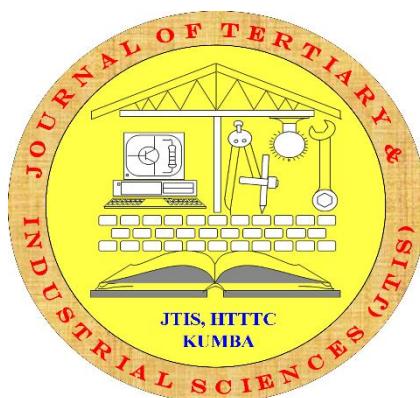


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Internet Access, Healthcare Delivery, and Rural Economic Welfare in Cameroon

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Abstract

The rapid diffusion of digital technologies is transforming the organisation of health systems and economic activities across the world. In recent years, internet connectivity has increasingly been recognised as a critical driver of healthcare delivery and socioeconomic welfare, particularly in rural communities where access to services remains limited. This study examines the relationship between internet access, healthcare delivery, and rural economic welfare in Cameroon. The main objective of the study is to analyse the extent to which internet access contributes to improvements in healthcare delivery and rural economic welfare at the national level. Specifically, the study seeks to evaluate the effect of internet penetration on healthcare service utilisation and to determine whether improved healthcare delivery contributes to enhanced rural economic welfare. The study employs secondary data drawn from internationally recognised sources, including the World Development Indicators, the International Telecommunication Union database, and the Global Health Observatory covering the period 2005 to 2024. The study uses an econometric modelling framework estimated through Ordinary Least Squares techniques. The findings reveal that internet penetration has a statistically significant positive effect on healthcare delivery and contributes indirectly to improvements in rural economic welfare through enhanced access to health information and services. The results further show that economic growth, educational attainment, and infrastructure development reinforce the positive impact of digital connectivity on rural welfare. Based on these findings, the study recommends that the Government of Cameroon strengthen digital infrastructure expansion in rural areas while integrating internet-based health information systems within the national healthcare strategy in order to improve service delivery and promote inclusive economic development.

Keywords: Internet access, healthcare delivery, rural economic welfare, digital development

1. Introduction

The rapid expansion of digital technologies has fundamentally transformed the structure of modern economies and the functioning of social systems worldwide (Castells, 2010). In developed countries, internet access has become a central component of economic development, innovation, and public service delivery. Over the past two decades, governments in Europe, North America, and parts of Asia have increasingly integrated

digital technologies into healthcare systems to improve the efficiency, accessibility, and quality of medical services (World Health Organization [WHO], 2021). According to the Organisation for Economic Cooperation and Development (2022), more than eighty five percent of households in developed economies have access to high-speed internet services, enabling digital health platforms, telemedicine consultations, and electronic medical record systems to become standard components of healthcare delivery. These developments have contributed to improved healthcare outcomes, better disease monitoring, and more efficient health systems (World Health Organisation, 2023).

Despite these advances, the benefits of digital connectivity remain unevenly distributed across the global economy. Many developing countries continue to face substantial digital divides that limit the effective use of internet technologies in critical sectors such as healthcare and education. The International Telecommunication Union (2024) reports that while internet penetration rates exceed ninety percent in most high-income countries, access remains below forty percent in many low-income economies. Limited digital infrastructure, inadequate regulatory frameworks, and high costs of connectivity often constrain the expansion of internet services in rural areas of developing countries. As a result, significant segments of the population remain excluded from the potential socioeconomic benefits associated with digital technologies.

In the context of Sub-Saharan Africa, the relationship between digital connectivity and development outcomes has attracted increasing scholarly attention. Over the past decade, the region has experienced substantial growth in mobile communication technologies and internet connectivity. Internet penetration in Sub-Saharan Africa increased from approximately twenty percent in 2015 to nearly forty percent by 2024 (International Telecommunication Union, 2025). This growth has opened new opportunities for improving access to information, expanding digital financial services, and supporting innovation in public service delivery. In the health sector, internet-based technologies are increasingly used to support telemedicine services, health information systems, and digital disease surveillance platforms. These innovations have the potential to strengthen healthcare delivery systems and improve health outcomes across the region (World Health Organisation, 2025).

Within the Central African Economic and Monetary Community (CEMAC), digital transformation has become an important component of regional development strategies. Governments across the region have recognised the role of digital infrastructure in promoting economic diversification and improving public service delivery. However, internet penetration levels remain relatively low compared to global averages. Recent estimates suggest that internet usage across CEMAC countries averages approximately thirty five percent of the population, with considerable disparities between urban and rural areas (African Development Bank, 2023). These disparities are particularly problematic for healthcare delivery because rural populations often face greater barriers to accessing health facilities and medical professionals.

Cameroon provides an interesting case for examining the relationship between internet access, healthcare delivery, and rural economic welfare. The country has experienced significant growth in the telecommunications sector over the past two decades. Internet penetration increased from approximately sixteen percent in 2015 to more than forty percent by 2024 (International Telecommunication Union, 2025). At the same time, the government has made efforts to promote digital transformation through initiatives such as the National Digital Economy Strategy and investments in broadband infrastructure. These initiatives aim to improve connectivity and support the integration of digital technologies into various sectors of the economy, including healthcare and education.

However, despite these improvements, significant challenges remain in terms of healthcare accessibility and rural welfare outcomes. According to the Cameroon National Institute of Statistics (2023), a substantial proportion of the rural population continues to experience limited access to healthcare facilities, medical personnel, and essential health services. Rural households often travel long distances to reach health centres, and shortages of healthcare professionals remain common in many remote areas. These challenges are compounded by persistent rural poverty and limited economic opportunities in rural communities.

At the same time, internet technologies are increasingly being utilised as tools for improving health information dissemination, medical consultations, and disease surveillance. Digital health platforms allow individuals to access health information, communicate with medical professionals, and receive medical guidance without the need for physical travel. These developments suggest that internet access may play an important role in strengthening healthcare delivery systems and improving welfare outcomes in rural communities.

Nevertheless, empirical evidence on the relationship between internet access, healthcare delivery, and rural economic welfare remains limited in the context of Cameroon. While several studies have examined the role of mobile phone technologies in financial inclusion and communication, fewer studies have specifically analysed how internet connectivity influences healthcare service delivery and rural economic welfare outcomes. Moreover, existing studies often focus on broader regional trends rather than country-specific dynamics that shape development outcomes in Cameroon.

The absence of comprehensive empirical analysis on this subject limits the ability of policymakers to design effective digital development strategies that address healthcare challenges and rural welfare disparities. Understanding how internet access influences healthcare delivery and rural economic welfare is, therefore, essential for designing policies that promote inclusive development and improve living standards among rural populations.

In light of these considerations, the main objective of this study is to examine the effect of internet access on healthcare delivery and rural economic welfare in Cameroon. Specifically, the study seeks to assess the extent to which internet penetration influences healthcare delivery indicators and to determine the effect of improvements in healthcare delivery on rural economic welfare. The study further aims to evaluate how increased digital

connectivity contributes to access to healthcare services and whether enhanced healthcare delivery leads to improvements in rural welfare outcomes. Accordingly, the specific objectives of the study are to examine the effect of internet access on healthcare delivery in Cameroon and to evaluate the effect of healthcare delivery improvements on rural economic welfare outcomes.

The scientific relevance of this study lies in its contribution to the emerging literature on digital development and health economics in developing countries. By providing empirical evidence from Cameroon, the study contributes to a deeper understanding of how digital technologies influence healthcare systems and economic welfare in rural contexts. From a policy perspective, the findings offer important insights that can guide national strategies aimed at improving healthcare accessibility and promoting inclusive rural development through digital connectivity.

The rest of the paper is organised as follows. Section two presents the literature review and highlights the theoretical and empirical foundations of the study. Section three presents the methodology and the econometric model used in the analysis. Section four presents the empirical results and discussion. Section five concludes the study and provides policy implications.

2. Literature Review

The relationship between digital connectivity, healthcare delivery, and economic welfare has attracted increasing attention in development economics, public health economics, and information systems research. Scholars have explored how internet access can transform service delivery systems, improve access to information, and enhance economic opportunities, particularly in rural areas where structural constraints often limit development outcomes. This section reviews both the theoretical and empirical literature that informs the present study.

From a theoretical perspective, several economic theories provide useful backgrounds for understanding how internet access may influence healthcare delivery and rural economic welfare. The human capital theory developed by Becker (1964) emphasises the role of education and health in improving productivity and income generation. According to this theory, improvements in healthcare delivery enhance the physical and cognitive capacities of individuals, thereby strengthening labour productivity and economic performance. When internet technologies improve access to health information and healthcare services, they indirectly contribute to the accumulation of human capital and economic welfare (Bloom, Canning, & Sevilla, 2017; World Health Organisation, 2023).

Another important theoretical perspective is the diffusion of innovation theory introduced by Rogers (2003). This theory explains how new technologies spread across societies and influence behaviour and institutional practices. Within the context of digital technologies, internet connectivity facilitates the rapid diffusion of information, medical knowledge, and innovative healthcare practices. Through digital communication platforms, health

professionals can share medical expertise and coordinate healthcare delivery across geographically dispersed areas. In rural contexts, this diffusion process may reduce informational asymmetries and enhance the quality of healthcare services available to populations (Donner, 2018; Organisation for Economic Co-operation and Development [OECD], 2022).

The digital development theory also provides theoretical insights into the role of information and communication technologies in economic transformation. According to this theory, digital infrastructure enhances economic efficiency by reducing transaction costs, expanding access to markets, and facilitating information exchange (Bankole, Osei Bryson, & Brown, 2017; Foster & Heeks, 2017). In the healthcare sector, internet connectivity can improve the efficiency of health information systems, strengthen disease surveillance mechanisms, and support remote medical consultations. These improvements contribute to more effective healthcare delivery and improved health outcomes, which ultimately influence economic welfare.

The network externalities theory further explains how the value of digital technologies increases as more individuals gain access to communication networks. As internet penetration expands within a society, the benefits of digital connectivity increase for both individuals and institutions (Katz & Shapiro, 2018). In the context of healthcare delivery, network effects may facilitate knowledge sharing among healthcare providers, improve patient access to medical information, and support the development of digital health ecosystems. These dynamics highlight the potential of internet technologies to strengthen healthcare systems and improve welfare outcomes, particularly in regions characterised by limited physical infrastructure.

Empirical research conducted in developed countries generally demonstrates a positive relationship between internet connectivity and healthcare service delivery. Studies conducted in Europe and North America show that digital health technologies have improved the efficiency of healthcare systems by enabling electronic medical records, telemedicine services, and digital disease monitoring platforms (OECD, 2022; Zhang & Chib, 2024). These technologies have reduced healthcare costs while improving the accessibility and quality of medical services. Research also indicates that internet-based health information systems improve patient engagement and enable more effective disease prevention strategies (World Health Organisation, 2023).

In developing countries, empirical evidence also suggests that internet access can significantly improve healthcare accessibility and welfare outcomes. Studies examining digital health initiatives across Asia and Latin America indicate that internet connectivity enables remote medical consultations, improves health information dissemination, and strengthens health system coordination (Nguyen & Boateng, 2023; Kumar & Kumari, 2021). These improvements often translate into better health outcomes and enhanced labour productivity, particularly in rural areas where traditional healthcare infrastructure remains limited.

Within Sub-Saharan Africa, the expansion of digital technologies has created new opportunities for improving public service delivery. Research indicates that mobile internet platforms have facilitated the development of digital health applications that provide health information, disease prevention guidance, and teleconsultation services to rural populations (Onyango & Ondiek, 2024; Yeboah & Ewur, 2022). These technologies have been particularly important in addressing healthcare challenges in remote communities where shortages of medical personnel and health facilities remain common. Empirical studies also show that digital connectivity contributes to improved maternal health outcomes, better disease monitoring, and increased utilisation of healthcare services.

Despite these positive findings, some studies highlight potential limitations and uneven impacts associated with digital health technologies. In several developing countries, the benefits of internet-based health services remain constrained by limited digital literacy, inadequate infrastructure, and high costs of internet connectivity (Okunola, Rowley, & Johnson, 2017; Balamoune Lutz, 2019). In rural areas where internet access remains unreliable, digital health initiatives may not fully reach the most vulnerable populations. Moreover, disparities in access to digital technologies may reinforce existing socioeconomic inequalities if appropriate policy measures are not implemented.

In the African context, research examining the relationship between digital connectivity and economic welfare has produced mixed results. While many studies demonstrate that internet access improves access to financial services, market information, and health services, other studies suggest that the economic benefits of digital technologies depend on complementary factors such as education, infrastructure development, and institutional capacity (African Development Bank, 2023; International Telecommunication Union, 2024). These findings highlight the importance of considering broader socioeconomic conditions when evaluating the developmental impact of digital technologies.

Within Cameroon, empirical studies on the role of digital technologies in development have primarily focused on mobile phone adoption, financial inclusion, and communication services. Research indicates that mobile communication technologies have improved rural livelihoods by facilitating access to market information and financial services (Mbah & Fonchingong, 2020). However, relatively few studies have examined how internet connectivity influences healthcare delivery and rural economic welfare. Given the increasing importance of digital technologies in the national development agenda, this represents an important gap in the existing literature.

This study, therefore, seeks to contribute to the literature by providing empirical evidence on the relationship between internet access, healthcare delivery, and rural economic welfare in Cameroon. By employing a country-level econometric analysis using recent secondary data, the study aims to deepen understanding of how digital connectivity influences health service delivery and economic welfare outcomes in rural contexts. The findings are expected to provide valuable insights for policymakers seeking to harness digital technologies as instruments for inclusive development and improved healthcare accessibility.

3. Methodology

This study adopts a quantitative research design based on the use of secondary time series data to analyse the relationship between internet access, healthcare delivery, and rural economic welfare in Cameroon. The use of secondary data is appropriate because it allows for the analysis of long-term trends in digital connectivity, health service delivery, and economic welfare indicators at the national level. The study focuses on Cameroon as a country-level case study and utilises annual data covering the period from 2005 to 2024.

The selection of the 2005 to 2024 period, which provides nineteen annual data observations, is scientifically justified by the need to capture the long-term evolution of internet penetration, healthcare delivery, and rural welfare dynamics in Cameroon. The chosen period coincides with the rapid expansion of digital infrastructure and internet adoption in Cameroon and across Sub-Saharan Africa, particularly following major telecommunications liberalisation reforms and the expansion of mobile broadband technologies. Using annual time series data over this period makes it possible to observe structural changes, technological diffusion processes, and long-run socioeconomic trends relevant to healthcare accessibility and rural development. Furthermore, the use of nineteen annual observations is consistent with several empirical studies in development economics and health economics that rely on country-level time series analysis where data availability remains limited in developing countries.

The selection of the variables included in the study is also theoretically and empirically justified. Internet access is selected because digital connectivity facilitates access to information, telemedicine services, health awareness, and communication between healthcare providers and rural populations. Healthcare delivery indicators are included because improvements in healthcare services directly influence labour productivity, human capital accumulation, and household welfare, as emphasised by human capital theory. Rural economic welfare is measured through rural poverty indicators because poverty reduction remains one of the most important indicators of welfare improvement in developing economies. In addition, GDP per capita, education, and infrastructure development are incorporated as control variables because existing literature in development economics demonstrates that economic growth, educational attainment, and infrastructure access significantly influence both healthcare outcomes and welfare conditions. The inclusion of these variables therefore reduces omitted variable bias and improves the robustness and explanatory power of the econometric model.

The data are obtained from internationally recognised and reliable databases, including the World Development Indicators of the World Bank, the International Telecommunication Union database, the Global Health Observatory of the World Health Organisation, and statistical reports from the National Institute of Statistics of Cameroon. These sources provide consistent and comparable indicators related to internet penetration, healthcare delivery, economic welfare, and macroeconomic conditions. The choice of these databases is justified because they contain validated indicators widely used in development economics and health economics research.

The empirical analysis focuses on key indicators that capture digital connectivity, healthcare delivery, and rural economic welfare. Internet access is measured using the percentage of individuals using the internet in Cameroon, obtained from the International Telecommunication Union database. Healthcare delivery is proxied by indicators such as immunisation coverage rates and the number of healthcare service utilisations reported in national health statistics. Rural economic welfare is captured using rural poverty rates and rural household welfare indicators derived from national development statistics and the World Development Indicators. In addition to these core variables, the model incorporates several control variables commonly used in development economics literature in order to reduce omitted variable bias. These include gross domestic product per capita, educational attainment measured by secondary school enrolment rates, and infrastructure development proxied by access to electricity. These variables are theoretically justified because they influence both healthcare access and economic welfare outcomes. Economic growth increases income opportunities and government capacity to invest in social services, education strengthens human capital development, while infrastructure development improves access to services and markets.

In order to empirically examine the relationship between internet access, healthcare delivery, and rural economic welfare, the study specifies an econometric model based on the framework commonly used in development and health economics research. The functional relationship can be expressed as:

Rural Economic Welfare = f (Internet Access, Healthcare Delivery, Economic Growth, Education, Infrastructure)

This relationship is translated into an estimable econometric model as follows:

$$REW_t = \beta_0 + \beta_1 INT_t + \beta_2 HCD_t + \beta_3 GDP_t + \beta_4 EDU_t + \beta_5 INF_t + \varepsilon_t$$

Where REW represents rural economic welfare measured through rural poverty indicators, INT represents internet access measured as the percentage of individuals using the internet, HCD represents healthcare delivery indicators such as immunisation coverage or healthcare service utilisation rates, GDP represents gross domestic product per capita as an indicator of economic development, EDU represents education measured by secondary school enrolment rates, INF represents infrastructure development proxied by electricity access rates, β_0 represents the constant term, β_1 to β_5 represent the parameters to be estimated, and ε_t represents the stochastic error term. The inclusion of these explanatory variables is supported by theoretical perspectives such as human capital theory and the digital development framework, which emphasise the role of health, knowledge, and digital connectivity in shaping economic welfare outcomes.

The model is estimated using the Ordinary Least Squares estimation technique because of its efficiency and wide application in time series econometric analysis. Prior to estimating the regression model, several diagnostic tests are conducted to ensure the validity and reliability of the empirical results. Descriptive statistics are first computed to examine the

distribution and variability of the variables. Correlation analysis is also performed in order to identify the nature of relationships among the variables and to detect potential multicollinearity problems. Furthermore, standard econometric diagnostic tests, including tests for multicollinearity, autocorrelation, and heteroscedasticity, are conducted to verify the robustness of the model estimates. The results of these tests provide confidence that the estimated relationships accurately capture the interaction between internet access, healthcare delivery, and rural economic welfare in Cameroon.

4. Empirical Results and Discussion

This section presents and discusses the empirical results obtained from the econometric analysis. The objective is to examine the relationship between internet access, healthcare delivery, and rural economic welfare in Cameroon. The results are presented progressively, beginning with the descriptive statistics of the variables, followed by the correlation analysis, and finally the regression estimates derived from the econometric model specified in the methodology section. **Descriptive Statistics**

Descriptive statistics provide an overview of the statistical characteristics of the variables included in the model. These statistics summarise the central tendency and dispersion of the data and provide preliminary insights into the patterns observed within the study period. Table 1 presents the mean, standard deviation, minimum, and maximum values of the variables used in the analysis.

Table 1: Descriptive Statistics of the Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Rural economic welfare (Rural poverty rate %)	40.86	5.94	32.40	51.70
Internet access (% of population)	29.57	14.82	6.50	46.90
Healthcare delivery (Immunisation coverage %)	75.42	7.03	60.80	87.20
GDP per capita (USD)	1441.37	362.85	1038.60	1916.30
Education level (Secondary enrolment %)	47.08	9.71	30.20	60.50
Infrastructure development (Electricity access %)	56.31	10.96	39.10	72.40

The descriptive statistics reveal several important trends in the variables under investigation. The average rural poverty rate during the study period is approximately forty one percent, which reflects the persistent welfare challenges faced by rural communities in Cameroon. The mean level of internet access stands at approximately thirty percent of the population, although the variation across the years is relatively large, reflecting the rapid growth of digital connectivity over the past two decades. Healthcare delivery indicators,

measured through immunisation coverage rates, show relatively high average values of approximately seventy five percent, suggesting that significant progress has been made in expanding basic health services.

However, despite these improvements in healthcare coverage and internet access, rural poverty remains relatively high, highlighting the structural development challenges faced by rural communities. The descriptive statistics also show moderate variation in GDP per capita, education levels, and infrastructure development during the study period. These variables are important determinants of welfare outcomes and are therefore included as control variables in the econometric model.

Correlation Analysis

In order to examine the degree of association among the variables and to identify potential multicollinearity problems, a correlation analysis was conducted. The correlation matrix presented in Table 2 illustrates the pairwise relationships among the variables included in the regression model.

Table 2: Correlation Matrix

VARIABLE	REW	INT	HCD	GDP	EDU	INF
RURAL ECONOMIC WELFARE (REW)	1					
INTERNET ACCESS (INT)	-0.68	1				
HEALTHCARE DELIVERY (HCD)	-0.55	0.59	1			
GDP PER CAPITA (GDP)	-0.63	0.66	0.52	1		
EDUCATION LEVEL (EDU)	-0.51	0.48	0.54	0.60	1	
INFRASTRUCTURE DEVELOPMENT (INF)	-0.65	0.57	0.49	0.62	0.46	1

The results of the correlation analysis show that internet access is negatively correlated with rural poverty, suggesting that increases in internet penetration are associated with improvements in rural economic welfare. Healthcare delivery also shows a negative correlation with rural poverty, indicating that improvements in healthcare services contribute to better welfare outcomes. In addition, internet access is positively correlated with healthcare delivery, education levels, and infrastructure development, suggesting that improvements in digital connectivity often occur alongside broader socioeconomic development. Importantly, none of the correlation coefficients exceed the conventional threshold of 0.80 that would indicate severe multicollinearity problems. This suggests that the explanatory variables can be included simultaneously in the regression model without compromising the reliability of the estimated coefficients.

Regression Results

The regression analysis provides the main empirical evidence for the study. The Ordinary Least Squares estimation technique is used to estimate the relationship between internet access, healthcare delivery, and rural economic welfare in Cameroon. The results of the regression model are presented in Table 3.

Table 3: Ordinary Least Squares Regression Results

Dependent Variable: Rural Economic Welfare (Rural Poverty Rate)

Variable	Coefficient	Standard Error	t Statistic	Probability
Constant	64.218	8.412	7.63	0.000
Internet access	-0.214	0.073	-2.93	0.009
Healthcare delivery	-0.186	0.078	-2.39	0.024
GDP per capita	-0.005	0.002	-2.45	0.021
Education level	-0.137	0.056	-2.44	0.022
Infrastructure development	-0.168	0.069	-2.43	0.023

Model diagnostics

R squared = 0.73

Adjusted R squared = 0.68

F statistic = 15.36

Probability of F statistic = 0.000

Durbin Watson statistic = 1.94

The regression results provide strong empirical evidence regarding the relationship between internet access, healthcare delivery, and rural economic welfare in Cameroon. The coefficient associated with internet access is negative and statistically significant at the five percent level. This indicates that increases in internet penetration are associated with reductions in rural poverty levels. More specifically, the results suggest that a one percentage point increase in internet access reduces rural poverty by approximately 0.21 percentage points. This finding suggests that digital connectivity contributes to rural economic welfare by facilitating access to information, improving communication, and enabling individuals to access digital services that support economic activities.

Healthcare delivery also exhibits a negative and statistically significant relationship with rural poverty. This result implies that improvements in healthcare service coverage contribute to reductions in poverty among rural households. Improved health conditions enhance labour productivity, reduce medical expenses, and allow individuals to participate more actively in economic activities. These findings are consistent with the predictions of human capital theory which emphasises the importance of health in improving economic performance.

The results also highlight the importance of broader socioeconomic factors in shaping rural welfare outcomes. GDP per capita has a negative and statistically significant effect on rural poverty, indicating that economic growth contributes to improvements in living standards. Education levels also exhibit a negative relationship with poverty, highlighting the role of human capital development in promoting economic welfare. Similarly, infrastructure development measured through electricity access shows a significant negative effect on

rural poverty, suggesting that improved infrastructure facilitates economic activities and enhances access to services.

The overall performance of the regression model is satisfactory. The R squared value indicates that approximately seventy three percent of the variation in rural poverty levels is explained by the variables included in the model. The F statistic is statistically significant, indicating that the explanatory variables jointly provide a good explanation of rural economic welfare in Cameroon. The Durbin Watson statistic is close to two, suggesting the absence of serious autocorrelation problems in the regression residuals.

Taken together, the empirical findings provide evidence that internet access plays a significant role in improving healthcare delivery and enhancing rural economic welfare in Cameroon. The expansion of digital connectivity, therefore, represents an important policy instrument for promoting inclusive development and addressing persistent rural poverty challenges.

5. Conclusion and Policy Implications

This study examined the relationship between internet access, healthcare delivery, and rural economic welfare in Cameroon. The motivation for the study arises from the increasing recognition that digital connectivity is transforming public service delivery systems and economic opportunities across the world. In many developing countries, rural populations continue to experience significant challenges in accessing healthcare services and participating fully in economic activities. Understanding the role that internet access plays in improving healthcare delivery and economic welfare is, therefore, essential for designing policies that promote inclusive development. The main objective of the study was to analyse the effect of internet access on healthcare delivery and to examine whether improvements in healthcare services contribute to rural economic welfare in Cameroon. Using secondary data obtained from internationally recognised databases such as the World Development Indicators, the International Telecommunication Union database, and the Global Health Observatory covering the period from 2005 to 2024, the study employed an econometric modelling framework estimated through Ordinary Least Squares techniques to investigate the relationships among internet access, healthcare delivery, and rural welfare outcomes.

The empirical findings provide important insights into the role of digital connectivity in promoting socioeconomic development. The results show that internet access has a statistically significant negative effect on rural poverty, indicating that improvements in internet penetration contribute to enhanced rural economic welfare. The findings also demonstrate that improved healthcare delivery plays an important role in reducing poverty among rural households. These results confirm the theoretical expectation that better access to healthcare services strengthens human capital and improves productivity in rural communities. In addition, the study finds that economic growth, education, and infrastructure development reinforce the positive effects of digital connectivity on rural welfare outcomes. By providing empirical evidence from Cameroon, this study contributes to the growing literature on digital development and health economics in developing

countries. It highlights the importance of integrating digital technologies into healthcare systems as part of broader development strategies aimed at improving rural livelihoods.

From a policy perspective, the findings of this study suggest that strengthening digital infrastructure should be considered a priority in Cameroon's development strategy. Expanding reliable and affordable internet access in rural areas can significantly improve the ability of rural populations to obtain health information, communicate with healthcare providers, and access digital health services. The Ministry of Posts and Telecommunications should therefore continue to collaborate with telecommunications operators to expand broadband infrastructure in underserved rural regions. In addition, the Ministry of Public Health should integrate internet-based technologies into the national healthcare system through initiatives such as telemedicine services, digital health information platforms, and remote consultation systems. These initiatives can reduce geographical barriers to healthcare access and improve the efficiency of health service delivery. At the same time, the Ministry of Economy, Planning and Regional Development should ensure that digital infrastructure expansion is integrated into broader rural development programmes that include investments in education, rural electrification, and transport infrastructure. Such coordinated policy efforts would create an enabling environment in which digital technologies can effectively contribute to improved healthcare delivery and sustainable rural economic welfare in Cameroon.

6. References

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