access online education and healthcare services, and engage in remote work opportunities. Access to digital technologies and the internet is essential for students to participate in online learning and access educational resources. However, students from disadvantaged backgrounds may lack access to these resources, putting them at a disadvantage compared to their peers. This can perpetuate existing inequalities in education and limit the ability of individuals to acquire the skills needed for the digital economy (Warschauer, 2017).

Additionally, the digital divide can have significant implications for healthcare access and outcomes. Telemedicine and digital health technologies have the potential to improve access to healthcare services, particularly in remote or underserved areas. However, individuals who lack access to digital technologies or the internet may be unable to benefit from these services, leading to disparities in healthcare access and outcomes (Crawford *et al.*, 2017). Addressing the digital divide in healthcare is crucial for ensuring that all individuals have access to quality healthcare services, regardless of their socioeconomic status or geographic location.

In the context of remote work, the digital divide can impact individuals' ability to access job opportunities and participate in the digital economy. Remote work relies heavily on digital technologies and the internet, and individuals who lack access to these resources may be excluded from remote work opportunities. This can limit their ability to participate in the digital economy and access the benefits of remote work, such as flexible working arrangements and access to a global market (Qiang, 2016).

Addressing the digital divide requires a comprehensive approach that includes improving access to ICTs, providing digital skills training, and creating inclusive policies and programs that promote digital inclusion for all (Oyelaran-Oyeyinka *et al.*, 2016). Governments, policymakers, and organizations must work together to bridge the digital divide and ensure that all individuals have access to the digital tools and resources they need to thrive in the digital age.

Level of Digital Divide in Nigeria

Bridging the digital divide in Nigeria is a complex and multifaceted challenge that requires comprehensive and targeted interventions. Despite efforts to improve access to information and communication technologies (ICTs) in recent years, significant disparities persist between urban and rural areas, as well as across different socioeconomic groups. The National Bureau of Statistics (2019) reported that while 47% of households in Nigeria have access to the internet, access rates vary significantly between urban areas, where access is more prevalent, and rural areas, where access is limited. This disparity in access to ICTs is further exacerbated by income inequality, with wealthier individuals and households more likely to have access to digital technologies (Ogbeide *et al.*, 2016).

Another key factor contributing to the digital divide in Nigeria is the level of digital skills among the population. The World Bank (2020) reported that only 54% of adults in Nigeria have basic digital skills, highlighting the need for targeted interventions to improve digital literacy. Without adequate digital skills, individuals are unable to fully utilize digital technologies for personal, educational, and professional purposes, further widening the digital divide.

Infrastructure development also plays a crucial role in determining the level of the digital divide in Nigeria. Limited infrastructure, particularly in rural and underserved areas, hinders access to reliable internet connectivity and other digital resources. Additionally, government policies on ICT access and affordability can either facilitate or hinder efforts to bridge the digital divide. Policies that promote competition among ICT providers, reduce the cost of internet services, and invest in digital infrastructure are essential for improving access to ICTs for all Nigerians (Ogbeide *et al.*, 2016).

To address the level of the digital divide in Nigeria, a multi-pronged approach is needed. This includes improving access to ICTs by expanding digital infrastructure, particularly in rural and underserved areas, and providing subsidies or incentives to make ICTs more affordable for low-income households. Additionally, efforts to improve digital literacy and skills training programs are essential for equipping individuals with the skills they need to fully participate in the digital economy.

Impact of Digital Divide

To adequately explore the impact of the digital divide, one must consider its multifaceted effects on individuals, communities, and organizations. In education, the digital divide manifests in unequal access to online learning resources and educational opportunities. Students from disadvantaged backgrounds may lack the necessary devices or internet connectivity to fully participate in digital learning environments, leading to disparities in academic achievement (Selwyn, 2016). This divide not only affects students' immediate educational outcomes but also has long-term implications for their future success and economic opportunities.

Similarly, the digital divide significantly impacts healthcare, particularly in rural and underserved areas. Limited access to telemedicine services and health information can prevent individuals from receiving timely medical care and information, exacerbating health disparities (Chib, 2016). The COVID-19 pandemic highlighted these disparities, as individuals without access to digital technologies struggled to access healthcare services and information during lockdowns and social distancing measures.

In the workplace, the digital divide can hinder employees' ability to engage in remote work, collaborate with colleagues, and access professional development opportunities. Organizations that fail to address the digital divide may experience reduced productivity, lower employee morale, and increased turnover rates (Kraut *et al.*, 2018). Additionally, the digital divide can limit organizations' ability to innovate and adapt to changing market conditions, putting them at a competitive disadvantage.

Economically, the digital divide can hinder economic development by limiting access to online markets and job opportunities. Individuals without access to digital technologies may be unable to take advantage of online job platforms or access e-commerce opportunities, limiting their economic prospects (Graham *et al.*, 2017). This lack of access can perpetuate cycles of poverty and inequality, particularly in developing countries where access to digital technologies is limited. Moreover, the digital divide can impact democratic participation and governance. In many countries, access to digital technologies is essential for accessing information, engaging in political discourse, and participating in democratic processes (Warschauer, 2017).

Bridging the digital divide is essential for promoting equity, economic development, and social inclusion in the digital age. Governments, organizations, and communities must collaborate to ensure that everyone has access to the necessary digital tools and skills to fully participate in the digital economy and society. Addressing the digital divide requires a comprehensive approach that addresses the underlying causes of inequality. This includes investing in digital infrastructure, providing digital skills training, and implementing policies that promote digital inclusion (Norris, 2020). Governments, organizations, and communities must work together to ensure that everyone has access to the benefits of the

digital economy and society. Only through such collaborative efforts can we bridge the digital divide and create a more equitable and inclusive digital future for all.

Strategies for Mitigating Digital Divide

Addressing the digital divide requires a multifaceted approach that includes improving access to ICT infrastructure, providing digital skills training, and promoting policies that support digital inclusion. During the process of implementing these strategies, governments, organizations, and communities can work together to bridge the digital divide and ensure that everyone has the opportunity to benefit from the digital economy.

Improving Access to ICT Infrastructure

Improving access to information and communication technology (ICT) infrastructure is crucial for bridging the digital divide and promoting digital inclusion. This strategy involves expanding broadband infrastructure to underserved areas, ensuring that all communities have access to high-speed internet. In today's digital age, reliable internet access is essential for various aspects of daily life, including education, healthcare, communication, and economic opportunities. However, many communities, especially those in remote and rural areas, still lack access to broadband internet due to inadequate infrastructure (Norris, 2020).

Investing in building new ICT infrastructure and upgrading existing infrastructure is key to improving access to high-speed internet. Governments and organizations can collaborate to fund these initiatives, ensuring that communities in underserved areas are not left behind in the digital age. According to Ogbuide *et al.*, (2016), building new infrastructure can be a complex and costly endeavour, requiring careful planning and coordination. However, the long-term benefits of improved access to ICT infrastructure far outweigh the initial costs (Norris, 2020).

Therefore, improving access to ICT infrastructure is essential for bridging the digital divide and promoting digital inclusion. By investing in building new infrastructure and upgrading existing infrastructure, governments and organizations can ensure that all communities have access to high-speed internet, opening up a world of opportunities for education, healthcare, and economic development. However, this strategy must be implemented in conjunction with other strategies, such as providing digital skills training and promoting affordable access, to truly bridge the digital divide and create a more inclusive society (Norris, 2020).

Digital Skills Training

This strategy focuses on providing digital literacy and skills training programs to individuals, especially those in underserved communities. These programs aim to teach people how to use digital tools and platforms effectively, enhancing their ability to participate in the digital economy and society at large. One of the key objectives of digital skills training is to equip individuals with the knowledge and skills necessary to navigate the digital world (Okafor, 2020). This includes basic skills such as using computers and smartphones, navigating the internet, and understanding how to use digital tools for communication, information retrieval, and online collaboration (Okonkwo, 2023). By providing these skills, individuals can improve their employability and access to educational and economic opportunities that require digital literacy.

By fostering these skills, digital skills training programs can empower individuals to be more confident and competent in their use of digital technologies. Overall, digital skills training is a crucial strategy for bridging the digital divide and promoting digital inclusion (Okeke, 2015). By providing individuals with the knowledge and skills necessary to navigate the digital world, these programs can empower individuals to participate more fully in the digital economy and society, ultimately leading to a more inclusive and equitable digital future.

Policies for Affordable Access

Policymakers can develop policies that prioritize affordable access to ICTs, making digital technologies more accessible to low-income individuals and communities. Promoting policies for affordable access to information and communication technologies (ICTs) is a crucial strategy for bridging the digital divide and ensuring digital inclusion for all. Policymakers play a significant role in creating an enabling environment that promotes affordability and accessibility to ICTs, especially for low-income individuals and communities. One approach is to develop policies that provide subsidies for internet services and devices, making them more affordable for those who might otherwise be unable to access them. These subsidies can help reduce the cost barrier associated with ICT access, thereby increasing digital inclusion.

In addition to subsidies, policymakers can also incentivize internet service providers (ISPs) to offer affordable plans to underserved communities. This can be done through regulatory measures that encourage ISPs to expand their networks to rural and remote areas and offer discounted rates for low-income households (Agyei, 2020). By creating a competitive market environment and providing incentives for ISPs to prioritize affordability, policymakers can help ensure that everyone has access to affordable internet services.

Furthermore, policymakers can also support the development of community-based ICT initiatives that provide access to ICTs in underserved areas. These initiatives can include public Wi-Fi hotspots, community centers with internet access, and mobile ICT units that bring internet services to remote communities (Boateng, 2019). By investing in these initiatives, policymakers can ensure that even the most marginalized communities have access to ICTs, thereby promoting digital inclusion and reducing the digital divide. Overall, promoting policies for affordable access to ICTs is essential for bridging the digital divide and ensuring providing subsidies, incentivizing ISPs, and supporting community-based initiatives, policymakers can create an inclusive digital environment where everyone has access to the benefits of ICTs.

Programs for Vulnerable Populations

Supporting programs for vulnerable populations is a crucial strategy for bridging the digital divide and promoting digital inclusion. Vulnerable populations, such as the elderly, people with disabilities, and low-income families, often face unique challenges in accessing and using digital technologies. Programs that target these populations can provide specialized training and support to help them overcome these barriers and participate more fully in the digital world. Gyasi (2021) aptly noted that many older adults may be unfamiliar with digital technologies or feel intimidated by them. Digital literacy programs can provide hands-on training and support to help older adults learn how to use computers, smartphones, and the internet. These programs can also teach them how to use digital tools for communication, accessing information, and online transactions, helping them stay connected and engaged in today's digital society (Gyasi, 2021).

Another example is programs that provide assistive technologies and support for people with disabilities. People with disabilities may face physical or cognitive barriers that make it difficult for them to use standard digital technologies. Programs that provide specialized assistive technologies, such as screen readers or adaptive keyboards, can help them access and use digital devices more effectively. These programs can also provide training and support to help people with disabilities navigate the digital world independently (Agyei, 2020).

Additionally, programs that provide affordable access to ICTs for low-income families can help bridge the digital divide. These programs can offer subsidized internet services or discounted devices to ensure that low-income families have access to the tools they need to participate in the digital economy and society. By providing these resources, these programs can help break the cycle of poverty and empower families to improve their economic and social well-being (Boateng, 2019). Therefore, supporting programs for vulnerable populations is essential for bridging the digital divide and promoting digital inclusion.

Collaboration between Governments, Organizations, and Communities

Governments play a crucial role in setting policies and regulations that promote digital inclusion and address barriers to access. They can allocate funding for digital infrastructure development, implement programs to promote digital literacy, and provide incentives for private sector involvement in underserved areas (Ayebanengimote, 2019). Non-Governmental Organizations, both public and private, are essential partners in bridging the digital divide. For example, private companies can invest in expanding broadband networks to rural and remote areas, while non-profit organizations can offer digital skills training programs for vulnerable populations (Ekpwele, 2018). Collaboration between these organizations can help maximize resources and reach a broader audience, ultimately leading to more effective digital inclusion efforts.

Communities also play a vital role in bridging the digital divide. Local community organizations, schools, and libraries can serve as hubs for digital access and training. They can provide internet access, computer labs, and training programs to help individuals develop digital skills (Adani, 2020). Community-led initiatives can also raise awareness about the importance of digital inclusion and advocate for policies that promote access for all members of society.

In the South-South region of Nigeria, the National Information Technology Development Agency (NITDA) has committed to implementing the national digital economy policy for digital Nigeria. This policy aims to create a framework for the planning, research, development, standardization, application, coordination, monitoring, evaluation, and regulation of Information Technology practices in Nigeria (NITDA, 2022). The priorities of the Agency include Developmental Regulation, Digital Literacy and Skills, Solid Infrastructure, Service Infrastructure, Digital Services Development and Promotion, Software Infrastructure, Digital Society, and Emerging Technologies & Indigenous Content Development and Adoption.

Collaboration between the government, organizations, and communities has led to significant progress in bridging the digital divide. Organizations such as the National Information Technology Development Agency (NITDA) have implemented projects to expand internet access to underserved areas, while community-based, and NGOs have provided training programs to enhance digital skills (NITDA, 2022). Overall, collaboration between governments, organizations, and communities is essential for bridging the digital divide. By working together, these stakeholders can leverage their resources and expertise to ensure that everyone has access to the benefits of the digital economy and society.

Digital Divide and Organizational Effectiveness

Bridging the digital divide is paramount for enhancing organizational effectiveness in today's interconnected world. The digital divide, characterized by disparities in access to and proficiency with digital technologies, poses significant challenges for organizations aiming to thrive in a digitally-driven landscape. In remote work settings, where reliance on digital tools and platforms is pervasive, the digital divide can exacerbate existing inequalities and hinder organizational productivity and innovation (Kraut *et al.*, 2018). To fully grasp the implications of the digital divide on organizational effectiveness, it is essential to explore its multifaceted impact on various aspects of organizational operations and performance.

One critical dimension through which the digital divide affects organizational effectiveness is employee productivity. Inequitable access to digital tools and resources can impede employees' ability to perform their tasks efficiently and collaborate effectively with colleagues, particularly in remote work environments (Choudrie *et al.*, 2020). Employees who lack access to reliable internet connectivity or essential digital devices may face challenges in accessing information, communicating with team members, and leveraging digital platforms for project management and collaboration. As a result, productivity levels may suffer, leading to delays in project completion, reduced output, and ultimately, diminished organizational performance (Van-Deursen *et al.*, 2019).

Moreover, the digital divide can have a profound impact on employee morale and job satisfaction, further influencing organizational effectiveness. When employees perceive disparities in access to digital technologies within the organization, feelings of frustration, alienation, and inequality may arise (Graham *et al.*, 2013). Employees who lack access to the same digital tools and resources as their peers may feel undervalued and demotivated, leading to decreased engagement and commitment to organizational goals. Additionally, the digital divide can exacerbate feelings of isolation among remote workers, as limited access to digital communication channels may hinder their ability to connect with colleagues and participate in team activities (Choudrie *et al.*, 2020). As a result, organizational cultures characterized by inclusivity, collaboration, and innovation may be compromised, impacting overall effectiveness and competitiveness (Kraut *et al.*, 2018).

Furthermore, the digital divide can impede organizational agility and adaptability, crucial factors for success in today's rapidly evolving business environment. Organizations that fail to address disparities in digital access and proficiency may struggle to embrace new technologies, adopt innovative business practices, and respond effectively to market changes (Van-Deursen *et al.*, 2019). In an era where digital transformation is essential for organizational survival and growth, the inability to bridge the digital divide can leave organizations vulnerable to disruption and stagnation. Moreover, organizations that neglect to invest in digital inclusion initiatives may face challenges in attracting and retaining top talent, as digitally savvy employees may seek out employers that prioritize equitable access to technology and support their professional development (Graham *et al.*, 2013).

To address the digital divide and enhance organizational effectiveness, proactive measures must be taken at both the individual and organizational levels. Providing employees with access to essential digital tools and resources, such as high-speed internet, computers, and software applications, is a fundamental step towards bridging the digital divide (Choudrie *et al.*, 2020). Organizations can also invest in digital skills training programs to equip employees with the necessary competencies to navigate digital platforms, communicate effectively online, and leverage technology for productivity and collaboration (Van-Deursen *et al.*, 2019). Additionally, fostering a culture of digital inclusion and diversity within the organization can help mitigate the negative impact of the digital divide on employee morale and job satisfaction (Kraut *et al.*, 2018). By promoting equitable access to technology, providing ongoing support and training, and fostering an inclusive organizational culture, organizations can bridge the digital divide and unlock the full potential of their workforce, thereby enhancing organizational effectiveness and competitiveness in the digital age.

METHODS

The study utilized a descriptive research design to investigate the impact of the variables of digital divide among employees engaged in remote work and organizational effectiveness in South-South Nigeria. This design was suitable for examining the influence stated variables without manipulating them. The population of the study comprised employees working remotely in various organizations across the South-South region of Nigeria. A sample size of sixty-three (63) employees was selected from the study's population using stratified random sampling to ensure fairness in representation across different organizational sizes and sectors within the South-South region. One self-structured questionnaires was used for data collection: the "Digital Divide for Remote Work Employees and Organizational Effectiveness in South-South Nigeria (DDRWEOESSN)".

The questionnaire was designed to assess the level of digital divide among employees, as well as organizational effectiveness. Trained research assistants administered the instrument to the respondents. The questionnaire included items relating to access to technology, digital skills, communication infrastructure, and perceptions of organizational

performance. The validity and reliability of the instruments was ensured through expert validation and pilot testing. The reliability index was calculated using Cronbach's Alpha, and an index of .852 was realized indicating high internal consistency.

Descriptive statistics: mean and standard deviation, were calculated to answer the research questions regarding the level of digital divide among employees and its impact on organizational effectiveness. Mean scores provided insights into the average level of digital divide, while standard deviation indicated the variability of responses within the sample. One-way analysis of variance was employed to test the null hypotheses and determine if significant impact were statistically found. ANOVA Analysis models were constructed to examine the impact between the independent variable (digital divide) and the dependent variables (organizational effectiveness), with the ANOVA coefficients indicating the strength and direction of the impact. The data analysis was conducted using SPSS statistical software, and the findings were interpreted in light of the research objectives and hypotheses.

RESULTS

RQ1: What is the level of digital divide among employees engaged in remote work in organizations in South-South Nigeria?

Table 1: Mean and standard deviation responses on the level of digital divide among employees engaged in remote work in organizations

S/N	Items	Mean	SD.	Remark
1	I encounter difficulties accessing the internet while working remotely.	3.4561	.50250	Agree
2	I have access to a reliable computer or smartphone for remote work.	2.4561	.21250	Disagree
3	I believe that my access to digital technology is equal to that of my colleagues.	3.1579	.36788	Agree
4	Digital divide issues affect my productivity while working remotely.	3.3333	.47559	Agree
5	I am comfortable with using digital tools and platforms for remote work.	3.2632	.44426	Agree
	Grand Mean	3.1965	.49617	Agree

Table 1 presents the mean and standard deviation responses for each item related to the digital divide. Specifically, employees agree that they encounter difficulties accessing the internet while working remotely, as evidenced by a mean score of 3.4561. However, employees disagree that they have access to a reliable computer or smartphone for remote work, as indicated by a mean score of 2.4561. This indicates disparities in access to necessary devices, which could hinder their ability to effectively engage in remote work. Employees agree that digital divide issues affect their productivity while working remotely, as shown by a mean score of 3.3333. Moreover, employees agree that their access to digital technology is equal to that of their colleagues, as demonstrated by a mean score of 3.1579. This suggests a level of perceived equality in access to digital resources among employees. The overall grand mean of 3.1965 indicates a general agreement that, while employees in South-South Nigeria generally have access to digital technology for remote work, there are still disparities in access to necessary devices that need to be addressed to bridge the digital divide effectively.

RQ2: How does the digital divide amongst employees engaged in remote work impact organizational effectiveness in South-South Nigeria?

Table 2: Mean and standard deviation responses on digital divide amongst employees engaged in remote work impact organizational effectiveness

S/N	Items	Mean	SD.	Remark
6	I have encountered communication barriers with colleagues due to differences in digital skills or access to technology.	3.3684	.67166	Agree
7	The digital divide impacts collaboration among remote team members.	3.1053	.64598	Agree
8	Addressing the digital divide could improve organizational performance.	3.0526	.81111	Agree
9	Bridging the digital divide could lead to better decision-making within the organization.	3.4035	.49496	Agree
10	It is important for our organization to address the digital divide among employees.	3.3158	.46896	Agree
	Grand Mean	3.1962	.52137	Agree

Table 2 presents the mean and standard deviation responses for each item related to the impact of the digital divide among employees engaged in remote work on organizational effectiveness in South-South Nigeria. Employees generally agree that they have encountered communication barriers with colleagues due to differences in digital skills or access to technology, as evidenced by a mean score of 3.3684. This suggests that the digital divide can hinder effective communication within remote teams. Additionally, employees agree that the digital divide impacts collaboration among

remote team members, as indicated by a mean score of 3.1053. Moreover, employees agree that addressing the digital divide could improve organizational performance, as shown by a mean score of 3.0526. Furthermore, employees believe that bridging the digital divide could lead to better decision-making within the organization, as indicated by a mean score of 3.4035. This suggests that addressing the digital divide is seen as a way to enhance decision-making processes. Overall, the grand mean of 3.1962 indicates a general agreement that it is important for the organization to address the digital divide among employees, emphasizing the need to bridge the digital divide to improve organizational effectiveness in South-South Nigeria.

RQ3: What strategies are employed towards mitigating the digital divide amongst employees engaged in remote work in organizational effectiveness in South-South Nigeria?

Table 3: Mean and standard deviation responses on strategies are employed towards mitigating the digital divide amongst employees engaged in remote work in organizational effectiveness

S/N	Items	Mean	SD.	Remark
11	Our organization provides training or resources to help improve digital skills among employees.	3.5088	.57080	Agree
12	There are specific policies in place to ensure equal access to digital technology for all employees.	3.4035	.72849	Agree
13	I have participated in initiatives aimed at bridging the digital divide within the organization.	3.4561	.50250	Agree
14	Current policies in place are effective in reducing the digital divide among employees.	3.1754	.60127	Agree
15	Additional measures could be taken to further mitigate the digital divide among employees.	3.4561	.50250	Agree
	Grand Mean	3.3942	.51719	Agree

Table 3 presents the mean and standard deviation responses for each item related to the strategies employed towards mitigating the digital divide among employees engaged in remote work in organizational effectiveness in South-South Nigeria. Employees generally agree that their organization provides training or resources to help improve digital skills among employees, as evidenced by a mean score of 3.5088. This implies that organizations are actively involved in enhancing employees' digital skills to bridge the digital divide. Additionally, employees agree that there are specific policies in place to ensure equal access to digital technology for all employees, as indicated by a mean score of 3.4035. Moreover, employees agree that they have participated in initiatives aimed at bridging the digital divide within the organization, as shown by a mean score of 3.4561. Furthermore, employees believe that current policies in place are effective in reducing the digital divide among employees, as indicated by a mean score of 3.1754. However, employees also agree that additional measures could be taken to further mitigate the digital divide among employees, as shown by a mean score of 3.4561. Overall, the grand mean of 3.3942 indicates a general agreement among employees regarding the strategies employed to mitigate the digital divide, highlighting the importance of continuous efforts to bridge the digital divide effectively in South-South Nigeria.

Testing of the Null Hypotheses

Hypothesis 1: The level of digital divide among employees engaged in remote work does not significantly impact organizational effectiveness in South-South Nigeria.

Table 4: Summary of ANOVA on level of digital divide among employees engaged in remote work does not significantly impact organizational effectiveness

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.224	1	2.224	10.263	.002
Within Groups	11.917	55	.217		
Total	14.140	56			

The hypothesis 1 states that "the level of digital divide among employees engaged in remote work does not significantly impact organizational effectiveness in South-South Nigeria". The analysis conducted using ANOVA was aimed to test this hypothesis. The results reveal that there is a significant difference between groups in terms of the level of digital divide and its impact on organizational effectiveness, as evidenced by a significant F-value of 10.263 ($p < .002$). This indicates that the level of digital divide among employees engaged in remote work does indeed have a significant impact on organizational effectiveness in South-South Nigeria. The sum of squares between groups is 2.224, while the sum of squares within groups is 11.917, resulting in a total sum of squares of 14.140. Overall, these findings reject the null hypothesis, providing evidence to support the assertion that the level of digital divide significantly affects organizational effectiveness in the region.

Hypothesis 2: The digital divide amongst employees engaged in remote work does not significantly impact organizational effectiveness in south-south Nigeria.

Table 5: Summary of ANOVA on digital divide amongst employees engaged in remote work does not significantly impact organizational effectiveness

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.421	1	.421	1.689	.000
Within Groups	13.719	55	.249		
Total	14.140	56			

The hypothesis 2 states that “the digital divide amongst employees engaged in remote work does not significantly impact organizational effectiveness in South-South Nigeria”. The analysis conducted using ANOVA aimed to test this hypothesis. The results indicate that there is a significant difference between groups in terms of the digital divide and its impact on organizational effectiveness, as evidenced by a significant F-value of 1.689 ($p < .05$). This suggests that the digital divide amongst employees engaged in remote work does indeed have a significant impact on organizational effectiveness in South-South Nigeria. The sum of squares between groups is .421, while the sum of squares within groups is 13.719, resulting in a total sum of squares of 14.140. Overall, these findings reject the null hypothesis, providing evidence to support the assertion that the digital divide significantly affects organizational effectiveness in the region.

Hypothesis 3: The strategies employed in mitigating digital divide amongst employees engaged in remote work do not significantly impact organizational effectiveness in south-south Nigeria.

Table 6: Summary of ANOVA on strategies employed in mitigating digital divide amongst employees engaged in remote work does not significantly impact organizational effectiveness

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.088	2	.044	13.169	.000
Within Groups	14.052	54	.260		
Total	14.140	56			

The hypothesis 3 posits that “the strategies employed in mitigating the digital divide amongst employees engaged in remote work do not significantly impact organizational effectiveness in South-South Nigeria”. The ANOVA analysis conducted to test this hypothesis reveals a significant difference between groups, with an F-value of 13.169 ($p < .000$). This indicates that the strategies employed in mitigating the digital divide do have a significant impact on organizational effectiveness. The sum of squares between groups is 0.088, while the sum of squares within groups is 14.052, resulting in a total sum of squares of 14.140. These results reject the null hypothesis and suggest that the strategies employed in mitigating the digital divide do influence organizational effectiveness in the region.

DISCUSSION OF FINDINGS

The Level of Digital Divide and its Impact on Organizational Effectiveness

The ANOVA analysis conducted to test the level of digital divide and its impact on organizational effectiveness reveals a significant difference between groups, with an F-value of 13.169 ($p < .05$). This indicates that the strategies employed in mitigating the digital divide do have a significant impact on organizational effectiveness. The sum of squares between groups is .088, while the sum of squares within groups is 14.052, resulting in a total sum of squares of 14.140. These results reject the null hypothesis and suggest that the strategies employed in mitigating the digital divide do influence organizational effectiveness in the region. The findings align with the research by Okoro (2015) who emphasized the importance of strategic interventions to bridge the digital divide and improve organizational outcomes. They argued that organizations that invest in digital literacy programs and provide access to necessary digital tools are more likely to enhance their overall effectiveness.

Similarly, the results support the argument made by Uche (2019) concerning the need for continuous improvement in digital infrastructure and policies to address the digital divide. They emphasized that organizations that prioritize digital inclusion are more likely to experience higher levels of productivity and employee satisfaction. Similarly, Ngozi (2020) emphasized the importance of organizational commitment to addressing the digital divide, as it can lead to improved decision-making processes and overall organizational performance.

Furthermore, the findings support the argument made by Chidinma (2019) regarding the importance of digital literacy in enhancing organizational effectiveness. Overall, the findings of this study contribute to the existing literature by providing empirical evidence of the impact of the digital divide on organizational effectiveness in South-South Nigeria.

By investing in digital infrastructure, policies, and training programs, organizations can improve communication, collaboration, and decision-making processes, ultimately leading to improved organizational performance.

Digital Divide amongst Employees in Remote Work and Organizational Effectiveness

The ANOVA analysis conducted to test the digital divide amongst employees engaged in remote work and its impact on organizational effectiveness. The results indicate that there is a significant difference between groups in terms of the digital divide and its impact on organizational effectiveness, as evidenced by a significant F-value of 1.689 ($p < .05$). This suggests that the digital divide amongst employees engaged in remote work does indeed have a significant impact on organizational effectiveness in South-South Nigeria. The sum of squares between groups is .421, while the sum of squares within groups is 13.719, resulting in a total sum of squares of 14.140. Overall, these findings reject the null hypothesis, providing evidence to support the assertion that the digital divide significantly affects organizational effectiveness in the region.

The study by Okoro (2015) emphasized the importance of bridging the digital divide to enhance organizational performance. According to the author, organizations that effectively address the digital divide through strategic initiatives and investments in digital inclusion programs are more likely to achieve higher levels of performance and competitiveness. This aligns with the findings of the current study, which suggests that the strategies employed in mitigating the digital divide can have a significant impact on organizational effectiveness in South-South Nigeria.

Nnamdi (2018) explored the relationship between digital inclusion and organizational performance, highlighting the role of digital technologies in driving organizational success. The study suggests that organizations that prioritize digital inclusion initiatives are better positioned to adapt to changing market conditions and customer demands, leading to improved performance outcomes. This resonates with the current study's findings, which suggest that addressing the digital divide can lead to better organizational performance in the region.

Ngozi (2020) discussed the implications of addressing the digital divide for organizational performance. The study suggests that organizations that invest in bridging the digital divide are more likely to experience improved performance outcomes, including increased productivity and efficiency. This aligns with the current study's findings, which suggest that the strategies employed in mitigating the digital divide can positively impact organizational effectiveness in South-South Nigeria.

Strategies Employed in Mitigating the Digital Divide and Organizational Effectiveness

The ANOVA analysis conducted to test the strategies employed in mitigating the digital divide amongst employees engaged in remote work and its impact on organizational effectiveness. The ANOVA analysis conducted to test this hypothesis reveals a significant difference between groups, with an F-value of 13.169 ($p < .05$). This indicates that the strategies employed in mitigating the digital divide do have a significant impact on organizational effectiveness. The sum of squares between groups is 0.088, while the sum of squares within groups is 14.052, resulting in a total sum of squares of 14.140. These results reject the null hypothesis and suggest that the strategies employed in mitigating the digital divide do influence organizational effectiveness in the region.

The study by Chukwudi (2017) provided insights into communication barriers in the digital age within Nigerian organizations. It highlighted how digital skills and access to technology can impact communication effectiveness, which is crucial in remote work settings. Ebele (2021) emphasized the role of digital skills training in enhancing organizational effectiveness, particularly in Nigeria. The study suggested that investing in digital skills development can improve overall organizational performance, especially in the context of remote work. The findings suggested that organizations that effectively bridge the digital divide tend to perform better than those that do not.

Okoro (2015) focused on strategies for bridging the digital divide and their impact on organizational performance. The study suggested that implementing effective strategies can lead to improved organizational outcomes. Uche (2019) examined the impact of the digital divide on organizational effectiveness in Nigeria. The findings suggested that addressing the digital divide is crucial for organizations to remain competitive and achieve their goals. Therefore, these studies collectively support the idea that the digital divide among employees engaged in remote work significantly impacts organizational effectiveness. They highlighted that organizations that prioritize digital inclusion and provide equal access to technology tend to perform better and are more resilient in the face of digital challenges.

CONCLUSION

The study on the digital divide in remote work among employees and organizational effectiveness within organizations in South-South Nigeria highlights the critical importance of addressing digital disparities to enhance organizational performance. The findings suggest that strategies aimed at mitigating the digital divide significantly impact

organizational effectiveness. This underscored the need for organizations to invest in digital skills training, provide equal access to digital technology, and implement policies that promote digital inclusion among employees.

Furthermore, the study emphasized the role of collaborative partnerships, technology integration, and community engagement in bridging the digital divide. These strategies, when implemented effectively, can lead to improved communication, collaboration, and decision-making within organizations. They also contribute to a more empowered and engaged workforce, ultimately enhancing organizational performance.

The study concluded that by recognizing the interconnectedness of these strategies and their alignment with TAM theory, organizations can develop more holistic approaches to addressing the digital divide and improving organizational effectiveness. Overall, the study contributes to the growing body of knowledge on digital inclusion and its impact on organizational performance, highlighting the importance of bridging the digital divide for sustainable organizational success.

RECOMMENDATIONS

Based on the findings of the study on the digital divide in remote work among employees and organizational effectiveness in South-South Nigeria, several recommendations can be made to improve organizational performance:

- Organizations should invest in digital skills training and provide equal access to digital technology for all employees engaged in remote work. This will help bridge the digital divide and ensure that all employees have the necessary tools and skills to effectively perform their jobs.
- Policymakers and organizations administrators should develop and implement policies that promote digital inclusion and ensure that all employees have access to the same opportunities for professional development and advancement, regardless of their background or location.
- Organizations should foster a culture of collaboration and communication among remote team members. This can be achieved through the use of digital collaboration tools, regular team meetings, and open channels of communication.
- Finally, organizations should continue to monitor and evaluate their progress in bridging the digital divide and improving organizational effectiveness. This will help ensure that the organization remains on track to achieve its goals and objectives in an increasingly digital and competitive environment.

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