Journal of Emerging Trends in Educational Research and Policy Studies (JETERAPS) 10(2): 82-90

jeteraps.scholarlinkresearch.com

Comparative Analysis of Networking and E-Readiness of Some African and Developed Countries

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Abstract
Different nations of the world are developing themselves in the areas that confer opportunities on them over others. In recent times, the metric used in measuring the extent of development falls in the continuum of Information and Communication Technology (ICT) with the firm belief that ICT influences all sectors of the economy and has brought another level of innovation called digitization. Digitization level or index determines a country's economy strength and weakness as well as opportunities available for such nation to explore in the global market. However, different attempts have been made overtime to put all nations of the world on a single digital scale as it is in Knowledge Economic Index (KEI) developed by World Bank and Networking Readiness Index of Booz and Company. The level of visibility of such documentation for utilization appears to be unattractive and is also highly compact for concerned stakeholders to understand. Hence, there is a need for between countries comparison and also on intercontinental basis to provide relative standing of selected countries and continents. Therefore, this paper attempted a disaggregation of networking and e-readiness index published by World Economic Forum in year 2013.

Keywords: digitization; networking, e-readiness, econom**y,** comparative analysis

INTRODUCTION

Prior to the twentieth century, the prominent economic idea was the trading that laid severe restrictions on import and emphasized aggressive efforts to increase production and export. The resulting export surplus was supposed to enrich the nation through the inflow of precious natural resources. Smith (1776), who is regarded as the father of modern economics, opposed this idea by developing the concept of absolute advantage. He argued that it was impossible for all nations to become rich concurrently by confining import because the export of one nation is another nation's import. However, all nations would gain simultaneously if they practised free trade and specialised in accordance with their absolute advantage.

On the other hand, David Ricardo in a century later was concerned with the static resource allocation problem when he proposed the concept of comparative advantage, which is determined not by absolute values of labor productivity but by labor productivity ratios. David proposed that a country should produce goods and services that she has comparative advantage over, in relation to other nations. However, Petri (1980) introduces incomplete specialization in a Ricardian model in a similar way. He observes that even finely disaggregated trade classifications may cover different products. Different countries may produce the same commodity as classified by trade statistics because those statistics aggregate products with different production characteristics.

Davis (1995) shows that intra-industry trade can be explained with a hybrid Heckscher-Ohlin-Ricardo model. Consider two goods which have identical factor intensities at any given factor price (perfect intra-industry goods) in Davis's terminology. With this, Davis points out that those Hicks-neutral differences in technologies across countries in these goods, no matter how small, will then dictate the pattern of specialization. Hence, comparative advantage can have a Ricardian character and lead to intra-industry trade which recognized technology and labor costs as the source of comparative advantage. Ricardo's theory of comparative advantage creates hope for technologically backward countries by implying that they can be a part of world trading system even though their labor productivity in every good may be lower than those in the developed countries.

One of the goods and services that are highly marketable in all nations of the world is Information and Communication Technology (ICT). This is especially so in this era of knowledge explosion that necessitated ICT as a driver of knowledge and business, an era in which knowledge added is the same as value added, knowledge is a more important factor than any other factor of production and the provider of knowledge is seen as an indispensable fuel in the engine of development. It has also been observed at the international level that ICT has become an unprecedented crucial factor in the race for whoever rules the world. It is little wonder then that some developed countries give more of their resources to the storage and dissemination of information, in the firm belief that he who runs the information rules the world (Chan, 2002). Chanalso argued that to consider survival without information is to think of surviving without food, water and protection. Modern intelligence systems and the application of computers are based on discovering and accessing information in much erudite ways than our ancestors. The explosive growth of ICT services has presented another level of innovation in the mode and method of presenting and preserving information which is otherwise known as digitalization.

Sabbagh, Friedrich, El-Darwiche, Singh, and Koster (2012) defined digitization as the mass adoption of connected digital services by consumers, enterprises, and governments. Digitization refers to all of the steps involved in the process of collection of materials and making it available online. This includes selection and collection of materials based on the collection development policy of the institutions, scanning material, transcribing, creating mark up and index, creating metadata, quality control by subject specialist, processing images, uploading to the web, preservation and maintaining archival media and online collections (Suleiman, 2013).

The retrospective conversion of printed library cards into Machine Readable Catalogue (MARC) represents one of the earliest digitization processes. Digitization process includes selection/collection of materials and scanning of the selected materials, transcribing and creating mark up and index, creating metadata quality control by subject specialist, processing images, populating the appropriate digital assert management software (DAMS), such as Dspace, Fefora, Greenstone collect, index and provide queries over a catalogue of metadata records accessible locally and remotely. The importance of digitization has been felt by businesses, enterprises and governments all over the world.

World Economic Forum (WEF, 2013) reveals that an increase of 10 percent in a country's digitization score fuels a 0.75 percent growth in its GDP per capital. Additionally, the economic effect of digitization accelerates as countries move to more advanced levels of digitization (Katz et al. 2010).Digitally constrained economies as reported by (WEF, 2013) receive the least benefit, probably because they are yet to establish an ICT ecosystem that can capitalize on the benefits of digitization

The importance of digitalization in the area of job creation has also been spotlighted, and it was concluded that with a 10 point increase in the digitization score, there is corresponding 1.02 percent drop in the unemployment rate. Digitization had the greatest employment effect in constrained and emerging digitized economies as revealed by Booz and Company Analysis(BCA, 2011). East Asia, South Asia, and Latin America received the most employment growth of all regions, with more than 4 million jobs created as a result of these regions' digitization improvements. Conversely, digitization provided little employment growth in North America and Western Europe(BCA, 2011). These advanced-stage economies probably realize fewer employment benefits because as their digitization activities increase, it produces similar increase in productivity. The need for some jobs was reduced and replaced by technology. Jobs such as lower value-added and labor-intensive tasks became emerging markets where labor appears to be cheaper. As companies in digitally advanced countries improve their productivity because of digitization, they transfer jobs to digitally emerging countries (Sabbagh & et.al, 2011).

Table 1: Digitization's Impact on GDP and Jobs

Region	**GDP Impact US$(Billions)**	**Number of Job Created**
Africa	8.3	618,699
Commonwealth of Independent State	11.8	340,820
East Asia and Pacific	55.8	2,370,241
Eastern Europe	7.0	159,015
Latin America and the Caribbean	27.0	636,737
Middle East and North Africa	16.5	377,772
North America	25.3	167,650
South Asia	9.4	1,117,753
Western Europe	31.5	213,578
Total	192.6	6,002,266

Source: Booz and Company Analysis (2011)

Booz and Company's econometric analysis estimates that, irrespective of unfavorable world economic condition, digitization enhanced a US$193 billion increase in world economic output and created 6 million employment opportunity globally in 2011 (Gallup Global Wellbeing Surveys GGWS, 2010). It was also reported that the impact of digitization across countries and sectors was not evenly distributed as developed economies enjoy higher economic growth benefits by a factor of almost 25

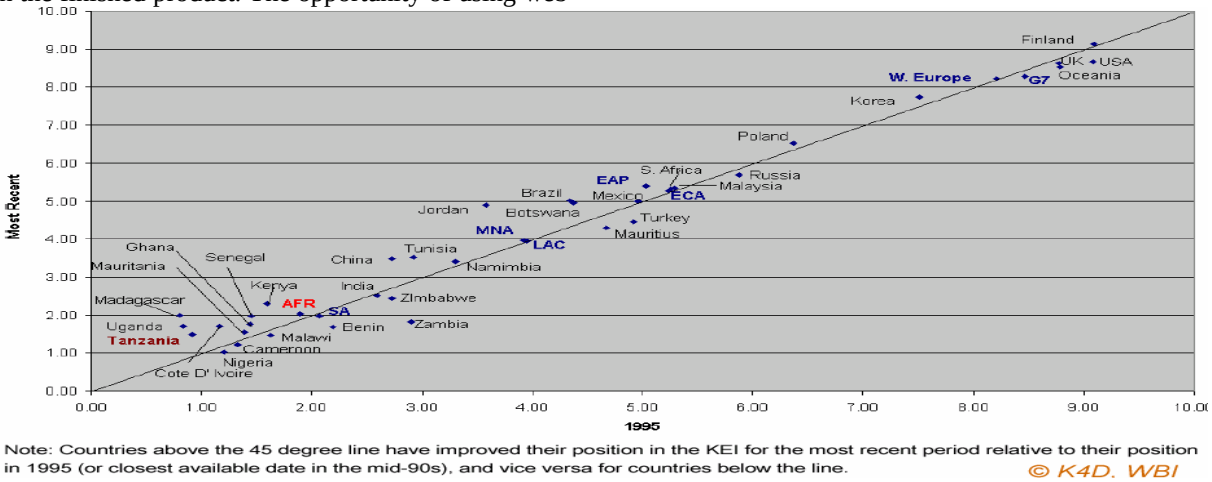
percent and lag behind emerging economies in job creation by same margin. The reason for this disparity was probably due to the fact that digitization is germane tothe economic structures of developed and emerging economies(BCA, 2011).

The importance of digitization has also been seen in industries and production processes. The report reveals that digitization affects the functioning of any enterprise in the areas that were broken down into four which are Business, Go-to-market, Production, and Operations (Katz, Vaterlaus, Zenhäusern, and Suter. 2010). The importance of digitalization in the context of business is that it is fundamentally reshaping business models in such a way that it lowers barriers to entry and expands the reach of the market for enterprises because of the adoption of some digital devices such as Skype to provide telephony to more than 500 million users globally, using Voice over Internet protocol (VoIP) technology. This creates a new wave in business models for operators worldwide and forces many to launch their own VoIP business models in response.

In the aspect of Go-to-market, digitization influences the way individuals, companies and corporate entities build brands, products, communicate, and provide services to their customers all over the globe. This is not unconnected with the advent of social media and other internet services. Companies are increasingly relying on social media to build brands and more subscribers are forming their purchase opinions online, even for items that they eventually buy offline. Close to 40 percent of those online actually use the web to research items that they buy in physical outlets (WEF, 2013). It was also reported that Digitization is enabling companies to create products tailored to customers' tastes as it can be seen in the production companies such as BMW who offers a build-your-own-BMW online service, which allows for more than a million different combinations in the finished product. The opportunity of using web (internet) as a retail channel by most industries and individuals also changed the wave of marketing across the globe. While some companies are significantly expanding their market horizon, some are experiencing bankruptcy. This new way of marketing began roughly in 2001.

It was noticeable among advanced companies of the world that digitization is changing companies' module operands and the way they manage their production assets. This enables companies to move labor-intensive tasks to emerging economies while competing to develop the best design and user-interface. This new way of production was visible in the operation of Samsung which acts as a supplier to Apple for its iPhone products, but both compete aggressively in the consumer market by trying to differentiate themselves in their design and user interface. Finally, digitization has had the greatest impact on the way companies organize and operate to generate competitive advantage.

Education sector has also witnessed tremendous change in their mode of operation due to the advent of digitalization. Recently, there has been growing interest in the application of new digital technology to improve playing, learning and education. The opportunity to use computer and internet to teach has diversified the mode of studentship to open, distance and face-to-face. This has its implication on enrolment, cost and time of study. It has also given an opportunity to those who do not have the chance of enrolment into face-to-face learning environment to study anywhere as well as anytime. Digitization also helps teachers in the way they conduct and plan academic and administrative duties as traditional teaching activities could be digitalized. Teacher productivity in terms of lesson preparation, lesson delivery and the use of instructional materials, promptness to classes using electronic reminders could be increased.



Note: Countries above the 45 degree line have improved their position in the KEI for the most recent period relative to their position in 1995 (or closest available date in the mid-90s), and vice versa for countries below the line.

Figure 1: Knowledge Economy Index

Source: Bloom, Canning and Chan (2006), adapted from World Bank Institute (2004), Tanzania and the Knowledge Economy: Preliminary Assessment." World Bank Institute Knowledge for Development Program

The first effort to assess the digital impact globally was made by World Bank (2004) as she developed Knowledge Economy Index (KEI). The countries were rated on four aspects of the knowledge economy based on favorability for knowledge development within the economic and institutional regime; education; innovation, and information and communications technology.

As Figure 1 shows, most African countries languish near the bottom of the KEI. South Africa, Botswana, and Mauritius record scores near the middle, but Nigeria, Cameroon, Malawi, Tanzania, and others have struggled, scoring less than two out of a possible ten points (Bloom, Canning and Chan, 2006). Countries outside the continent of Africa that were at the forefront were Finland, USA, UK, Korea etc. Another similar attempt was made in 2013 by World Economic Forum (WEF) formally known as Booz and Companies to locate countries' digital position globally on a continuum known as Networked Readiness or E-readiness Index. Countries were rated based on their level of digitalization and the benefits derived from it across different pillars of economics. According to the United Nations (2012), "E-readiness Index assesses the quality and usefulness of information and services provided by a country for the purpose of engaging its citizens in public policy making through the use of e-government programs. As such it is indicative of both the capacity and the willingness of the state in encouraging the citizen in promoting deliberative, participatory decision-making in public policy and of the reach of its own socially inclusive governance program".

Apart from the fact that document (WEF, 2013) being too elaborate and not easy to understand, there is also no known study that has ever compared the countries' digital position since 2014 using Africa and other sampled countries of the world as a test case. It will not be an exercise in futility to reassess the relative standing of those high flyer countries in Africa and other continents on the KEI with networking and e-readiness index. Therefore, this write-up compared Networking and E-readiness of some reputable African countries and other countries of the world using, World Economic Forum rating of year 2013 across different sectors of the economy.

Statement of the Problem

Development is a cumulative grow in sub-components of a system, different indicators have been adopted to measure nations' development across the globe in the time pass but are not unconnected with one fallibility or the other. The advent and the adoption of ICT in all sectors of government and economy has made it a common yardstick by which nations' development could be measured. Knowledge Economy Index developed by World Bank for countries across the globe in year 2004 assess relative standing and performance of each country in the comity of nations excluded some facet of countries' development. Subsequent effort made by WEF to put nations on the same metric that led to development of Networking Readiness Index considered ICT as indispensable tool for such a task as it has permeated into nearly every sectors of government and economy. However, since the computation of NRI and the assessment of sectors's performance for each country of the world by WEF, little or no effort has been made to engage in between countries or intercontinental comparison among stakeholders across nations. Therefore, this paper presents comparative analysis of Networking and E-readiness of African and other developed countries using NRI estimate of WEF.

Significance of the Study

The study analyzed the performance of each sector in the selected countries in Africa and developed ones with respect to the opportunities brought by ICT and it variants to the nations' economy. The result will allows stakeholders in different countries who are backward in the metric to see their level/digitization stage and lay solid ICT foundation for every sector to earnest the opportunities brought by digitization. It will also inform the policy makers of different countries selected in the study to determine whether to adopt comparative or absolute advantage brought by ICT/digitization. The result of the analysis could also create impetus for stakeholders in different countries to develop their digital agenda.

Limitation of the study

In the study, the approach documentary analysis is the major limitation of the study. As it does not affords collection of empirical data by the researcher. The study only used secondary data reported in World Bank KEI and World Economic Forum NRI. Also, researcher has no idea of how different indicators in the study were measured but was only aware that some were obtained from secondary data of other organizations/studies which could lead to measurement errors as they could be obtained using different scales.

METHODOLOGY

The research design adopted for the study was non-experimental, documentary analysis of World Economic Forum's yearly release of 2013 (Global Information Technology Report) and subsequent years. The documents analyzed the impact of digital technologies on 144 countries of the world that were rated based on their digital scores. The position of each country, based on digital scores, was used to compute Networked Readiness Index (NRI) that was created 17 years ago with the intention of adopting business and financial strategies that would allow development in the context of a fast-moving but promising on-line economy. Ever since, the NRI has

provided decision-makers with a useful conceptual framework to evaluate the impact of information and communication technologies (ICTs) at a global level, and to benchmark the ICT readiness and its usage for their economies.

The index was computed across 54 indicators of ICT readiness that was sourced from 2011–2012 weighted average of World Economic Forum, Executive Opinion, United Nations Education, Science and Culture Organization (UNESCO), UNESCO Institute for Statistics Data Centre (accessed November 29, 2011); UNESCO Science Report 2010: The Current Status of Science around the World; World Bank, World Development Indicators 2009; national sources, calculations based on International Telecommunication Union (ITU); World Telecommunication/ICT Indicators Database 2012 (December 2012 edition); International Monetary Fund, World Economic Outlook (October 2012 edition); World Bank, World Development Indicators Online (retrieved November 29, 2012). The data used in this Report represent the most recent available figures from various international agencies and national authorities at the time when the data collection took place. It is possible that some data have been updated or revised since then.

Networked Readiness Index for WEF, 2013 was computed for a category of K indicators using

Category,

$$\sum_{k=1}^{k} indicator_k$$

The formula represents

$$6\ x\frac{country\ score-sample\ minimum}{sample\ maximum-sample\ minimum}+1$$

The sample minimum and maximum are respectively, the lowest and highest country scores in the sample of economies covered. In a situation where there are outliers, the computation was adjusted to

$$-6\ x\frac{country\ score-sample\ minimum}{sample\ maximum-sample\ minimum}\text{-}7$$

RESULT AND DISCUSSION

Table 2: Influence of Digitization on Political and Regulatory Environment

Country	Law Making Activities	ICT Law and Policy	Intellectual Properties Protection	Software Piracy rate	Availability of Latest Technologies
Finland	5.6	5.7	6.3	25	6.6
Ghana	4.1	3.6	3.1	n/a	4.7
Kenya	3.7	4.1	3.1	78	4.9
Korea	2.8	5.4	4.3	40	6.1
Nigeria	3.6	3.7	2.9	82	4.7
Singapore	6.4	5.8	6.1	33	6.3
South Africa	4.3	5.0	5.3	35	5.7
USA	3.8	5.2	5.0	19	6.6
First Country in the World	Singapore Mean=3.6	Luxembourg Mean=4.0	Finland M=3.8	United States	Sweden M=5.0

From the result in Table 2, it can be observed that most African countries perform above average when it comes to the use of ICT in law making activities as majority of them score above the mean score of 3.6 with South Africa taking the lead. It is noteworthy that Singapore effectively used ICT for law making activities among all the countries of the world followed by Finland while countries such as Ghana, South Africa and Kenya are more effective than USA and Korea. From the result also, it was discovered that all the countries outside the continent of Africa have an effective ICT policy and law with Luxembourg taking the lead. African countries that are above the mean score are Kenya and South Africa, while others score a little bit below the mean. The result further reveals that all African countries, except South Africa, are ineffective in intellectual properties protection while this was given priority among the sampled countries outside the continent of Africa. It can also be observed that the prevalence of software piracy is less in USA and it is more prominent among African countries with Nigeria taking the lead. More so, the result also reveals countries' availability of latest technologies. It shows that Sweden is the only country that has the latest technologies all over the world. Among the countries sampled, Finland and USA have the same score while Nigeria and Ghana also rate the same in Africa and South Africa took the lead. It can be concluded that Nigeria is lagging behind among African countries while Singapore is at the forefront all over the world when it comes to the influence of digitization on political and regulatory environment.

Table 3: Influence of Digitization on Education

Country	Tertiary Education Enrolment rate in %	Secondary enrollment rate	Quality School Management	Procurement of Advance Technology	Quality of Education System	Quality of math and science education	Adult literacy rate %	Internet access in schools
Finland	93.7	107.5	5.6	4.5	5.8	6.2	99.0	6.4
Ghana	12.1	59.2	4.3	3.4	3.8	3.6	67.3	3.2
Kenya	4.0	60.2	4.3	3.5	4.3	3.9	87.4	3.8
Korea	103.1	97.1	4.7	4.0	4.1	5.5	99.0	6.2
Nigeria	10.3	44.0	3.9	3.6	3.5	3.6	61.3	3.5
Singapore	72.0	107.0	5.7	5.3	5.8	6.3	95.9	6.3
South Africa	15.4	93.8	5.3	3.1	2.2	2.0	88.7	3.1
USA	94.8	96.0	5.6	4.4	4.7	4.3	99.0	5.7
First Country in the World	Korea	Australia	UK Mean=4.2	Qatar Mean=3.6	Switzerland M=3.7	Singapore M=3.9	Estonia	Iceland M=4.1

Table 3 shows the influence of Digitalization on Education in sampled countries. The result reveals that with respect to tertiary education enrolment, Korea is taking the lead all over the world. Among the sampled countries, USA followed Korea and then Finland while in the continent of Africa,

South Africa, Ghana and Nigeria followed accordingly. It is noteworthy that Australia has the highest secondary school enrolment all over the world. Among the sampled countries, Finland was at the forefront followed by Singapore. In Africa, South Africa, followed by Kenya has prominent secondary school enrolment. Result reveals further that when it comes to quality school management, United Kingdom has the best practice all over the world. Among the sampled countries, Singapore was at the forefront, Finland and USA have the same rating while Kenya and Ghana also have a tie in Africa with Nigeria lagging behind them.

Qatar was rated highest of all the countries all over the world in the procurement of advanced technologies, followed by Singapore and then Finland among the sampled countries; Nigeria is at the forefront in Africa while South Africa is the least. The best quality education is obtainable in Switzerland while the best science and mathematics education is resident in Singapore when compared with other countries of the world. While in Africa, Kenya has the best quality education as well as science education. Estonia has the highest adult literacy all over the world and is followed side by side by USA, Korea and Finland. Among African countries sampled; South Africa leads and is followed by Kenya while Nigeria is the least. All over the world, Iceland has been found to have the best internet service in the school, followed by Finland while in Africa, it was found to be Kenya, followed by Nigeria. From Table 3, inference could be made that digitization influences education in Singapore more than any country of the world and Kenyan education has a similar experience in Africa while South Africa is the least recipient.

Table 4: Influence of Digitization on Electronic and Electricity

Country	Electricity Production (%)	Mobile Network Coverage	Internet Bandwidth	Secure internet servers	Access to Internet Content
Finland	14,982.0	.99.9	118.4	1,486.7	6.4
Ghana	376.0	84.9	0.2	2.2	4.2
Kenya	174.2	89.1	4.5	3.2	4.7
Korea	.9,675.0	99.9	7.2	2,496.1	6.3
Nigeria	128.0	90.0	0.4	1.7	4.6
Singapore	8,381.0	99.9	343.7	607.3	6.4
South Africa	5,004.3	99.8	8.9	73.9	4.8
USA	14,020.0	99.8	47.2	1,563.2	6.0
First Country in the World	ICE land Mean=53,637.7 kwh	Azerbaijan 100%	Hong Kong	Iceland	United Kingdom M=4.9

Table 5 presents the influence of Digitization on the electronic and electrical aspects of the sampled nations. The result reveals that Iceland has the highest level of electrical production in the world and is followed by Finland among the sampled countries and then USA, whereas in Africa, South Africa has the highest level of production, followed by Ghana. The table also shows the mobile network coverage with Azerbaijan taking the lead all over the world, whereas countries like Finland, Korea and Singapore has the same level of production. South Africa has the highest level of coverage in Africa, followed by Kenya and then others. Furthermore, the result reveals the level of internet bandwidth available for the sampled countries and the world as whole. It shows that Hong Kong has the highest bandwidth all

over the world, followed by Singapore, and then Finland among the sample countries. In Africa, South Africa has the highest available bandwidth followed by Kenya while other countries are seriously lagging behind. The countries were also rated on the ease of securing internet server, Iceland was rated highest all over the world and among the sampled countries; it is followed by Korea and then USA. South Africa takes the lead and is followed by Kenya in Africa. Countries' access to internet content was rated and it was found that United Kingdom has the highest access all over the world followed by Finland among the sampled countries. In Africa, South Africa has the highest access, followed by Kenya. From the result presented in Table 4, it is noteworthy that Iceland is in the best position all over the world when it comes to electricity and electronics, however, in Africa, South Africa and Kenya have the best of electricity and electronic.

Table 5: Influence of Digitization on Affordability of ICT Accessories

Country	Mobile Cellular Tariff	Fixed broadband internet tariffs	Internet and telephony sectors competition index
Finland	0.07	28.85	1.83
Ghana	0.10	35.71	1.42
Kenya	0.11	71.60	2.00
Korea	0.33	36.52	1.76
Nigeria	0.38	101.97	2.00
Singapore	0.17	37.09	2.00
South Africa	0.51	37.48	1.13
USA	0.27	19.95	2.00
First Country in the World	Liberia	Israel	Argentina

Table 5 shows the ease of affordability of ICT accessories. The result reveals that out of all countries of the world, Liberia has the least mobile cellular tariff, close to it among the sampled countries is Finland, whereas, Ghana has the least tariff in Africa. Fixed bandwidth internet tariff of the sampled countries was also rated, among which Finland had the least, followed by USA; Ghana was the least in Africa and Israel enjoyed the least bandwidth internet tariff all over the world. The rating of internet and telephony sectors also reveals that Argentina experienced the highest intensity while Finland, USA, Kenya and Nigeria were rated the same. This implies that most African countries are rated alongside developed countries when it comes to affordability of ICT accessories.

Table 6: Influence of Digitization on ICT Personal Usage

Country	Mobile telephone subscriptions	Internet users	Households with a personal computer	Households with internet access	Fixed broadband internet subscription	Use of virtual social networks	Mobile broadband internet subscriptions
Finland	166.0	89.4	81.5	84.2	29.5	6.3	87.1
Ghana	84.8	14.1	9.1	0.3	0.3	5.1	23.0
Kenya	67.5	28.0	4.1	2.2	0.1	5.2	0.3
Korea	108.5	83.8	81.9	97.2	36.9	6.0	105.1
Nigeria	58.6	28.4	9.3	4.6	0.1	5.3	10.0
Singapore	150.2	71.0	86.1	84.8	25.6	6.2	114.1
South Africa	126.8	21.0	18.3	9.8	1.8	5.3	19.8
USA	92.7	77.9	75.5	71.6	27.4	6.2	74.5
First Country in the World		Iceland	Iceland	Korea	Switzerland	Iceland M=5.3	Singapore

Table 6 shows the level of ICT personal usage. The result reveals that all over the world, Iceland is rated as the country with the best ICT usage for personal purpose; it is followed by Korea and then Singapore. In Africa, South Africa takes the lead followed by Ghana except in the area of mobile internet subscription.

Table 7: Influence of Digitization on Service Delivery and Business Activities

Country	Level Technology Absorption	Capacity For Innovation	Patent Cooperation Treaty	Business To Business Internet Usage	Business to Consumer Internet Use	Extent of staff training
Finland	6.1	5.6	279.3	6.3	6.0	5.4
Ghana	4.2	3.0	0.0	4.8	3.8	3.7
Kenya	4.9	3.5	0.1	4.9	4.5	3.9
Korea	6.0	4.5	172.1	5.9	6.3	4.3
Nigeria	4.7	3.2	0.0	4.6	4.5	4.1
Singapore	6.0	4.4	120.4	6.0	5.3	5.3
South Africa	5.4	3.5	6.0	5.6	4.8	4.6
USA	5.9	5.2	134.4	5.6	6.0	5.0
First Country in the World	Sweden, mean=4.8	Japan, Mean=3.3	Sweden	Finland, Mean=5.0	United Kingdom, Mean=4.5)	Switzerland M=3.9

Table 7 presents the influence of digitization on service delivery and business activities. The result shows that Sweden has the highest tendency for technological absorption of all the countries of the world; it was followed by Finland among the sampled countries while Korea and Singapore are at the same level and South Africa takes the lead in Africa, followed by Kenya. Nigeria and Ghana were below the world average point. In the area of capacity for innovation, Japan has the highest tendency of all the countries of the world, followed by Finland and USA among the sampled countries, while South Africa and Kenya are at the same level. In Patent cooperation treaty, all African countries were lagging behind with evidence that it does not exist in Nigeria; Sweden is also taking the lead all over the world followed by Finland and then Korea among the sampled countries. United Kingdom is rated first in the world when it comes to business-to-business internet usage, followed by Korea among the sampled countries, then USA and Finland were rated the same. In Africa, South Africa had the highest score followed by Nigeria and Kenya which have the same score. Regarding training of staff, it was recorded that Switzerland has the highest score among all the countries of the world followed by Finland among the sampled countries while South Africa is leading in Africa and is closely followed by Nigeria. From the result, inference can be made that Sweden takes the lead among all the countries of the world when it comes to influence of digitization on service delivery and business activities while South Africa is at the forefront in Africa.

CONCLUSION

Based on the result presented on different aspects of the economy across the sampled countries and the world at large, it is left for each country to decide which area of digitization benefits to explore. The potential areas of benefits may vary from one country to the other, this will help informed and skilful policymakers and national leaders to lay a solid foundation for digitization and make available facilities that will enhance access and ability to differentiate opportunities and capabilities that digitization can bring for such nation. Knowledge of an individual country's digital strength and weaknesses will inform policy makers' choice of either comparative or absolute advantage brought by digitization. Also, making choices on what sectors of the country fit the best opportunity for the absolute advantage Adam Smith described and focusing on them will be considered.

RECOMMENDATIONS

Based on the result and conclusion above, it was recommended that policymakers and national leaders alike should:

- provide a solid foundation in form of infrastructure to accommodate emerging trends in digital landscape most especially in the continent of Africa;
- analyze and understand the trade-offs between job creation and productivity that digitization brings and develop the mechanism to harness them;
- depend on the stage of digitization (advance, emerging or constrained), stakeholders and other national leaders in different countries should develop means of offsetting potential job losses that digitization brings;
- analyze, understand and determine what role to play (direct developer, financier, or facilitator in digitization process) in order to advance the country's digitization agenda.

REFERENCE

Bloom, D., Canning, D. and Chan, K (2006), adapted from World Bank Institute (2004), Tanzania and the Knowledge Economy: Preliminary Assessment." World Bank Institute Knowledge for Development Program.

Booz and Company Analysis (2011). World Economic Forum, Executive Opinion Survey, 2011 and 2012 editions

Chan, F. M. (2002). "Development information literacy in the Malaysian smart schools: resource-based learning as a tool to prepare today's students for tomorrow's society". In: Singh, Diljit et al (Eds.), School libraries for a knowledge society. Paper presented at 31st. IASL Annual Conference and 6th International Forum on research in school librarianship, 5-9 August, at Petaling Jaya, Malaysia.

Davis, D. R., (1995) "Intra-Industry Trade: A Heckscher-Ohlin-Ricardo Approach," *Journal of International Economics* 39 (1995): 201-26.

Gallup Global Wellbeing Surveys. 2010. Gallup Wellbeing Thriving Index. Available at http://www.gallup.com/poll/147167/High-Wellbeing- Eludes-Masses-Countries Worldwide.aspx#2.

International Monetary Fund's World Economic Outlook (October 2012 edition).

International Telecommunication Union (ITU, 2012), ITU World Telecommunication/ICT Indicators Database 2012 (December 2012 edition)

ITU (International Telecommunication Union). 2012. *World Telecomunication/ICT Indicators Database* (December 2012 edition.) Available at http://www.itu.int/ITU-D/ict/publications/world/world.html.

Jipp, A. 1963. "Wealth of Nations and Telephone Density." *Telecommunications Journal* (July): 199– 201.

Katz, R. 2012. *The Impact of Broadband on the Economy: Research to Date and Policy Issues. ITU Broadband Series,* April. Geneva: ITU. Available at http://www.itu.int/ITUD/treg/broadband/ITU-BB Reports_Impact-of-Broadband-on-the-Economy.pdf.

Koutroumpis, P. (2009). "The Economic Impact of Broadband on Growth: A Simultaneous Approach." *Telecommunications Policy* 33 (9): 471-85. Available at http://www.sciencedirect.com/science/article/pii/ S0308596109000767

Petri, P., (1980): "A Ricardian Model of Market Sharing," *Journal of International Economics* 10 (1980):201-11

Sabbagh, K., Friedrich, E., Singh, R., and Koster, M. (2012). Maximizing the Impact of Digitization: Booz & Company in 2012;www.strategyand.pwc.com

Smith, A. (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations*. 3 vols. Dublin: Whitestone.

Suleiman, B. (2013). Automation and Digitization of Primary/Post Primary School Libraries as an Impetus for Effective Teaching and Learning: *Journal of Educational and Social Research. Vol. 3, No 10*

The World Bank, 2012. World Development Indicators Online (accessed November 28, 2012); national sources.

United Nations (2012). United Nations E-Government Survey 2012: E-Government for the People. www2.unpan.org/ egovkb/datacenter/CountryView.aspx.

United Nations Education, Science and Culture Organization (UNESCO, 2010), UNESCO Institute for Statistics Data Centre (accessed November 29, 2012); UNESCO, UNESCO Science Report 2010: The Current Status of Science around the World; national sources

World Economic Forum, (WEF) 2012, The Global Information Technology Report 2012: Living in a Hyperconnected World," World Economic Forum, 2012, and by Booz & Company in 2012.

World Economic Forum. 2012. *The Global Competitiveness Report 2012–2013.* Geneva: World Economic Forum. Available at www. weforum.org/gcr.