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The Impact of Mobile Connectivity and Governance on Regional Trade: An Empirical Analysis of Uganda and EAC

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ABSTRACT

This study investigates the impact of mobile connectivity and governance on regional trade within the context Uganda's foreign trade with other East African Community (EAC) states. Mobile connectivity has been considered with the dimensions of FTS (Fixed telephone subscriptions -% of population), IUI (Individuals using the Internet-% of population), MCS (Mobile cellular subscriptions-% of population). Governance is measured by the dimensions of RQ (Regulatory Quality), GE (Government Effectiveness), VA (Voice and Accountability), PSAVT (Political Stability and Absence of Violence/Terrorism), RL (Rule of Law) and CC (Control of Corruption). We utilise panel data of Uganda, Kenya, Tanzania, Rwanda, and Burundi which are 5 of the current 8 members of the EAC whose data is available in the period of 1995 – 2022. We model the trade volume of Uganda with the other states by using the gravity model of international trade. The findings of the Fixed-Effects model indicate that FTS seems to be positively related with trade volume, while MCS seems to be negatively related with trade volume. RQ seems to be positively related with trade volume while GE seems to be negatively related with trade volume. Population Effect is also found to have a positive significant effect.

Keywords*: Uganda, East African Community, Trade Volume, Governance, Mobile Connectivity, Gravity Model.*

L'impact de la connectivité mobile et de la gouvernance sur le commerce régional : une analyse empirique de l'Ouganda et de la CAE

RÉSUMÉ

Cette étude examine l'impact de la connectivité mobile et de la gouvernance sur le commerce régional dans le contexte des échanges extérieurs de l'Ouganda avec les autres États membres de la Communauté d'Afrique de l'Est (CAE). La connectivité mobile est analysée à travers les dimensions suivantes : FTS (abonnements au téléphone fixe - % de la population), IUI (individus utilisant Internet - % de la population) et MCS (abonnements à la téléphonie mobile - % de la population). La gouvernance est mesurée selon les dimensions suivantes : RQ (qualité de la réglementation), GE (efficacité du gouvernement), VA (voix et responsabilité), PSAVT (stabilité politique et absence de violence/terrorisme), RL (primauté du droit) et CC (contrôle de la corruption). Nous utilisons des données de panel sur l'Ouganda, le Kenya, la Tanzanie, le Rwanda et le Burundi, qui sont cinq des huit membres actuels de la CAE pour lesquels des données sont disponibles pour la période allant de 1995 à 2022. Nous modélisons le volume des échanges commerciaux de l'Ouganda avec ces autres États en utilisant le modèle gravitationnel du commerce international. Les résultats du modèle à effets fixes indiquent que la FTS semble être positivement corrélée avec le volume des échanges, tandis que la MCS semble être négativement corrélée avec celui-ci. La RQ semble avoir une relation positive avec le volume des

échanges, tandis que la GE semble avoir une relation négative. L'effet de la population s'avère également avoir un effet significatif et positif.

***Mots clés**: Ouganda, Communauté d'Afrique de l'Est, Volume des échanges, Gouvernance, Connectivité mobile, Modèle gravitationnel.*

INTRODUCTION

The proliferation of mobile technology has transformed communication, commerce, and connectivity dynamics across the globe, particularly in developing regions like the Sub-Saharan Africa and East Africa in particular. Concurrently, governance structures act as the back born of international trade and integration within regional blocs. However, limited empirical research exists on the interplay between mobile connectivity, governance quality, and regional trade dynamics, especially within the EAC.

The global circulation of information at a substantially lower cost, due to the rise of many trade cooperations and the Uruguay round followed by the creation of WTO which set the stage for the growth of post-Fordist industrial systems globally (Kincheloe 1995). This shift in both knowledge content and circulation methods was brought about by this alteration, which Harvey referred to as "time-space convergence"(Harvey 1990).

The development of the 'just-in-time inventory system' with the help of computerized technology, as well as the expanding capabilities of multinational corporations to function globally and seamlessly, resulted in a shift from state monopoly to globalization. This emphasizes the significance of mobile connectivity in international trade by enabling real-time communication and coordination among global partners. In this context, mobile connectivity has become an essential tool for economic development and growth in Africa (Pradhan et al. 2018)

The shift from analogue to digital data led to a closer relationship between computer services and telecommunications. This change coincided with the privatization of telecommunication systems on a global scale. The United Nations recognized the importance of telecommunications and founded the ISDN to regulate technological progress in this field within its partner states. The extensive development of optical fibre networks in the United States played a decisive role in supporting these international initiatives hence resulting into a global coordination and more balanced information distribution (Li and Agbinya 2005)

Prevalent impact of data-driven average life has induced every aspect of human activity, whether in the business sphere or on a personal level. The combination of mobile and internet technologies has changed the interaction between consumers and producers from three-dimensional to two-dimensional. This transformation has brought noteworthy gains to the international trade, such as reduced accounting and opportunity costs. (Overå 2006)

Many developing countries like those in the East African community have tried to improve telecommunication infrastructures which as a result has resulted into lower costs of communication and improved standards of living. This is because consumers adopt lower tech-products and automatically mobile connectivity improves. This also pushes both SMEs and individuals into exploring their potential as they go beyond their local markets to international markets hence accessing cheap raw materials and management of the global supply chain.

Competitive government structures can result into trade stability, builds investor confidence, and fostering trade beyond country's border. This can be done through introducing non-tariff barriers and customs unions with its neighbouring countries. Therefore, governance impact on regional trade can be observed in its ability to provide an enabling climate for investment and trade hence fostering trust and confidence within regions and simplifies the smooth movement of people, services, and trade across borders.

Regional integration has seen an increase in all parts of the world since the end of the second world war as countries were looking for not only security partners but also trade partners. After the Bretton woods, the Uruguay Round which created the World Trade Organisation then the Doha Round spearheaded the UN commitment to regional integration. Countries started to integrate and formed trade agreements which saw the flourishment of international trade around the world.

Cooperation of the East African countries of Uganda, Kenya and Tanzania dates to the beginning of the twentieth century. These countries have been cooperating in economic and political sectors whin phases

and the latest phase was creating of the East African Community in the year 2000. Later the community expanded by adding Rwanda and Burundi, South Sudan, Democratic Republic of Congo and Somalia in 2007,2016,2022 and 2024 respectively.

Existing research has extensively examined the impact of regional integration in facilitating regional trade though the impact of mobile connectivity and governance got limited to no focus. As the EAC continues to grow their economic integration, understanding these factors is fundamental. This gap in the current research emphasises the need for an inclusive research into the interplay between mobile connectivity, governance, and regional trade in the context of Uganda and its EAC partners.

This study hypothesises that mobile connectivity and governance significantly impact Uganda's trade volume with its East African Community neighbours. An increase in the technological advancements, improvements in governance indicators such as control of corruption, political stability, regulatory quality, and government quality, positively contribute to trade volume and productivity. These are hypothesized to exclusively and communally boost regional trade dynamics through reducing transaction costs, fostering a positive business climate, and furthering cross-border communication and market accessibility.

LITERATURE REVIEW

The concept mobile connectivity is featured by the growing number of various groups of people taking the chance in applying digital media communication with devices such as mobile phones, social media and all other internet connections because of emerging global economy or digitalization. (Hunold et al. 2000)

Early in the Philippines was a dialogue about what capability mobile applications would have regarding social, economic, and pollical development since this country was regarded as the top user of online banking, online education, and governance. This documentation was also a recommendation to the East African community as well since they are known to be the users of mobile interconnection. (Hellström 2010)

Majority of the population worldwide have a mobile phone or socially connected in anyway, this has become part of their lives to the extent that someone would not seat longer without checking something on their mobile phone. Research says that mobile connectivity has rapidly increased due to availability of internet connections, which encourages more users to interact with either through communicating with family and friends, workmates, school colleagues and many others.

The state of mobile connectivity report (GSMA 2023) reports that, the benefit of the mobile connectivity to consumers is looked at in terms of, nature of information used, services offered, and generally any organizational set-up for the global population. The report found out that worldwide, many people are connected to the internet, which was not the case in the past years, some regions have access to the broadband though some groups of people do not use it. Further describes that people may not be connected may be because they're living in a region without broadband network or they have it, but they just do not utilize these internet services.

Researchers have credited mobile connectivity with boosting education systems due to the possibility of e-learning, as communication has been made easier for mobile users because they can communicate with their friends and families instantly regardless of distance. However, some of their respondents disagreed, believing that this connectedness has done more harm than good, particularly to their children, who are frequently exposed to content that may influence the way they behave because of mimicking habits (Taylor and Silver 2019).

There is a link between a country's mobile phone use and openness in a country's leadership mainly in African countries. This is based on the research made on some sub-Saharan countries which showed that the larger than number of youths using mobile phone, the higher the chances of increased successful implementation of policies and the rule of law. It was also found that there are considerable improvements in the preventive and corrective procedures in the Kenya government linked to mobile penetration (S. Asongu et al. 2019).

Governance can be defined as a complex concept encompassing the enforcement of laws, efforts to combat corruption, the standard of regulations, and the efficiency of bureaucratic systems (Tusalem 2015)

Scholars divided governance metrics into three categories, that's nominating leaders, their successors, and absence of political unrest. Promotion of better-quality goods and living standards through implementing favourable economic policies and regulating the leadership. The last metric is the populations' adherence to the available institutes and constitutional instruments of power in regulating the people's day-to-day activities through gauging the amount at which power is miss used by the country's leadership (Andrés et al 2015)

Governance indicators by (Kaufmann et al 2011) have faced scrutiny from various authors, particularly (Kurtz and Schrank 2007) who evaluated the models, measures, and mechanisms used hence questioned the assumption of the linkage of good governance and the economic wellbeing of a given society. In their indicators, they emphasise concerns including perception prejudices and conceptual confusion with policy choices.

(Kurtz and Schrank 2007) were disproved as their claims were deemed biased as disruptive to the short-term link between governance and growth proposed by other academics. The debate continues to revolve around concerns regarding measurement accuracy and its impact on discussions about the relationship between economic growth and governance effectiveness (Kaufmann et al 2011).

From the Islamic perspective of governance, the leader of a society is put on the top of the hierarchy responsible for implementing necessary disciplines such as Islamic laws and values, usury free financial systems, security, justice, openness, economic welfare and answerability of leaders to the arms of law. According to the study, presidential democratic systems and monarchies in Muslim communities/countries are the most similar in form and nature to the Islamic model (Naqvi et al 2011).

DATA

Data for economic indicators like GDP, Population, Inflation, FDI were extracted Database of the world bank. Fixed-broadband subscriptions (per 100 inhabitants), fixed-broadband subscriptions (per 100 inhabitants) fixed telephone subscriptions (per 100 inhabitants), Percentage of Individuals using the Internet, Mobile telephone subscriptions (per 100 inhabitants) were used as main independent variables. This was extracted from the ITU World Telecommunication/ICT indicators database. Distance, common languages, colonial link, sharing a border and landlocked data were used as control variables of transportation cost taken from CEPII (Centre d'Etudes Prospectives et d'Informations Internationales) gravity dataset. Governance Indicators data were extracted from the World Bank database. The analysis was done for the period 1994 to 2022.

International trade is the dependant variable, which leveraged import volume and export volume from one country to another and these data were taken from the UN Com-trade database. It is denoted as Ln Trade, and it is computed by adding the total volume of exports and imports to the total value of international trade. Since the Gravity model is multiplicative, the natural log form it was to prevent heteroscedastic difficulties; nonetheless, it includes unobserved effects that may hinder us from addressing the issue of unincorporated variables.

Remoteness was created as a variable since geographical distances between countries does not vary with time, Fixed Effects model cannot be established. Therefore, the remoteness captures the relative importance of trade partners in the global economy and incorporates geographical distance hence it's not time invariant and Fixed Effects model can be incorporated. It's calculated as the log and the outcome of distance plus partner GDP divided by the GDP of the world in the period of the study.

To capture the difference in the level of economic development among countries, the GDP per Capita Distance variable was created. It's calculated by getting the GDP per capita of Uganda and that of the partner countries and subtract the Minimum Value from the Maximum Value and take the natural log.

METHODOLOGY

The gravity model of international trade is based on the Newton's Law of Universal Gravitation, which states that every particle in the universe attracts others with the force that's proportional to their mass

and inversely proportional to the square of their distance (Chasimidis 2013).It suggests that the total trade volume of two countries is induced by the size of their economies represented by the GDP, distance between them, and transportation costs (Hollweg and Rocha 2018). These elements can be considered as the "mass" and "distance" parameters in the model, which estimates the size of economic relationships between nations (Cevik 2022)

The mathematical equation of gravity model of international trade was developed by a group of economists from the Netherlands who tested it empirically and was first applied by Tinbergen. In his key work, Tinbergen invented the gravity equation which shaped the world economy. He econometrically identifies the standard model for investigating the flow of trade and it is currently considered to a benchmark in international trade (Shahriar et al. 2019)

He concentrated on trade flows under conditions of no trade barriers and proposed that free trade would typically result in optimal global welfare. By comparing real trade volumes with theoretical volumes without trade barriers, we assess the explanatory power of multivariate linear regression in contrast to the gravity model (Haveman and Hummels 2004)

The hypothetical basis of the gravity model of international trade can be traced back to models such as the Ricardian, Heckscher-Ohlin, and rising returns to scale. Each of these hypotheses differ in how the economies have specialised. For example, for the Ricardian model, technology vary between nations, so that each country specialises in

The traditional form of the model claims that, economic development which is the size of GDP, Population, Geographical Distance, and control variables that can be used to determine bilateral trade between countries. This model specification follows the traditional paths universally used in the literatures like ((De Benedictis and Taglioni 2011), (J. E. Anderson 2011) and (Baldwin and Taglioni 2011))

The Gravity Model of International Trade has demonstrated considerable experimental accomplishment in rationalizing intercontinental trade. The gravity model assumes that larger economies will attract more trade, and greater distances between countries will reduce trade.

The gravity model equation for international trade is typically expressed as follows: $T\_ij=(M\_i \times M\_j)/D\_ij$

Where:

T_ij is the trade value of i and *j*.

M_i and M_j are the economic sizes of i and *j*, measured by GDP.

D_ij the distance between two countries' centroids (geographical centres)

Researchers have expanded the gravity model to include additional variables such as cultural similarities, language, and common historical ties to better explain trade flows. This extended approach aims to capture the complexities of international trade patterns by considering a broader range of influencing factors beyond economic size and distance (De Benedictis and Taglioni 2011)

In the empirical literature, many variables are used to represent trade barriers which include transport costs calculated by finding the distance between trading countries, countries being landlocked, Islands, borders dummies that shows that transport costs. It should also be noted that distance does is not affected by change in time though its effect differs compared to the country's development as their infrastructure developments are dissimilar among countries.

Several economic, political, and geographic factors such as free-trade agreements or shared language are consistently important variables predicting bilateral trade flows when using gravity models for analysis (Ismail 2020)

As of this study, the model is expanded as follows.

$\ln(T)ijt=\beta 0+\beta 1\ln\gamma jt+\beta 2+\ln\gamma jt\beta 3\ln Dij+Uij+i=1\ldots\ldots\ldots\ Nij=1\ldots\ldots\ M,\ t=1\ldots.\ T$

The dependent variables $\ln(T)ijt$ are trade flows which are imports and exports of Uganda with subscript i indicating Uganda and j the EAC partner countries while t indicates time.

The common language dummy is the one used to represent the information costs among trading partners. Therefore, the dummy variables used in this study for EAC trading partners like Common language, common borders and common coloniser were given the value of one (1) (Nordås and Piermartini 2004).

To initiate the model, the log form of the gravity model was built using the linear combination of indicators. The model is purely augmented with mobile connectivity dynamics, governance and remoteness which incorporates the distance between the countries as well as the relative importance of the partner country's GDP in the global GDP. This is because most of the recent literature in the gravity models underlined that hypothetically, bilateral trade barriers between trading countries are not the only determinants of the models.

The panel data with several variables representing geographical, cultural and integration characteristics was used in the quest to probe the factor's effect on Uganda's bilateral trade Vis-à-Vis it's East African Community partners.

The OLS regression was run first with no Fixed or Random Effects, with LnTrade treated as a dependent variable which LHS of gravity model regression equation and the independent variables on the RHS.

Table 1 Gravity Model analysis

LnTrade	*Coefficient*	*Std. err.*	*t*	*P>|t*	*95% conf. interval lower*	*95% conf. interval upper*
Dstance	-0.003577	0.080633	5.46	0	-0.2047131	-0.0022022
GDP of Uganda	9.77E-11	1.45E-11	6.76	0.00	6.91E-11	-16.732
GDP of Partner	-4.06E-11	9.398E-12	-4.32	0	-5.92E-11	-2.2E-11
ComLang	4.068618	0.601864	6.76	0.00	2.874823	5.262412
ComBorder	0.224491	0.3981456	0.57	0.57	-0.5534027	0.994301
_cons	10.71394	0.5439024	19.78	0.00	9.635187	1.79276

Number of obs=108, F (5,102) = 19.78, Prob > F = 0.0000, R-squared =0.4675, Root MSE = 1.3593.

After performing the F.E and R.E Models, to choose between random or fixed models the Hausman test was performed. The Hausman test is used to establish whether there is correlation between unique errors and the regressors. With the P-Value being 0.0008, its statistically significant which means the FE model is chosen in this analysis. With Hausman test indicating significant differences in the coefficients, the FE was found to be significant.

Table 2 Random Effects Model (RE)

LNTRADE	COEFFICIENT	STD. ERROR	Z	P>|	[95% CONF.	INTERVAL]
GDPPERCAPITA DISTANCE	0.259444	0.175402	1.48	0.13	-0.08434	0.603226
REMOTE	-0.58975	0.67953	-0.87	0.38	-1.9216	0.742109
POPULATION EFFECT	5.326437	1.202605	4.43	0	2.969375	7.6835
COM LANG	-4.49477	2.328486	-1.93	0.05	-9.05852	0.068978
COM BORDER	0.951679	1.063662	0.89	0.37	-1.13306	3.036418
COM COLONIZER	0	(omitted)				
DISTANCE	-0.00321	0.001252	-2.57	0.01	-0.00567	-0.00076
FTS EFFECT	87.15116	36.39597	2.39	0.01	15.81636	158.486
IUI EFFECT	-0.00139	0.023015	-0.06	0.95	-0.0465	0.043722
MCS EFFECT	-2.84505	1.089918	-2.61	0.00	-4.98124	-0.70885
GE EFFECT	-0.0593	0.023343	-2.54	0.01	-0.10505	-0.01355
VA EFFECT	0.00179	0.0184	0.1	0.92	-0.03427	0.037853
PSAVT EFFECT	0.029061	0.021769	1.33	0.18	-0.01361	0.071728
RQ EFFECT	0.041953	0.019261	2.18	0.02	0.004201	0.079704
RL EFFECT	-0.00585	0.025527	-0.23	0.81	-0.05588	0.044187
CC EFFECT	0.000514	0.014765	0.03	0.97	-0.02843	0.029453
FDI EFFECT	-2.8897	10.28104	-0.28	0.77	-23.0402	17.26077
_CONS	-155.425	43.08094	-3.61	0	-239.862	-70.9874
SIGMA_U	0					
SIGMA_E	1.274405					
RHO	0 (fraction of variance due to u_i)					

Additional Information about R.E Model

R- Squared	Obs per group	Wald chi2(16) = 137.41
Within = 0.4599	min = 27	corr(u_i, X) = 0 (assumed)
Between = 1.0000	avg = 27.0	Prob > chi2 = 0
Overall = 0.6016	max = 27	Wald chi2(16) = 137.41
		corr(u_i, X) = 0 (assumed)
		Prob > chi2 = 0

Table 3 Fixed Effects Model (FE)

	Coefficient		*t*	*P>|t|*	*[95% conf.*	*interval]*
GDPpercapita Distance	0.2594444	0.175402	1.48	0.143	-0.08897	0.6078591
Remote	-0.589746	0.67953	-0.87	0.388	-1.939549	0.7600578
Population Effect	5.326437	1.202605	4.43	0***	2.93761	7.715264
Com Lang	0	(omitted)				
Com Border	0	(omitted)				
Com Colonizer	0	(omitted)				
Distance	0	(omitted)				
FTS effect	87.15116	36.39597	2.39	0.019*	14.85502	159.4473
IUI Effect	-0.001388	0.023015	-0.06	0.952	-0.047105	0.0443294
MCS Effect	-2.845045	1.089918	-2.61	0.011*	-5.010033	-0.680057
GE Effect	-0.059301	0.023343	-2.54	0.013*	-0.10567	-0.012933
VA Effect	0.0017898	0.0184	0.1	0.923	-0.03476	0.0383392
PSAVT Effect	0.0290609	0.021769	1.33	0.185	-0.014181	0.0723026
RQ Effect	0.0419526	0.019261	2.18	0.032*	0.0036926	0.0802126
RL Effect	-0.005846	0.025527	-0.23	0.819	-0.056552	0.0448613
CC Effect	0.0005135	0.014765	0.03	0.972	-0.028816	0.0298432
FDI Effect	-2.889701	10.28104	-0.28	0.779	-23.31173	17.53233
_cons	-159.5056	44.9092	-3.55	0.001	-248.7122	-70.299
sigma_u	3.1617785					
sigma_e	1.2744045					
rho	0.8602432					

F test that all u_i = 0; F (9,91) = 6.14 Prob> F=0.0008

Additional Information about F.E Model

Fixed effects (within) regression	R-squared:	Obs per group:
Number of obs: 108		
Group variable: Partner.	Within: 0.4599	Min: 27
Number of groups: 4	Between: 0.4922	1 Avg: 27.0
	Overall: 0.2723	0.6016 Max: 27
F(13, 91): 5.96		
corr(u_i, Xb): -0.9215		
Prob > F: 0.0000		

Table 4 Results of the Hausman test

	(b) fe	*(B) re*	*(b-B) Difference*	*sqrt(diag(V_b-V_B)) Std. err.*
GDPpercapi~e	.2594444	.2594444	-1.62e-11	*2.62e-07*
Remote	-.5897457	-.5897457	9.81e-11	*1.78e-06*
Population	5.326437	5.326437	7.53e-10	*.0000127*
FTS effect	87.15116	87.15116	2.74e-09	*.000044*
IUI Effect	-.0013876	-.0013876	-4.25e-13	*7.69e-09*
MCS Effect	-2.845045	-2.845045	-5.71e-10	*9.60e-06*
GE Effect	-.059301	-.059301	-5.83e-12	*9.95e-08*
VA Effect	.0017898	.0017898	-3.39e-12	*5.77e-08*
PSAVT Effect	.0290609	.0290609	-3.03e-12	*5.14e-08*
RQ Effect	.0419526	.0419526	4.49e-12	*7.82e-08*
RL Effect	-.0058455	-.0058455	3.97e-12	*6.44e-08*
CC Effect	.0005135	.0005135	2.31e-12	*3.85e-08*
FDI Effect	*-2.889701*	*-2.889701*	*-1.13e-09*	*.0000181*

b = Consistent under H0 and Ha; obtained from xtreg.

B = Inconsistent under Ha, efficient under H0; obtained from xtreg.

Test of H0: Difference in coefficients not systematic

chi2(8) = (b-B)'[(V_b-V_B) ^ (-1)] (b-B)

= 0.00

Prob > chi2 = 0.0000

(V_b-V_B is not positive definite)

In this analysis, (Prob>chi2 = 0.0000) is very low, suggesting the rejection of the null hypothesis. With Hausman test indicating significant differences in the coefficients, the FE model was found to be appropriate. Theoretically, choosing the Fixed Effects model centres on its ability to control for time-invariant heterogeneities across entities, provide consistent and efficient estimates, offer policy-relevant insights, and mitigate endogeneity concerns. Therefore, based on theoretical grounds and the nature of our data, opting for the Fixed Effects model is theoretically justified to obtain robust and interpretable estimates of the predictors' effects on bilateral trade of Uganda and its partners in the region.

RESULTS AND DISCUSSIONS

The purpose of this study is investigating the impact of governance and mobile connectivity, on regional trade within the context of Uganda Vis-à-Vis other East African Community states.

The results of the fixed effects panel data model suggests that distance, GDP of the partner country, and a common language significantly impact trade. Common border variables as do not show a significant effect in this context. The overall model explains nearly half of the variance in trade, indicating a reasonably good fit.

Moreover, the current research involves characteristics that are unique to each entity and are likely to influence the dependent variable. This is common in studies involving individuals, firms, or countries where intrinsic differences are expected to affect outcomes. Thus, FE models are preferred.

The results suggests that in the connectivity dimensions like FTS and MCS and GE and RQ from the governance indicators significantly affect trade volume. Fixed Telephone Subscription shows a positive correlation with volume of trade. This suggests that the fixed telephone subscriptions in the region contributed to the exchange of information and communication in the region which positively impacted trade volumes. However, MCS shows a negative corelation with the volume of trade. This informs us that mobile cellular subscription as individuals using internet were not significant in the model.

Government effectiveness and Regulatory Quality showed a negative correlation to trade volume which reflects that these governance indicators reduced trade volumes as some EAC countries might have strained trade with trade barriers on some products to and from Uganda. It should be noted that, most of the EAC countries produces identical products with Uganda hence countries don't find it necessary to trade in those products.

Population Effect showed a positive correlation which reflects the increasing total population of the EAC countries. This can be supported by the EAC data which showed 300 million population in the community (EAC 2022). This also reflects the significance of population effect in the model.

As the gravity model regression was conducted, collinearity was encountered in the dummy variables of common language, common border and common colonizer and were automatically omitted. This means that there is strong correlation among these variables making it difficult to estimate their individual coefficients.

Table 5 Hypothesis Testing

Hypotheses	Accept	Effect	Reject
H1: Fixed Telephone Subscription	✓	+	
H2: Individuals Using Internet		✓	
H3: Mobile Cellular Subscription	✓	-	
H4: Government Effectiveness	✓	-	
H5: Voice and Accountability		✓	
H6: Political Stability		✓	

H7: Regulatory Quality	✓		+
H8: Rule of Law		✓	
H9: Corruption Control		✓	
H10: Population Effect	✓		+

CONCLUSION

This study investigated the impact of mobile connectivity and governance on regional trade with the empirical analysis of Uganda and the EAC countries. The study showed that regulatory quality and fixed telephone subscriptions had a positive impact on trade volumes in the region which implies improvements in both effective regulatory structures and telecommunication infrastructure hence stimulation of regional trade. On contrary, government effectiveness and mobile cellular subscriptions showed a negative correlation with trade volumes signifying possible policy improvements. Furthermore, population effect appears to be a key factor in the dynamics of regional trade. The results underscore the need for more investments targeting telecommunication infrastructure and continuous improvements of regulatory quality to encourage regional trade within the region. Positive link between regulatory quality and trade volumes in the region confirms that effective regulatory policies encourage export and reduces trade costs.

EAC policymakers should prioritise improving governance dimensions and tackling mobile connectivity concerns to boost regional trade and economic development.

For future studies, an emphasis should be directed towards the impact One Network Area which was adopted by the EAC and the recent Telecommunications infrastructure improvements on regional trade in the EAC.

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