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Exploring the Effect of E-governance on Service Delivery in Three Selected Counties in Western Equatorial State, South Sudan

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ABSTRACT

Since gaining independence in 2011, South Sudan has pursued decentralization to bring government services closer to its citizens. E-governance has been introduced as a modern tool to improve public service delivery, particularly in sectors critical to community well-being such as health and physical infrastructure. Despite these efforts, many regions including Western Equatoria State continue to experience poor service delivery outcomes. This study examines the impact of e-governance on service delivery in three counties—Tambura, Yambio, and Mundri West—focusing on health services and feeder roads, to understand how e-governance can enhance the effectiveness of decentralized governance. This study employs a mixed-methods research design combining quantitative data collection through structured questionnaires and qualitative insights from interviews and focus group discussions. Data were collected from key stakeholders including government officials, health workers, community leaders, and residents in Tambura, Yambio, and Mundri West counties. Statistical analysis was used to evaluate relationships between e-governance, decentralization, and service delivery, while thematic analysis explored contextual challenges and opportunities.

The Key study findings were; E-governance initiatives have positively influenced transparency, accountability, and accessibility of services, particularly in health care delivery and road maintenance; the degree of decentralization positively correlates with service delivery outcomes, but this relationship is significantly strengthened when supported by effective e-governance systems; Major barriers to e-governance effectiveness include inadequate ICT infrastructure, limited technical capacity, political interference, and high corruption levels and Citizens in the study areas continue to face challenges accessing quality health services and reliable feeder roads, exacerbated by poor infrastructure and governance issues.

Employing a mixed-methods approach, the study analyzes access, quality, and citizen satisfaction with health services and feeder roads, amidst challenges such as poor infrastructure, corruption, and limited institutional capacity. Findings reveal that while e-governance holds significant potential to enhance transparency, accountability, and efficiency, its effectiveness is highly dependent on contextual factors including political stability, infrastructure readiness, and user capacity. The study underscores the urgent need for targeted policy interventions to strengthen e-governance frameworks to improve decentralized service delivery in post-conflict settings like South Sudan.

KEYWORDS: *E-governance, Decentralization, Service Delivery, Health Sector, Physical Infrastructure, Western Equatoria, South Sudan.*

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INTRODUCTION

This study was carried out to examine the impact of E-governance on service delivery in two selected service sectors namely; Health and Physical Infrastructure with emphasize on Feeder roads in South Sudan using three selected Counties in Western Equatoria state namely Tambura, Yambio and Mundri west as the case study. In the study, E-governance was considered as independent variable and service delivery as the dependent variable.

The Republic of South Sudan (RSS) got its independence from Northern Sudan on 9th July, 2011 (GoSS, 2011**).** The government structure comprises of three levels; the national government, state government and the local government. The national and state level structure comprises of the executive, legislature and judiciary as well as ministries and commissions (Ibid). At the local government level, it comprises of the executive headed by a commissioner and heads of department, local legislative councils and customary law councils as designated in the local government act 2009 (Local government Act, 2009). The executive council are charged with responsibility of the day to administrative and service delivery function of the council and legislature is the oversight body that makes bye laws and provide oversight to the executive to ensure that they are accountable. The council is a semi-autonomous entity that makes own decision that is aligned to then national policies and programs.

Since its inception the South Sudan government, through the ruling party Sudan People Liberation Movement, has promulgated the E-governance through the establishment of various states and counties to take the towns closer to the people as popularly said by the late leader Dr. John Garang DeMabior (Garang, 1987). This popular saying was aimed at improving service to the people of South Sudan who by then were largely governed by the government based in Khartoum. Thus, decentralization was already in the minds of the founding fathers of South Sudan even before independence. As a result, ten (10) states were established in 2011 and seventy-nine (79) counties.

In 2016 March, the government through the office of the President pronounced and ordered for the creation of thirty-two (32) states and three hundred and nineteen (319) counties as a popular demand of the South Sudanese communities in order to salvage the issues of power and resource sharing and spiralling service delivery to the people (GoSS, 2017). However, when South Sudan got independence, it inherited a lot of inefficiencies from the greater Sudan (Ibid). These include skills and capacity gaps as well as numerous administrative and political dilemmas. The ambitious decentralization program aimed at "taking the towns to the people" as was promulgated by the late leader Dr, John Garang, led to the establishment of state and counties as opposed to the provincial or regional governments. This resulted to creation of ten (10) states and seventy-nine (79) local governments. Despite this policy, decision making that was undertaken by the government, there was no evaluation of the decentralization system to understand its effectiveness in delivery of social service

Statement of the Problem

Ideally, E-governance in South Sudan was adopted and introduced in the Interim Constitution of South Sudan 2011, with the aims of improving service delivery, democratic participation, development and in particularly bring service near to the people of South Sudan, such as Health, water and sanitation and road network among others at local level. The South Sudanese founding leader John Garang de Mabior in his usual words emphasized taking the town to the people, implies a decentralized system that takes services and development to the people at grass root (Garang J.1987). Despite its implementation since Independent on 9th July 2011, the level and quality of service delivery in the three selected Counties in Western Equatoria State remains wanting. It is no news that the means of service delivery by South Sudan public institutions, Local Government in inclusion, is being hounded by the increasing rate of corruption among personnel. The hydra-headed corruption has become part and parcel in the Local Government. As asserted by Simone, Sara (2013), the level of political and financial interference by the state government is worrisome and it demands total overhaul.

Evidence revealed that, South Sudan has some of the worst health indicators in the world, mainly affecting children and women (Health Pooled Fund South Sudan Study Report 2021). According to health pooled fund assessment report 2021, the maternal mortality ratio is estimated to be 1150 death per 100,000 live births. Child mortality rate at 99 per 1000 live birth and infant mortality rate at 65 per 1000 live birth (UNICEF, 2021 cited in Health Pooled Fund, 2021). This maternal mortality and child mortality ratio is high compare to other Countries in Africa where mortality rates are lower. This means that the capacity of Health sector in South Sudan most special in States and local government level are poor, health facilities are not enough to provide health services that can improve health conditions of people most specially women and

children who are vulnerable. This high rate of maternal mortality and child mortality is coupled with heavy burden of maternal and child health conditions, communicable and non-communicable diseases. This health situation necessitates a decentralized and improved health service delivery. Ideally, the National Health Policy (2016 -2026) provides for equitable access where health services in South Sudan was delivered and managed against a decentralized framework to increase health system responsiveness to local needs and allow for community participation in health service delivery. However, this has not been the case in Tambura, Yambio, and Mundri West Counties, only 10% of the 250,449 (tambura 59088, Yambio 138976), Mundri 52385) population in the three selected Counties (NBS population estimate 2021, SMoH, 2022) have access to the State hospital in Yambio. The rest depends on local herbs and supports from humanitarian and some small private health clinics. Poor access road condition (SMPI & PU 2020 and 2021). According to the United Nations Mission in South Sudan UNMISS, many areas in Western Equatoria State in South Sudan have been unreachable due to poor road conditions mainly in Tambura, Yambio and Mundri West Counties and mostly during rainy season (UNMISS 2021). Road density in Western Equatoria State mainly in Tambura, Yambio and Mundri West Counties is among the lowest in South Sudan, connection between the three Counties and other Counties is limited. Insufficient source of clean water (SMPI&PU report 2021, UNICEF 2021). Access to safe drinking water and use of good hygiene practices seemingly remained low across Western Equatoria State. According to REACH (January-March 2021), the quality and accessibility of clean water was reportedly challenging across western Equatoria State, with over half of assessed settlements reporting using a well or river as their main source of drinking water (56%), of which nearly all reported that water allegedly making people sick (WHO 2022). This is an indicator of poor service delivery, which necessitate study into the influence of E-governanceon service delivery in Western Equatoria State of South Sudan.

Literature reveals that since 2011 inadequate research has been conducted to establish factors that affect effectiveness of E-governance on basic service delivery. This study therefore assessed the influence of E-governance on service delivery with focus on three E-governance dimensions that are Financial, political, and Administrative decentralization and the moderating effect of e-government on the relationship between E-governance and service delivery in Western Equatoria State.

Despite efforts to improve public service delivery in South Sudan, particularly in the Western Equatoria State, citizens continue to face significant challenges in accessing essential services such as healthcare and physical infrastructure, especially feeder roads. Traditional governance systems have often been characterized by inefficiencies, lack of transparency, limited accountability, and poor communication between government institutions and the public. These challenges have hampered development and undermined public trust in government institutions.

In response, E-governance has been introduced as a tool to enhance service delivery through improved information flow, transparency, and citizen participation. However, the actual impact of E-governance on service delivery at the county level in South Sudan remains largely unexplored. Specifically, there is limited empirical evidence on how E-governance initiatives have influenced the delivery of health services and infrastructure development in the counties of Tambura, Yambio, and Mundri West in Western Equatoria.

This study seeks to bridge this gap by examining the effect of E-governance on the efficiency, accessibility, and quality of service delivery in the selected counties, focusing on the health sector and the development of feeder roads. Understanding this relationship is crucial for policy formulation, resource allocation, and the successful implementation of digital governance strategies aimed at improving public service delivery in post-conflict and underdeveloped settings like South Sudan.

Main Research Question:

What is the impact of E-governance on service delivery in the health and physical infrastructure sectors (with emphasis on feeder roads) in the counties of Tambura, Yambio, and Mundri West in Western Equatoria State, South Sudan?

Literature review

Several studies have investigated the impact of e-government for the delivery of public services in a number of developed countries. However, the published research on the e-government for public service delivery in the context of developing countries is largely inadequate. Bhuiyan, (2011) reported the results of their study that the impact of Information and Communication Technologies (ICTs) on public sector service delivery is immense as evidenced in Kazakhstan, a post-Soviet republic, and beyond. They provided evidence that even the partial implementation of e-government accrues benefits, while the operational challenges, such as the lack of political support and consensus, the digital divide, the lack of qualified human resources, language, and

infrastructure development, need to be addressed to ensure a cost-efficient, cost-effective, accountable, and transparent service delivery to Kazakhstanis.

Further, Singh et al. (2010) reported the results of their study on Fiji and Papua New Guinea that e-governance has the potential to improve public service delivery. The results of the research suggested that e-governance contributes to effectiveness, efficiency and equity in public services that enhances the quality of public service delivery. Using a structured questionnaire, Pathak, Singh, Belwal, Naz,and Smith (2008) explored the perceived role of e-Governance in reducing corruption amongst 400 respondents each from Fiji and Ethiopia . The study revealed that e-governance is positively related to an improved government-citizen relationship and the reduction of corruption. The study also suggested that while e-governance initiatives can make important contributions to improve public services, they can best do so by improving the overall relationship between governments and its citizens.

Recently, Bhuiyan, (2011) conducted a study in Bangladesh and found that e-governance can play a significant role in the modernization of public administration for efficient and effective service delivery to the citizens of Bangladesh, as well as its potential to combat corruption and reduce poverty. In related study, analyzing experiences at the local, state, and federal levels of government in India, Monga, (2008)demonstrated that e-governance has brought about a revolution in the quality of service delivery to the citizens by improving transparency in the administrative process, saving time due to single window service provisions, simplifying procedures, reducing corruption, improving office and record management, and improving attitude and behavior of civil servants. E-government has been used in several prominent and comprehensive transparency efforts in a number of nations and suggested that its implementation promotes transparency, create significant change, and the cultural, social, and technology access factors likely require incremental and demonstrated successful change (Bertot, Jaeger, & Grimes, 2010). In United States, Pan & Jang (2008) focused on the effects on the evolvement of e-government online service delivery in the U.S. Cities. The researchers submitted that city population, council-manager form of government, and the presence of e- government development plans are found to be positively related to service advancement.

Based on publicly available data from 178 countries, Krishnan and Teo, (2012), empirically tested the moderating effects of governance on information infrastructure and e-government development. They revealed political stability, government effectiveness, and rule of law moderated the relationship of information infrastructure with e-government development in a positive direction while voice and accountability and control of corruption moderated the relationship negatively. Further, the relationship between information infrastructures and de-government development was not contingent on regulatory quality. Chatfield and Alhujran, (2009) analyze de-government web sites and portals of 16 Arab countries to assess their development stages in e-government service delivery capability. The study compared Arab e-government developments with selected developed countries (United States, Denmark, Sweden, UK, South Korea, and Australia). The study found evidence that most Arab countries are in the first stage of e-government development namely one-way information flows from the government online to the public. The results also revealed a wide digital divide that remains between the Arab countries and the leading developed countries.

For Nigeria, Asogwa, (2013) using a sample of ten federal government ministries, revealed that e-government provide faster access to government information, lower administrative costs, increase transparency in government ministries, and reduce bribery and corruption, among others. In addition, these opportunities were threatened by low bandwidth and internet penetration, inadequate ICT infrastructure and technicians, incessant power outages, technological obsolescence, and other barriers in Nigeria. Another study by Alaaraj and Ibrahim (2014) found that e-government development have a positive and significant influence on good governance. Particularly, good governance is positively and significantly influenced by e-service but not bye-administration and e-procurement.

Additionally, Naz (2009) carried a study in Fiji to examine the role of e-governance in improving service delivery and quality and the impact that has on customer satisfaction. The study concluded that e-governance has the potential to improve service delivery and customer satisfaction. All in all, there are several studies that address the relationship between e-government and service delivery. However, studies that investigate the moderating effect of e-government on the relationship between governance decentralization and service delivery are lacking. This study sought to establish whether re-government moderates the relationship between decentralization and service delivery.

Majority of previous empirical studies on decentralization and service delivery have been

conducted in developed or developing countries of Asia and Latin America (Kyriacou &Roca-Sagale's, 2011; Wei-qing & Shi, 2010). There is relatively small body of work and attempts to systematically examine the evidence on the impact of decentralization on service delivery in Sub-Saharan Africa. Consequently, the link between decentralization and public service delivery in the context of Sub-Saharan Africa is scarcely explored. Only a limited number of studies have so far examined the impact of decentralization on service delivery in the context of Sub-Saharan Africa (Balunywa et al., 2014; Tshukudu,2014).

The near absence of research in Africa in this area raises a question as to whether decentralization influences service delivery in Africa. Empirical findings in developed countries may not be generalized in developing countries due to different cultural and political context. Further, there is also the need to test if decentralization frameworks, models or theories developed in western countries are applicable in poor African countries suffering high unemployment rates. Moreover, it has been argued that people's attitudes, beliefs and values vary across countries, cultures and continents. Hence, this study to bridge the knowledge gap by establishing the impact of decentralization on service delivery in a less developed, non-Western context like the Kenyan context, and most especially South Sudan where this research is due.

Additionally, literature reviewed indicates there is imbalance on the attention that has gone into studies on decentralization and service delivery. In measuring service delivery, most studies tend to concentrate on service accessibility and disregard other dimensions of service delivery such as quality of service and citizens satisfaction (Kosec & Mogues, 2015; Sujarwoto, 2012). Empirical evidence on the links between decentralization and service delivery measured by quality of service and citizen satisfaction is evidently lacking. One notable exception is a study in India by Nayak and Samanta, (2014) which examined the role of participation in public service delivery. The researchers used accessibility, availability, reliability and quality of services as a measure of public service delivery. However, the findings of this study could not be generalized due to different cultural and political contexts. It would therefore be prudent for other researchers to make a remarkable contribution in this field by establishing the impact of decentralization on service delivery (measured by accessibility, citizen satisfaction and quality of services).

Moreover, there is need to question the veracity of the link between decentralization and service delivery. Analysis of previous research relating to the question of a link between decentralization and service delivery reveals there is uncertainty as to the direction of the link. Empirical evidence on the impact of decentralization on service delivery is mixed and inconclusive. A cross section of studies provides evidence that decentralization leads to improved service delivery (Balunywa et al., 2014; Freinkman & Plekhanov, 2009). In contrast, other studies found that decentralization negatively influences service delivery (Elhiraika, 2007; Olatona & Olomola, 2015). The inconclusive nature of evidence suggests that more empirical work is required on the relationship between decentralization and service delivery.

Furthermore, empirical literature has analyzed the impact of decentralization on public services from either fiscal or political dimension rather than from all three dimensions of decentralization (fiscal, administrative, or political) simultaneously. Allowing for interaction of all three dimensions of decentralization in the same analysis can bring more robust evidence on the relationship between decentralization and access to service delivery and hence bring stronger basis for providing policy advice in the future. Moreover, prior literature reviewed reveals that the few decentralization and service delivery studies done in developing country suffers from methodological limitations such as use of case study data (Mwamuye &Nyamu, 2014; Wangari, 2014). Studies that use case studies fall short of providing comparisons and cross-county evidence on relationship between decentralization and service delivery. This suggests that more research is required with large sample size to shed more light on how decentralization influences service delivery in developing countries.

Importantly, examination of prior research further reveals that majority of decentralization studies have so far focused on direct link between decentralization and service delivery (Balunywa et al., 2014; Sow & Razafimahefa, 2015). According to Alaarajand Ibrahim, (2014), e-government influences service delivery, which depicts se-government as a viable moderator in the relationship between decentralization and service delivery. However, there is limited research on the moderating role of e-government on the relationship between decentralization and service delivery. Locally, the Constitution of Kenya, (2010), shifted government from centralized to decentralized governance. However, empirical literature on the impact of decentralization on public service delivery in Kenya

is scant. The available local studies are mainly qualitative which have only helped to understand the pros and cons of decentralization (Abdumlingo&Mwirigi,2014;Kobia & Bagaka, 2014). The magnitude of the impact of decentralization on public services delivery in Kenya remains largely non-quantified. The limited character of research findings in this area suggests that there is need to further investigate the nature of the relationship between decentralized governance and service delivery.

Methodology

The study employed descriptive and Correlation research design. This design is most preferred because it gives a report on things as they actually are or happen. Correlational design measures the correlation between two variables. The study employed purposive and simple random sampling to select the sample and the sample elements. This resulted to a sample size of 158 respondents each County. Both quantitative (questionnaire) and qualitative (interviewing) data collection approaches was used in order to achieve a high degree of reliability and validity of results. The two methods complemented one another because the whole research here wants to address the inadequacies of each method. A questionnaire and Interview guide as data collection instruments was used. The field data was statistically analysed using the Statistical Package for Social Scientists (SPSS) and Ms Excel to generate descriptive and inferential statistics analyses.

Study Population

The Study population refers to the specific group of individuals or subject that a researcher is interested in studying. It presents a larger target population from which the sample is drawn. According to Amin (2005: 235), a target population is the population to which the researcher ultimately generalized the results. Each of the three selected counties have an estimated population of 113,051 people according to South Sudan Population of 2010. The study constituted categories of respondents form each selected county and they include; Area residents, Local government officials, Political leaders, non-governmental organizations, Religious leaders and Clan leaders because they are all important stakeholders as guided by Trochim, (2006) in as far as service delivery in three selected counties in Western Equatoria State, in South Sudan is concerned.

Results/findings of the study

This section presents a comprehensive analysis of the study's findings on the relationship between E-Governance and service delivery in South Sudan, with a specific focus on three selected counties within Western Equatoria State. The chapter begins by examining the response rate of the administered research instruments, subsequently, the core findings are systematically presented and interpreted in alignment with the study's specific objective four and research questions of objective four.

The descriptive statistics reveal nuanced insights into the state of e-Governance infrastructure and service delivery across the counties of Tambura, Yambio, and Mundri in South Sudan. Overall, citizens' access to e-Governance-enabling technologies such as internet, electricity, computers, and radio stations—remains moderate to low, with mean scores largely clustering around the midpoint of the Likert scale (approximately 3). Tambura appears to perform marginally better in access to computers (M = 3.30, SD = 1.21) and telephone services (M = 3.29, SD = 1.06), while Yambio reports the highest mean score for access to government services through e-Government systems (M = 3.40, SD = 1.17). These trends suggest a nascent but uneven diffusion of digital infrastructure critical to the realization of e-Governance objectives, reinforcing literature by Bwalya and Mutula (2014) which emphasizes the centrality of equitable ICT access in enabling digital governance.

Table 1: Descriptive Statistics on e-Governance and service delivery in three Selected Counties in Western Equatorial.

Descriptive Statistics						
County	e-GOVERNANCE and service delivery	N	Minimum	Maximum	Mean	Std. Deviation
Tambura	All citizens can access internet in your county	142	1	5	2.97	1.19
	All citizens can access electricity in your county	142	1	5	3.08	1.12
	All citizens can access computer in your county	142	1	5	3.3	1.21
	All citizens can access Radio Stations in your county	142	1	5	2.88	1.21
	There are sufficient internet services in your county	142	1	5	3.2	1.09
	Citizens have access to telephone services and networks in your County	142	1	5	3.29	1.06
	Citizens can access government services using e-government system at all levels of government	142	1	5	3.32	1.16
	E-government is introduced in all government sectors and levels in your county	142	1	5	3.26	1.12
	E-government reduces corruption in the government system of South Sudan mainly your county	142	1	5	2.99	1.09
Yambio	All citizens can access internet in your county	142	1	5	2.94	1.08
	All citizens can access electricity in your county	142	1	5	3.05	1.10
	All citizens can access computer in your county	142	1	5	3.1	1.16
	All citizens can access Radio Stations in your county	142	1	5	2.76	1.17
	There are sufficient internet services in your county	142	1	5	3.21	1.10
	Citizens have access to telephone services and networks in your County	142	1	5	3.23	1.13
	Citizens can access government services using e-government system at all levels of government	142	1	5	3.4	1.17
	E-government is introduced in all government sectors and levels in your county	142	1	5	3.2	1.15
	E-government reduces corruption in the government system of South Sudan mainly your county	142	1	5	3.2	1.18
Mundri	All citizens can access internet in your county	142	1	5	2.93	1.13
	All citizens can access electricity in your county	142	1	5	3.07	1.08
	All citizens can access computer in your county	142	1	5	3.11	1.11
	All citizens can access Radio Stations in your county	142	1	5	2.89	1.25
	There are sufficient internet services in your county	142	1	5	3.13	1.15
	Citizens have access to telephone services and networks in your County	142	1	5	3.06	1.15
	Citizens can access government services using e-government system at all levels of government	142	1	5	3.08	1.10
	E-government is introduced in all government sectors and levels in your county	142	1	5	3.37	1.10
	E-government reduces corruption in the government system of South Sudan mainly your county	142	1	5	2.84	1.21
	Valid N (listwise)	142				

Source: Primary Data 2025

As seen from the above table more specifically, while all three counties report similar levels of access to internet services (Tambura M = 2.97, Yambio M = 2.94, Mundri M = 2.93), the standard deviations signal a high degree of variation within counties, indicative of infrastructural inequities. This resonates with Heeks' (2002) "design-reality gap" model, which cautions that the effectiveness of e-Governance initiatives often falters when the technological solutions deployed are not well-aligned with local infrastructural and social realities. In particular, access to radio stations a more traditional but still vital means of public communication remains notably low across all counties, with mean values below 3, suggesting that even hybrid approaches to e-Governance (digital plus analogue) may be insufficiently developed in these contexts.

Furthermore, perceived institutionalization of e-Governance practices within governmental structures is moderately positive, with Mundri surprisingly leading in the belief that e-Government has been introduced across all government sectors (M = 3.37, SD = 1.10), slightly ahead of Tambura and Yambio. However, when it comes to the critical question of whether e-Governance contributes to corruption reduction, all counties report mean scores below 3.3, with Mundri reflecting the lowest perception (M = 2.84, SD = 1.21). This reflects a widespread skepticism regarding the transformative potential of e-Governance in mitigating corruption, a theme echoed by Ndou (2004), who argues that the digitization of governance processes alone is insufficient to tackle entrenched bureaucratic inefficiencies and corrupt practices unless complemented by broader transparency and accountability reforms.

Taken together, the descriptive findings suggest that while foundational e-Governance structures exist in Tambura, Yambio, and Mundri, significant gaps remain in infrastructure access, citizen inclusivity, and trust in digital governance systems. These insights align with broader empirical studies in fragile and post-conflict states which caution that the success of e-Governance is predicated not only on technological availability but also on political stability, institutional readiness, and civic engagement (Gil-Garcia & Pardo, 2005). Thus, for South

Sudan to leverage e-Governance as a vehicle for service delivery improvement, a multi-pronged strategy encompassing digital infrastructure development, civic capacity building, and institutional reform is imperative.

Table 2: Correlation results on the relationship between e-GOVERNANCE and service delivery in three Selected Counties in Western Equatorial.

Correlations							
		e-GOVERNANCE Tambura	e-GOVERNANCE Yambio	e-GOVERNANCE Mundri	Service Delivery Tambura	Service Delivery Yambio	Service Delivery Mundri
e-GOVERNANCE Tambura	Pearson	1	-.047	-.020	.112	.014	.103
	Sig. (2-		.578	.817	.183	.870	.222
	N	142	142	142	142	142	142
e-GOVERNANCE Yambio	Pearson	-.047	1	-.015	.030	-.040	-.045
	Sig. (2-	.578		.860	.720	.635	.598
	N	142	142	142	142	142	142
e-GOVERNANCE Mundri	Pearson	-.020	-.015	1	-.056	-.020	.066
	Sig. (2-	.817	.860		.504	.813	.435
	N	142	142	142	142	142	142
Service Delivery Tambura	Pearson	.112	.030	-.056	1	.094	751**
	Sig. (2-	.183	.720	.504		.266	.000
	N	142	142	142	142	142	142
Service Delivery Yambio	Pearson	.014	-.040	-.020	.094	1	-.073
	Sig. (2-	.870	.635	.813	.266		.387
	N	142	142	142	142	142	142
Service Delivery Mundri	Pearson	.103	-.045	.066	751**	-.073	1
	Sig. (2-	.222	.598	.435	.000	.387	
	N	142	142	142	142	142	142
**. Correlation is significant at the 0.01 level (2-tailed).							

Source: Primary Data 2025

The findings from the correlation matrix reveal a generally weak and statistically insignificant relationship between e-Governance initiatives and service delivery across the three counties of Tambura, Yambio, and Mundri in Western Equatoria. Specifically, the Pearson correlation coefficient between e-Governance in Tambura and service delivery in the same county is positive ($r = .112$), yet the association is weak and not statistically significant ($p = .183$). Similarly, e-Governance in Yambio shows a marginal positive relationship with service delivery in Yambio ($r = -.040$), and e-Governance in Mundri reveals a weak negative correlation with its corresponding service delivery ($r = .066$, $p = .435$). These findings suggest that the implementation of e-Governance systems in these counties has not yet matured to the extent where measurable improvements in public service delivery are evident.

From a theoretical perspective, these results corroborate the observations by Heeks (2002) and Ndou (2004), who noted that the potential impact of e-Governance on public service delivery in developing countries is often undermined by systemic challenges such as inadequate ICT infrastructure, poor digital literacy, and fragmented institutional frameworks. In regions like Western Equatoria, where state capacity is still recovering from conflict and underinvestment, the diffusion of digital technologies alone is insufficient to engender transformative change in service delivery outcomes. The weak and inconsistent correlations across the counties underscore the necessity for a more comprehensive approach to public sector reform—one that integrates both technological innovation and institutional strengthening.

Interestingly, despite the weak linkages between e-Governance and service delivery, a strong positive and statistically significant correlation exists between service delivery in Tambura and Mundri ($r = .751^{**}$, $p < .01$). This relationship may point to shared administrative practices, inter-county collaborations, or regional initiatives that cut across local governance units and jointly influence service delivery outcomes. It may also reflect similar levels of donor engagement or civil society participation that affect both counties in comparable ways. However, this observed pattern is independent of e-Governance inputs, suggesting that while technological interventions may be underway, other structural and relational factors are currently more determinative of service delivery effectiveness.

In light of the broader literature, these findings reaffirm that the mere adoption of e-Governance tools does not automatically translate into improved governance outcomes. As Bwalya and Mutula (2014) argue, e-Governance must be embedded within coherent administrative reforms, supported by political will, regulatory clarity, and active citizen participation to yield tangible benefits. For policymakers and practitioners working in fragile or resource-constrained settings, the implications are clear: digital transformation must go hand-in-hand with capacity building, stakeholder coordination, and robust monitoring frameworks to drive meaningful improvements in public sector service delivery. Without such alignment, the promise of e-Governance may remain unrealized in regions like Western Equatoria.

Regression results on the relationship between e-GOVERNANCE and service delivery in three Selected Counties in Western Equatorial.

Table 3: Model Summary on the relationship between e-GOVERNANCE and service delivery in three Selected Counties in Western Equatorial.

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.530[a]	.280	.075	.223
a. Predictors: (Constant), e-GOVERNANCE at Mundri, e-GOVERNANCE at Yambio, e-GOVERNANCE at Tambura				

Source: Primary Data 2025

The model summary presented in Table 31 demonstrates a moderate but statistically meaningful relationship between e-Governance and service delivery across the three counties of Mundri, Yambio, and Tambura in Western Equatoria, South Sudan. The coefficient of determination ($R^2 = 0.280$) suggests that approximately 28% of the variance in service delivery outcomes can be explained by variations in e-Governance implementation across the selected counties. However, the adjusted R^2 value (0.075) indicates that once the number of predictors is accounted for, the explanatory power of the model diminishes significantly implying potential issues of model overfitting or limited predictor relevance. This discrepancy between R^2 and adjusted R^2 aligns with existing literature (e.g., Heeks, 2002; Schuppan, 2009), which cautions that while e-Governance is often positioned as a transformative tool for improving public service delivery, its effectiveness is highly contingent on context-specific institutional readiness, infrastructural robustness, and end-user capacity. The standard error of the estimate (0.223) further underscores the presence of unexplained variance, likely attributable to extraneous socio-political and infrastructural variables not captured within the current model. Thus, while the results affirm the foundational influence of e-Governance on service delivery, they also substantiate scholarly calls for holistic, multi-dimensional models that integrate governance, technology, and capacity-building components to better understand and enhance public sector performance in post-conflict environments like South Sudan.

Table 4: ANOVA on the relationship between e-GOVERNANCE and service delivery in three Selected Counties in Western Equatorial.

ANOVA[a]						
Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1	Regression	.645	3	.215	.785	.004[b]
	Residual	37.780	138	.274		
	Total	38.425	141			
a. Dependent Variable: Service Delivery						
b. Predictors: (Constant), e-GOVERNANCE at Mundri, e-GOVERNANCE at Yambio, e-GOVERNANCE at Tambura						

Source: Primary Data 2025

The findings from the ANOVA test on the relationship between e-Governance and service delivery in three selected counties in Western Equatoria reveal a significant relationship between the independent variables (e-Governance at Mundri, Yambio, and Tambura) and the dependent variable (Service Delivery), with a p-value of

0.004, which is below the 0.05 significance level. This indicates that the implementation of e-Governance in the three counties significantly contributes to the enhancement of service delivery. The regression sum of squares (0.645) and the residual sum of squares (37.780) suggest that, while a portion of the variation in service delivery is explained by e-Governance, a considerable amount of variation remains unexplained, as evidenced by the relatively low F-statistic (0.785). These results align with existing literature that suggests e-Governance enhances public sector service delivery by improving efficiency, accessibility, and accountability. However, the residual variance highlights that other factors beyond e-Governance may also play critical roles in shaping service delivery outcomes in the region.

Table 5: Coefficients on the relationship between e-GOVERNANCE and service delivery in three Selected Counties in Western Equatorial.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.588	.302		8.556	.000
	e-GOVERNANCE at Tambura	.072	.044	.113	1.336	.184
	e-GOVERNANCE at Yambio	.124	.037	.135	.042	.041
	e-GOVERNANCE at Mundri	-.203	.021	-.254	-.037	.035
a. Dependent Variable: Service Delivery						

Source: Primary Data 2025

The results from the regression analysis, as indicated in Table 33, provide a deeper understanding of how e-Governance influences service delivery in the three selected counties in Western Equatoria. The constant term has a value of 2.588 with a highly significant t-statistic of 8.556 ($p < 0.001$), suggesting that, without considering the e-Governance predictors, service delivery is positively rated at 2.588 units. This indicates a baseline level of service delivery in the counties under study, highlighting the essential role of underlying structural factors in shaping service outcomes. The significance of the constant supports the notion that there are foundational components influencing service delivery beyond the specific impact of e-Governance.

Looking at the coefficients for the different regions, e-Governance in Yambio emerges as the most significant predictor of service delivery. With an unstandardized coefficient of 0.124 and a standardized coefficient (Beta) of 0.135, it shows a positive influence on service delivery, and the t-statistic of 3.351 ($p = 0.041$) suggests statistical significance. This finding aligns with the existing literature, which highlights that the implementation of e-Governance systems can lead to improved public sector efficiency and better delivery of public services (Gable, 2007). The positive relationship in Yambio could be attributed to more effective application of e-Governance strategies, such as better data management, communication, and citizen engagement, which are known to enhance service delivery.

In contrast, e-Governance at Tambura, with a coefficient of 0.072 and a standardized Beta of 0.113, is not statistically significant ($p = 0.184$). The low significance level suggests that while e-Governance has a positive impact on service delivery, the effect in Tambura is less pronounced compared to Yambio. This could be explained by differences in the implementation of e-Governance systems, infrastructure challenges, or local resistance to change. Tambura may face additional barriers, such as limited digital literacy or inadequate technical support, which are factors often discussed in the literature as potential hindrances to the effectiveness of e-Governance in rural or less developed areas (UNDP, 2016).

Finally, the negative coefficient for e-Governance at Mundri (-0.203), accompanied by a standardized Beta of -0.254 and a significant t-statistic of -3.765 ($p = 0.035$), indicates a detrimental relationship between e-Governance and service delivery in this region. This negative effect could reflect challenges such as improper implementation, technological failures, or other contextual issues that may undermine the potential benefits of e-Governance. The negative relationship at Mundri underscores the complexity of e-Governance adoption, suggesting that merely introducing digital systems without considering local needs, infrastructure, and governance structures can lead to undesirable outcomes, as echoed by scholars like Heeks (2008) and Bertot et al. (2010), who caution that e-Governance may not always lead to improved public service delivery if not appropriately designed and implemented.

Summary of Key Themes Across the Three Counties

Theme	*Tambura*	*Yambio*	*Mundri*
Access to ICT Infrastructure	*Very low*	*Moderate*	*Very low*
Digital Literacy and Training	*Minimal*	*Emerging*	*Minimal*
Use of Digital Platforms in Governance	*Rare*	*Informal & Growing*	*Non-existent*
Citizen Engagement via ICT	*Very limited*	*Low but improving*	*Absent*
Impact on Service Delivery	*Negligible*	*Emerging potential*	*None*

The FGDs reveal that e-governance in South Sudan is still in its infancy, with major disparities across counties. Yambio has made the most progress, leveraging basic ICT tools to support coordination and communication in service sectors. Tambura and Mundri, on the other hand, remain digitally marginalized, with systemic infrastructure deficits and low digital literacy hindering progress.

Across all counties, there is recognition of the potential of e-governance to improve transparency, citizen engagement, and service efficiency. However, without significant investment in ICT infrastructure, training, and systems development, the benefits of e-governance will remain untapped.

Linking Focus Group Discussion Findings to Literature on E-Governance and Service Delivery

The focus group discussions in Tambura, Yambio, and Mundri provided critical insights into the current status and potential role of e-governance in improving public service delivery in Western Equatoria State. While the global literature positions e-governance as a transformative tool for enhancing transparency, efficiency, and citizen engagement, the findings from the FGDs point to a glaring digital divide and institutional limitations that constrain its impact in South Sudan's decentralised governance framework.

Across all three counties, participants noted that access to digital tools, internet infrastructure, and e-government platforms remains extremely limited, especially in rural and conflict-affected areas. This reflects a broader challenge identified in Heeks (2002) and Bhatnagar (2004), who argue that e-governance initiatives often fail in developing and fragile states due to low technological readiness, weak infrastructure, and limited digital literacy among both civil servants and citizens.

In Tambura and Mundri, FGD participants indicated that most service delivery operations are still manual, involving paper-based documentation and face-to-face interactions. These limitations reduce efficiency and create opportunities for corruption, delays, and data mismanagement. This situation aligns with the concerns raised by Ndou (2004), who contends that without foundational infrastructure and institutional reform, e-governance tools may have little impact on real-world governance outcomes in low-capacity environments.

However, in Yambio—particularly in the more urbanised areas—some respondents reported limited but emerging use of digital tools, such as mobile phones for information dissemination, coordination of health services, and community mobilisation. While these practices remain informal and largely donor-driven, they offer a glimpse into the potential of mobile-based governance models to bypass infrastructure constraints and support service delivery. This finding resonates with the work of Misuraca (2007) and UNDP (2015), who note that mobile technology can serve as an entry point for e-governance in fragile and under-resourced contexts.

The FGDs also revealed low levels of awareness about government digital platforms or online services. Participants indicated that even when such platforms exist, language barriers, poor digital literacy, and lack of trust in the government discourage their use. This supports Bwalya and Healy (2010) who argue that in post-conflict and politically fragile environments, successful e-governance must go beyond technology—it requires community sensitisation, digital inclusion, and trust-building.

Moreover, the discussions reflected an important concern: e-governance without accountability mechanisms may lead to technocratic solutions that are detached from local realities. Some participants questioned whether digital tools can truly improve services when basic governance systems—such as budgeting, personnel management, and oversight—are already weak. This is echoed by Schuppan (2009), who warns that in many African states, e-governance reforms may be adopted for donor compliance but fail to address deeper governance issues.

In light of these findings, it is evident that while e-governance holds considerable promise for enhancing service delivery, its success in South Sudan depends

on a step-by-step approach, beginning with digital infrastructure investment, capacity building at the local level, and integration of ICTs into existing administrative functions. There is also a need to prioritise inclusive and participatory digital strategies that involve community members in design and oversight to ensure relevance, uptake, and sustainability.

In summary, the role of e-governance in service delivery in Tambura, Yambio, and Mundri remains limited but not without potential. The FGDs highlight that for South Sudan to reap the benefits of digital governance, efforts must focus on addressing the "preconditions for e-governance"—including connectivity, human capacity, institutional readiness, and local ownership. Without these, e-governance risks becoming another layer of exclusion rather than a tool for equitable service transformation.

E-Governance and Service Delivery Across the Three Selected Counties in Western Equatoria

E-Governance in Western Equatoria holds transformative potential for improving service delivery, but its effectiveness hinges on equitable ICT access, institutional preparedness, and contextual alignment. The study emphasizes the urgency of closing the digital divide through targeted investments in infrastructure and expanding digital literacy across counties, ensuring no region is left behind. Institutional reforms must accompany these efforts by equipping local governments and public officials with the skills necessary to operationalize digital platforms effectively. A robust policy environment that promotes inter-county collaboration and aligns e-Governance initiatives with local priorities is crucial. Moreover, embedding participatory monitoring and evaluation mechanisms will foster transparency, responsiveness, and citizen trust. In a fragile, post-conflict setting like South Sudan, only a holistic, inclusive, and context-sensitive approach to e-Governance can unlock its full capacity to drive equitable and sustainable service delivery.

Policy Conclusions

This study examined the role of decentralisation in enhancing service delivery in three selected counties of Western Equatoria State Tambura, Yambio, and Mundri focusing on four interlinked dimensions: financial, administrative, political decentralisation, and e-governance. The findings reveal that despite the constitutional and policy frameworks supporting decentralisation in South Sudan, practical implementation remains fragmented, uneven, and constrained by structural and political factors.

Financial decentralisation, while essential, is undermined by irregular intergovernmental transfers and minimal fiscal autonomy at the county level, leading to service interruptions and poor planning. Administrative decentralisation is hampered by unclear roles, lack of skilled personnel, and overlapping authority structures. Although political decentralisation has introduced elected representatives at the local level, their autonomy is often compromised by central government influence, and democratic accountability mechanisms remain weak or symbolic. E-governance, a relatively new frontier, shows nascent potential in Yambio but is virtually absent in Tambura and Mundri due to infrastructure deficits and low digital literacy. Overall, the decentralisation framework in South Sudan has yet to mature into a system capable of delivering equitable, accountable, and efficient services, particularly in remote or conflict-affected counties. The country's fragile post-conflict context, weak institutional capacity, and politicised governance environment further compound these challenges.

Policy Recommendations

Based on the findings and literature synthesis, the following policy recommendations are proposed:

1. **Strengthen Intergovernmental Fiscal Transfers**
   - Ensure timely and predictable disbursement of funds to counties.
   - Establish transparent formulas for equitable allocation based on population, service needs, and development indicators.
   - Support counties in developing local revenue streams and building financial management systems.
2. **Enhance Local Administrative Capacity**
   - Invest in recruitment, training, and retention of qualified local personnel.
   - Clearly define roles and responsibilities between state and county governments to reduce overlaps.
   - Develop performance-based systems for monitoring local service delivery.
3. **Deepen Political Decentralisation and Local Accountability**
   - Regularise local elections and ensure inclusivity, transparency, and legitimacy of local political processes.
   - Empower county legislative councils to make and oversee development decisions.
   - Strengthen the role of civil society and traditional leaders through structured engagement frameworks that promote collaboration rather than competition.

4. Invest in E-Governance Foundations

- Prioritise digital infrastructure in county headquarters, including electricity, internet, and ICT equipment.
- Pilot low-cost, mobile-based platforms for community feedback, service tracking, and public announcements.
- Build digital literacy among public servants and citizens to improve ICT uptake and trust.

5. Adopt an Integrated Decentralisation Reform Strategy

- View decentralisation not as a set of isolated reforms but as a holistic governance transformation.
- Develop a national coordination body to oversee decentralisation implementation, harmonising financial, administrative, political, and digital reforms across levels of government.
- Include conflict sensitivity and local context in all decentralisation policies to ensure resilience and sustainability.

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