

## **Information Communications Technology Improving the Income of Sub-Saharan Africa Countries**

### **I. Introduction**

Many countries around the world have given a special attention to the development of ICT. Generally, ICT is believed to have the potential to improve the living standards of society. It generates revenue and creates employment opportunities; it improves productivity of inputs, lowers transaction costs, facilitates the creation of knowledge; it reduces price dispersions and price fluctuations; it makes markets more efficient and promotes investment. It is also argued that ICT has the potential to lead “leapfrogging” development in developing countries.

Although far behind the developed region, countries in Sub-Saharan Africa have also given a special priority to the development of telecommunications infrastructure. As a result, adoption of mobile and internet technologies is increasing. However, the impact of these technologies on economic growth has not been studied adequately. Therefore, it is imperative to ask whether ICT is helping people living in Sub-Saharan Africa in increasing their income or not. Understanding the impact of mobile phones

and the Internet in the region will help governments and other stakeholders design policies, strategies, programs, and projects which could maximize the benefits from ICTs.

Using data from the World Bank and the International Telecommunication Union this study examined the impact of ICT in the region for the period of 2006-2015 over a panel of 40 Sub-Saharan Africa countries.

### **II. Summary of Findings**

Results showed that growth in mobile phone penetration has contributed significantly to the real GDP per capita of the region. A 10% increase in mobile phone penetration resulted in a 1.2% change in real GDP per capita.

Therefore, governments, non-governmental organizations, and the business community should make a concerted effort to improve access to mobile phones in the region. Promoting mobile phone usage will play a critical role in reducing the poverty level of the region through raising the per capita income of the population.

It was also found that the Internet has a positive impact on the income of the population. However, statistically this impact was not significant.

Therefore, in order to fully realize the potential of the Internet its access should be promoted until a critical mass of Internet users is achieved.

Furthermore, governments should design policies which encourage the presence of local contents on the Internet. Donors and the international community should also give their support directly to those startups which focus on local content production and distribution. Finally, improving the ICT skill of the people should be an assignment for all stakeholders.

### III. The Research

#### Method

We have applied Datta and Agarwal's (2004) approach with minor modification.

The model is specified as follows:

$$\begin{aligned} \lnrgdppc_{it} = & a_i + \beta_1 \lnrgdppc_{i,t-1} + \beta_2 \ln govcon_{it} \\ & + \beta_3 \ln mercha_{it} + \beta_4 \ln gcf_{it} + \beta_5 internet_{it} + \\ & \beta_6 mob_{it} + \beta_7 inf_{it} + \beta_8 popg_{it} + year + v_t + \epsilon_{it} \end{aligned}$$

Then the model is estimated using the Windmeijer corrected two-step system GMM. Roodman's (2015) xtabond2 3.6.3 is applied on STATA 12.

### Results.

Table 1: Dynamic panel-data estimation, Windmeijer corrected two-step system GMM (Instruments are collapsed).  
Dependent variable is Real GDP Per Capita.

Variables	Coeff.	St. error	Z	p>Z
lrgdppc L.1*	0.9060462	0.05846	15.5	0.000
internet	0.0033255	0.00298	1.12	0.264
mob***	0.0012131	0.00070	1.74	0.082
lngovcon*	-0.0745640	0.02771	2.69	0.007
lnmercha	0.0346075	0.06165	0.56	0.575
lngcf**	0.0491633	0.02328	2.11	0.035
inf*	-0.0000136	4.1E-06	3.31	0.001
popg	-0.0306409	0.01908	1.61	0.108

Wald chi2(18) = 3.73e+07 Pr > chi2 = 0.000; AB(1)=z = -1.1 Pr > z = 0.268; AB(2)=z = 0.95 Pr > z = 0.340; Sargan=chi2(21) = 8.39 Pr > chi2 = 0.993; Hansen=chi2(21) = 22.26 Pr > chi2 = 0.385; Difference-in-Hansen tests : Hansen(GMM)=chi2(18) = 19.58 Pr > chi2 = 0.357, Difference(GMM)=chi2(3) = 2.68 Pr > chi2 = 0.444, Hansen(IV)=chi2(7) = 10.90 Pr > chi2 = 0.143, Difference(IV)=chi2(14) = 11.36 Pr > chi2 = 0.657; Number of observations=340;Number of groups=40; Number of instruments=40.

Note: Variables with "\*\*", "\*\*\*", and "\*\*\*\*" are significant at p<1%, p<5%, and p<10% respectively. Year dummies are included in the estimation. lrgdppc L.1= lagged log of real gross domestic product;internet=Internet users per 100 people; mob= mobile subscribers per 100 people; lngovcon= log of government consumption; lnmercha= log of merchandise trade; lngcf= log of gross capital formation; inf= inflation; popg= population growth.

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