

Africa in the Time of COVID-19: Finding Local Solutions to Combat a Global Pandemic

Prince Edward Darah, Ph.D.

Chartered Institute of Bankers, Ghana

Peter Ndiang'ui, Ph.D.

College of Education, Florida Gulf Coast University

Abstract

The onset of Covid-19 pandemic has caught the entire globe by surprise. Left unchecked, it is evident that the pandemic has the potential of causing untold devastation that is unheard of for more than a century. According to several reports from epidemiologists, it is a strain of flu that rivals the Spanish pandemic of 1918-1919, which killed at least 20 million people worldwide. The purpose of this paper is to examine how a number of selected African countries have organized themselves to reduce the impact of the Covid-19 Pandemic. It has been observed that the potential social, economic, and security devastation that COVID-19 could cause in Africa should be enough of an incentive for African governments to invest immediately in preparedness for the worst-case scenario. In this paper, the authors have examined how the use of local solutions in ten selected African countries has helped in combating the virus. For methodology, data was collected from primary and secondary sources that have been compiled to explore the differences in the approaches of different countries. The methodology of data collection also involved interviewing people from the various countries to examine the authenticity of the information gathered. The success of the combat measures applied is in terms of making comparisons of the country data provided by the World Health Organization (WHO) on the number of positive cases and the fatalities. The data analysis involved correlating both the primary and secondary information. It is concluded that countries that have applied local solutions to combat the pandemic have had more success than those that waited for the west to get solutions. The more successful countries are those that sought local resources, intensified surveillance, and built capacities to limit onward transmission. The authors have concluded that this may be the beginning of a new approach to finding solutions to local problems with minimal reliance on the West. While they do this, there are obvious challenges that they will face as they move forward in a new era of self-dependence but the end result will be economic independence and less focus on catching up development.

Key Terms: Covid-19 Virus, local solutions, prospects, challenges

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com



Introduction

Traditionally, African countries have tended to depend on solutions from the West anytime that a calamity occurs in the continent. During the global pandemic that has befallen them in the early part of the year 2020, many countries in Africa are seeking local solutions while stepping up their preparedness to detect and cope with COVID-19 importations. This has ranged from dependence on seeking herbal resources as in Madagascar to dependence on spiritual help as in Tanzania. Countries like Kenya have applied stringent measures that involve closure of business and other institutions and imposing curfew. On the whole, virtually every country has applied local solutions without dependence on the West. One of the biggest challenges is created by the fact that China which is the primary source of the pandemic is Africa's leading commercial partner which implies that there are large travel volumes through which severe acute respiratory syndrome coronavirus could reach the continent. Several African countries have on their own implemented measures to control the Afro-Chinese interactions. These measures have helped in reducing and controlling possible case importations from China. The African countries have also reduced air travel with most European countries. This level of independence was not happening before when the former colonizers dictated the decisions made in their former colonies. It should provide an incentive for the African countries to find home-made solutions to their problems rather than depending on the West.

In his book entitled *Emerging Africa: How the global economy's last frontier can prosper and matter*, Moghalu (2014), examined the conventional wisdom about Africa's overdependence on the West. He concluded that Africa and its people will only prosper and matter in the international market if it sought solutions to its problems from within and not from external sources. As we ponder on the ramifications of the coronavirus pandemic, we see not only the devastation but also lots of opportunities that are equally begging to be utilised by Africa if only we followed Dr. Moghalu's advice. We see this pandemic as both an opportunity and a wake-up call for my continent Africa to reposition itself as an economic force to reckon with globally. Jayaram *et al.* (2020) observed that largely due to the relatively low levels of socioeconomic development and poor infrastructure, the impact of COVID-19 in Africa could result in a devastation of unprecedented magnitude unless governments, development institutions, and the private sector act with extraordinary speed and agility. The number of recorded COVID-19 cases

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com



in Africa, is still relatively small, but it is growing fast. The continent has far fewer doctors, hospital beds, and ventilators per capita than any other region. A health crisis of significant proportions looms unless containment measures succeed *and* urgent action is taken to ramp up health-system resources. Jayaram *et al.* (2020) further noted that on the economic front, the crisis in jobs and livelihoods could be even greater. After two decades of steady economic progress, the pandemic could tip Africa into its first recession in 25 years.

Statement of the Problem

Traditionally, Africans have depended on the West for solutions whenever a calamity befell the continent. This pandemic is quite different. Since it has affected the entire globe, everybody is for himself and each country (rich or poor) is forced to fight on its own. It is also important to note that the pandemic comes at a time when the United States, the traditional leader of the table for more than half a century has scaled down its role on the world stage and actually appears to be undermining any efforts towards a global effort to battle the virus. It has halted funding to the World Health Organization (WHO), the organization best positioned to coordinate the global response to the pandemic. Other leading nations, instead of filling the void have just expressed amusement at worst or sadness at best at the leader's reaction.

This lack of global leadership or support from the West is where we see the opportunities in spite of the devastation from the pandemic. In this paper, we have examined how ten African countries have responded to the onset of the virus. NNkengasong, John & Wessam Mankoulalaa (March 2020) observed that, many African countries have within a short time stepped up their preparedness to detect and cope with the virus. They have prioritized the allocation of resources, intensified the surveillance, and increased their capacity building without dependence on the West. For once, Africans must identify solutions to their own problems on their own. Interestingly, the viewpoints of the origins from different parts of the continent are almost amusing. Many have blamed this pandemic on other people and demons including satanic machinations. Others have seen it as a curse from the gods who have become dissatisfied for one reason or another. Other regions are not immune from these interpretations. The West seems to be more focused on interpreting the origins from conspiracy theories such as the debilitating effect of electromagnetic waves from the 5G evolution. All these interpretations cannot just be considered as hogwash but

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com



mind boggling. The few on the continent who have refused to accept this analogy will soon be demonised and relegated to the background. A case in point was during the 2008/2009 global financial crises which had relatively lower effects on Africa compared to other continents. During this crisis, our international analysts, advisors and academics on the African continent occupied themselves with the task of espousing concepts and theories that could stem the tide in the West instead of advising African businesses and leaderships on how to position themselves and take advantage of the economic fall-outs in the West. Do not get us wrong; We are not espousing or in favour of a concept of neglect for the West since the world has become a global village and a care centre for all mankind. Any action or inaction on the part of any one group could be detrimental and contagion in one form or the other.

Objectives

- 1. Assess the impact of COVID-19 Pandemic on African economies;
- 2. Identify how African countries are responding to the onset of Covid-19 Pandemic and;
- 3. Examine the challenges that African countries are experiencing in identifying the solutions to the covid-19 pandemic.
- 4. To examine how some African cultural practices influence the effects of the Covid-19 pandemic

Research questions

- 1. What are the challenges of African countries created by the COVID-19 virus?
- 2. How will the need for locally-based solutions reduce dependence on the west on future socio-economic problems for African countries?
- 3. What opportunities will African countries acquire through the learning experience from the COVID-19 virus?
- 4. To what extent do some African cultural practices influence the effects of the Covid-19 pandemic?

The overriding question is: How long do African countries have to continue on this tangent of becoming too obsessed with what happens in the West to solve their local problems? Historically, it has been proven that the West hardly cares about the well being of African people. Down memory lane, many would attest to the fact that Africans have had to grapple with very terrible virus induced pandemics including Cholera and Ebola, and many epidemics that nearly wiped out

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com



entire villages and threatened the survival of many cities and towns in Africa. For instance, what was the response of the West during the Ebola crisis in West Africa? The West evacuated their people in droves from Congo, Liberia and Sierra Leone; the countries considered as the epicentres of the virus then. Other Africans who could afford lifestyles and cost of living in the West also left in droves on first class and business class tickets. We recall the case of a high ranking cabinet official of Liberia who left for the West amidst the Ebola crisis and refused to come back to Africa to the point he ended up being relieved from office by the then President. Amidst the current coronavirus pandemic, it would appear that the West is evacuating its citizens from some African countries including Ghana. All the employees of the multinationals who come from the West are also gone with their expertise leaving behind employees of African descent and locals who are technically challenged by virtue of the fact that most of these local employees have not been given the opportunity to occupy strategic positions that will enable and facilitate technology and knowledge transfer to them. These expatriates have gone to join and add to the strength of their people as call ups or reservists to produce goods such as PPEs and offer services that are needed by their countries at this crucial time (Ozfidan, Savas, & Demir, 2019). As if this is not enough, the American Government for instance, has threatened to invoke and activate emergency powers that will restrict American companies including 3M to produce essential goods for the consumption of only Americans at this crucial time. What is Africa's leverage amidst this pandemic? How do African countries get PPEs and other essential goods locally during this global lockdown where virtually almost every country has closed its borders?

It would appear from the foregoing that the ramifications of the current actions by the West and these multinationals and their implications on the production and supply of goods and services by extension the survival of our economies on the African continent could be dire both in the short and medium terms now that the global supply chain of goods and services has been significantly disrupted.

Methodology

The data for this research was collected from both primary and secondary sources. The primary sources include interviewing people from the various countries. The countries distributed all over the continent were selected due to the availability of respondents to provide necessary

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com



information from the source. The authors received a lot of helpful information which was used to verify some of the recorded information.

Data was also collected from secondary sources. These involved reading the peer-reviewed articles and other published sources. The positive cases and fatality data was also collected from the published statistics by the World Health Organization (WHO).

The analysis involved verifying the data from the interviews and that of the secondary sources. The authors also analyzed the relationship between pandemic-combat methods and the number of fatalities. In order to make the statistics comparable, the effects were reduced to per capita based on the entire population of each country. Dependence on both primary and secondary sources helped to obtain more reliable data that helped in arriving at the conclusions made.

Limitations

There are a few significant limitations to this study. First, the COVID-19 pandemic onset started less than six months ago and its real impact is yet to be realized by all the countries. The responses by the countries which are the premises of this study in on-going and may take longer than initially anticipated. Secondly, the research findings are based on ten economies on the African continent to portray and describe the status quo. This is less than 20% of the total number of countries in the continent. Although this is statistically significant, it is not easy to base generalizations in the entire continent on this sample. As such not so much generalizations were made but conclusions were drawn by limiting them to the specific environments on the continent. Third, the secondary data used though deemed reliable is in many ways suspect. A number of the countries may not have the means to collect the data particularly in their less accessible rural areas. Lastly, the collection of data from primary sources (interview of government officials, nongovernmental organizations and local individuals) initially proved difficult due to the unwillingness and unpreparedness of resource persons to grant audience to the authors was a militating factor. Some considered the research environment as conspiratorial. They expressed fear of retaliation from their seniors. We overcame this limitation by convincing them interviewees would not be singled out in the paper.

Significance of the Paper

The findings in this paper would enable leaderships on the continent to assess their success of the methods used to combat the pandemic. They will also learn of what other countries are doing

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com



to reduce the effects of the pandemic. The paper generates knowledge which will guide policy makers in the planning and usage of local resources, that can be useful to academics and managers in furtherance of future studies and local resources management to combat future calamities.

Literature Review

In the early part of the year 2020, several research papers on the impact of Covid-19 pandemic have emerged (Garbe et al., 2020). Several papers have focused on identifying the measures that countries have taken to combat the devastation of the virus. A common thread for most countries is lockdown. Reflecting on the severity of the situation, Parker (2020) observed that 53% of all the countries he surveyed included nationally enforced lock-down among the measures to combat the spread of the virus. These measures included closure of schools, public places and non-essential businesses. Lock-downs have posed other challenges. Most low-income people cannot afford the luxury of living without pay for a significant period of time. Similarly, people involved in taking care of the sick are essential in the control process. Researchers noted that making sure that sick people get the care they need and don't infect others is one of the key planks of containing COVID-19 since the majority of the workers have little choice about putting in a shift, even if they feel unwell (Ojha, 2020; Parker, 2020; Rahin & Rahim, 2020).

The year 2020 promises to be rife with terrible disorders, with Africa being at the receiving end. As it has always been, the 1st world economies are working tirelessly to look after themselves -the US, for instance, has pumped US\$2.2 trillion into its economy in the form of stimulus-Africa left to look after its own.

Covid-19 caught the world totally unprepared, and with no proven and available medical response. Soludo (2020) observed that ad-hoc cocktails and learning-by-doing constitute the strategic response package to Covid-19 with no proven and available medical response. In most western countries, the cocktail of response has included a coterie of defensive measures including: border closure; prepare isolation centres and mobilize medical personnel/facilities; implement "stay at home" orders or lockdowns except for food, medicine and essential services; campaign for basic hygiene and social distancing; arrange welfare packages for the vulnerable; and also economic stimulus packages to mitigate the effects on the macro economy. A template many African countries have largely copied the above template, to varying degrees. But the question Soludo (2020) asked is: Can Africa really afford lockdowns, and can they be effective?

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com



Soludo (2020) observed that China isolated Wuhan, and kept Shanghai, Beijing, and other major economic engines open, and today, China supplies the world with medical equipment, face masks, etc and raking-in hundreds of billions of dollars. Although a country like China could afford total lockdown without too much suffering, the leaders decided to keep most of its economic hubs working amidst the partial lockdown ensuring continuous supply of goods and services throughout the country. On the other hand, countries in Africa shut down their production lines during these lockdowns resulting in scarcity and high cost of goods in the market. Many on the continent who live on subsistence wage became very vulnerable. Hunger and desperation were rife and these had devastating effects on the low incomes people. In Nigeria, Africa's most populous country, the citizens have had to endure an unpleasant situation. The food stimuluses announced by most governments were barely enough. For instance, Millions of Nigerians that observed the COVID-19 lockdown lacked the food and income that their families needed to survive, said Anietie Ewang, a Nigeria researcher at Human Rights Watch. Ewang was of the strong view that the government needs to combine public health measures with efforts to prevent the pandemic from destroying the lives and livelihoods of society's poorest and most vulnerable people.

The pandemic has also exposed the inadequacies in the healthcare and housing systems in Africa. Most healthcare delivery and diseases control centres could barely cope with the pandemic. Lack of Personal Protection Equipments (PPEs), testing centres, testing equipment and reagents were rife in most countries in Africa. Soludo (2020) observed a joke in the social media that narrated how the Health Minister of Burundi was asked to explain the miracle in his country whereby the number of infections was reported as zero. His response was: "it is simple: we don't have any testing kits". During the lockdown in most countries, citizens who live in slums and favelas on sleeping rota had to pack themselves in cubicles and kiosks for several days during night and day, a situation that exposed most of them to the virus. For these people, the "stay home and stay safe" protocol prescribed by WHO was an unrealistic mantra that would never work in their situation since the cubicles and kiosks they packed themselves in could not afford them a safe haven but rather render them more vulnerable to the virus.

Stimulus packages that were given by governments were not properly targeted and streamlined. Most of the people outside the formal sector who largely fall in the micro business category hardly received support due to documentation, locational and bureaucratic snags. "The

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com



vast majority of people outside of the formal system are hit devastatingly by the lockdown. "Any disruption to their daily livelihood has a huge and significant impact on their ability to meet their most basic needs," said Felix Morka, Executive Director of the Social Economic Rights Action Center, a Lagos-based non-governmental organization.

It would appear from the review that most of the experimental models mentioned above have not yielded any significant result in combating Covid-19 both in Africa and the West. Africa's delicate economies may not have the capacity and ability to bring back the economies up and running after Covid-19. Shutting down the entire production economy during lockdowns as we have observed in parts of the West may be dicey. Africa needs to devise measures in line with its social and economic realities to combat the virus and revamp its economy. It will be an opportunity for Africa to also mainstream these measures and improve upon them to confront future economic disruptions and health pandemics.

Research Findings

The research identified interesting findings on how the different economies reacted to and dealt with the calamity posed by the Covid-19 pandemic. The table below identifies the effect of the pandemic in the various countries. This is followed by a discussion on what each country has done to combat the pandemic. It is worthy of note that countries that took more stringent measures based on local conditions, some which may not be advocated in the West, faced less severe consequences from the pandemic. For instance, Kenya which advocated for caning of curfew violators was able to control the spread much faster than other countries. It should be noted that the authors are in no way advocating such stringent measures but they are interesting to report.

Influence of Africa's cultural practices

There are a number of cultural practices widespread throughout the continent that may be helpful in reducing the number of positive cases and mortalities from the pandemic. For one, in most of the western world, some of the institutions that are mostly affected are the nursing homes that mainly cater for the elderly. In the United States for instance, these are some of the institutions that have been most affected by the pandemic. In most of Africa, institutionalization of the seniors is considered a taboo. They are taken care of in their homes among their younger family members. Unlike the west, there have been minimal deaths of the elderly since they are not together with many others in the same nursing homes.



Many people in Africa have experienced an exposure to many microbes from birth. This builds some level of immunity that may become handy if a new virus enters the body. In many African countries, the proportion of positive cases that result in fatalities is lower than in most other regions.

The more centralized political systems in most African countries made it easier to enforce local responses at a faster rate than in other countries where the democratic systems of political leadership necessitated a slower response. For instance, when Kenya imposed a dusk to dawn curfew, the government was able to easily enforce it by using unorthodox methods like empowering the police force to beat those who did not obey the curfew. This very effective measure could not be done in the west.

COVID-19 Related Cases In 10 Selected African Countries

Table 1: Figures updated on May 5th, 2020

#	Country	Total population in millions	Reported Covid-19 positive cases	No. of active cases	No of Covid-19 Related deaths	No recovered	Percentage of Covid-19 related death per thousand of positive cases
1	Egypt	102.3	7201	5019	452	1730	.004
2	Ethiopia	115.0	145	50	4	91	.00003
3	Ghana	31.1	2719	2407	18	294	.0006
4	Kenya	53.8	535	329	24	182	.0004
5	Madagascar	27.7	151	50	0	101	0
6	Nigeria	206.1	2802	2292	93	417	.0005

©EIJEAS 2020 Volume: 5, Issue: 11, 29-58, Ohio, USA Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com



7	Rwanda	13.0	261	133	0	128	0
8	South Africa	59.3	7220	4336	138	2746	.0023
9	Tanzania	59.7	480	297	16	167	.0003
10	Zimbabwe	14.9	34	25	4	5	.0003

Case Studies

Ghana

The Coronavirus pandemic has plagued almost every country on the globe. Amid the pandemic various measures including quarantine, curfew, partial and total lockdowns were taken in a bid to contain the pandemic.

Ghana was no exception in implementing one measure or the other to curb the COVID-19 pandemic. At the initial stages, the President of the Republic, Nana Addo Dankwa Akufo-Addo on March 15, 2020 had issued directives mandating the agencies in charge of all border posts to cause all borders and ports to be closed for a period to both in-bound and out-bound human traffic. Prior to this directive, the President had asked his Ministers and heads of parastatals to temporarily suspend all foreign travels unless it was essential. Schools, mosques, churches and social gathering of all forms and shapes had been suspended for a period subject to review. Subsequently, a-three week partial lockdown was imposed on the capital city and two other cities that the Centre for Diseases Control (CDC) thought were vulnerable considering the infection rate coupled with the imposition of World Health Organisation's (WHO) protocols including social distancing on the whole nation. All of the aforementioned measures were announced by the President during his COVID-19 addresses to the nation on different occasions (Ministry of Health (MoH) Online, Published: March 15, 2020). Many organizations such as banks and state agencies had devised various ways of working including running of rota and the deployment of smart workplace solutions that run on IT dashboards to reduce the spread of the virus. Electronic learning has taken over physical contact modus across the educational system of all forms and shapes. The Ministry

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com

of Education has for instance, resourced its ICT department to conduct classes on state television networks.

Various home-grown technologies, inventions and innovations to help curb the spread of the coronavirus also emerged. The invention by Jude Osei Kelvin in the production of a solarpowered handwashing sink and the COVID-19 prevention electronic bucket produced by Owusu Dapaah and Richard Boateng are classical examples. Local pharmaceutical and textile companies have also re-modelled their operations and equipment with the help of Ghanaian engineers and artisans to commence the production of disinfectants and PPEs. Local artisans have also joined the wagon of masks and disinfectants production. The Food and Drugs Authority of Ghana has so far registered 45 companies to produce homemade facemasks, gloves and face shields (graphic.com.gh/news/general). A good number of the youth who hitherto lived in slums in the lockdown cities and left for their various villages prior to the lockdown are now engaged in subsistence farming. On May 1, 2020, President Akufo-Addo had announced various stimulus packages for businesses, households and vulnerable groups including frontline workers that were carrying out testing and treating patients in the form of tax reliefs, cash and services. President Akufo-Addo on April 19, 2020 announced the allocation of a ¢600 million stimulus package to small and medium scale enterprises (SMEs) this month as part of efforts to deal with the effects of the Covid-19 on the business community. The loans form part of measures put in place by the government of Ghana to mitigate the strain on Small and Medium scale businesses across the country that has been severely hit by the coronavirus pandemic (Graphic Online, Published: May 1, 2020).

The state scaled up its investment in research, technology and began the construction of state-of-the art disease control units, district hospitals and community healthcare centres. The ongoing infectious disease control unit being constructed at Amasaman in the Ga West Local Government Area to isolate and treat COVID-19 patients attests to the government's intention of investing in the health sector.

Banks and other mobile money service providers have increased their deposit and cash out limits to help curb the spread of the coronavirus.

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com

Nigeria

The Nigeria Government announced various measures to limit and stop the spread of the coronavirus. Measures announced by the CDC include imposition of social distancing protocols, partial lockdown of the commercial capital and other states the CDC considered vulnerable due to the infection rate. Schools, mosques, churches and social gathering of all forms have been temporarily suspended. Wearing of face masks and shields have been made compulsory in environments that social distancing protocols could not be practiced amply (Olalowa, 2020). President Muhammadu Buhari on April 13, 2020 announced further that a lockdown, in place since March 30 in Lagos state, neighboring Ogun state, and Abuja, the nation's capital, would continue for another 14 days (Human Rights Watch Online, Published: April 14, 2020).

Markets, malls and schools premises have been disinfected. Safe burial modus including cremation and private service are now mandatory. The public is regularly educated on WHO protocols and good hygiene practices on local and state radio and television sets.

On March 16, 2020, the Central Bank of Nigeria has set out a number of measures to tackle the impact of the coronavirus, including establishing a fund to support the country's economy (of 50 billion naira; i.e. EUR 121 million), targeted at households and micro and small enterprises. The interest rate had also been cut, a moratorium had been announced on principal repayments for CBN intervention facilities and tax measures were taken (KPMG Online, Published May 7, 2020).

Ethiopia

The leadership of Ethiopia employed both WHO and home-grown measures in a bid to curb the spread of the coronavirus. Social distancing protocols, lockdown of key cities including the state capital, temporal suspension of social gathering of all forms and shapes and wearing of PPEs were some of the measures employed by the COVID-19 National Ministerial Committee to limit the spread of the coronavirus. Various public places including train stations and airports were disinfected. Education on pandemic control protocols was undertaken in local languages to deepen the masses' understanding and facilitate adherence to the protocols (africanews.com, Published: March 17, 2020).

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com

Land Market

Zimbabwe

In Zimbabwe, President Mnangagwa announced far-reaching actions to stop the spread of

Covid-19. Ban on gatherings around night clubs, bars, beer halls, movie houses, swimming pools,

gymnasiums and sporting activities until further notice were among a series of measures

announced by the President at the onset of the outbreak.

The country's borders have been closed for all non-essential travel for both in-bound and

out-bound traffic. Zimbabwe citizens were advised to limit their visits to informal markets.

Personnel from health and security services were deployed to enhance screening services. Hospital

visits were cut to one visit by one person per day. A 21-day self-quarantine order was also imposed

by the Government (allafrica.com/stories). The Government encouraged automated electronic

services to reduce human contact in dispensing banking and other essential services {Public Health

(COVID-19) Prevention, Containment and Treatment) (National Lockdown) (Amendment)

Order, 2020 (No.5) (Statutory Instrument 99 of 2020 of Zimbabwe).

Egypt

Egypt took on a series of steady preventative measures to combat the growing spread of

COVID-19. Prime Minister Mostafa Madbouly announced decrees that were to remain operative

until the end of Ramadan or until further notice as regards the battle against COVID-19:

These decrees include a partial lock-down implemented in the country from 9 am to 6 am,

closure of all cafes, cafeterias, casinos, and clubs and restriction of working hours of 6 pm to 5 am

for commercial centres, such as malls and markets. All public and private mass transportation

means stopped from 9 pm until 6 am and operated in a way that avoided overcrowding of citizens.

Precautionary measures were taken to lessen the number of workers in the units of the state's

parastatals in order to ensure adherence to social distancing protocols (Egyptian Streets Online,

Published April 29, 2020).

42

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com

Kenya

For the last two months, the Kenyan Government has embarked on one of the most

ambitious covid-19 control programs in Africa. Immediately after learning of the outbreak of the

virus, it limited the air travel from and to China. Later, it limited the travel from European

countries. It closed schools and other public institutions immediately. It instituted curfew from

dusk to dawn.

Working with locally-based organizations like AMREF, the government started training

programs for health workers on COVID-19 preparedness and response and providing them with

protective gear. They also trained Community Health Workers to educate communities and raise

awareness about the virus, dispel any myths or misconceptions, and how to prevent the spread of

the virus with handwashing and social distancing. They are also using public radio and other forms

of media, both digital and traditional, to widely distribute COVID-19 information. Because they

have an advanced online financial exchange system called MPESA, they have been able to limit

transmission of the virus through cash transactions.

Madagascar

Madagascar has embarked on dependence on local herbs in combating the virus. Although

this has been rejected by WHO, it has been widely accepted by the local people. Interestingly,

Madagascar has not reported a single case of Covid-19 related death.

"This herbal tea gives results in seven days," President Andry Rajoelina said at an April 20

news conference, claiming it had cured two people. The event took place at the country's Malagasy

Institute of Applied Research, which developed the tonic branded as Covid-Organics, or CVO.

In recent weeks, CVO – made with **Artemisia annua**, a plant whose artemisinin extract is

used in antimalarial drugs – has been dispensed to Madagascar high school students and by soldiers

going door to door, according to news reports.

Artemisia is a source of an ingredient in a WHO-approved malaria treatment, and some

labs are testing it to see if it can be of any use against COVID-19. But yet it is unproven, and even

Madagascar's national medical academy has publicly voiced their doubts.

43

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com

The BBC reported that the tonic has been tested on less than 20 people before being

available for purchase.

The use of products which have not been robustly investigated to treat COVID-19 can put people in danger," the WHO wrote, "giving a false sense of security and distracting them

from hand washing and physical distancing which are cardinal in COVID-19 prevention.

Madagascar's Rajoelina is not alone among political leaders endorsing products or

protocols of uncertain value in the COVID-19 response. Japanese Prime Minister Shinzo Abe has

promoted the anti-influenza drug Avignan, saying his country would "expand to the greatest

possible extent its administration to patients wishing to take it," The Japan Times reported in late

April. The news organization said a Chinese study found the drug to be effective, especially among

patients with mild symptoms, so Beijing is including it in treatment guidelines. But the drug – also

known as favipiravir – may cause birth defects.

Tanzania

The coronavirus response in Tanzania has been mixed. Tanzania recorded its first

coronavirus case on March 16. President John Magufuli has been increasingly criticized at home

and abroad for his response to the pandemic after the number of confirmed cases rose sharply

within a month.

In his International Workers' Day message on Friday, Magufuli urged Tanzanians to

continue working, saying coronavirus should not stop workers from serving society — though he

added that workers should follow the guidelines issued by health officials.

Magufuli has rejected the need to restrict movement of citizens, claiming stringent social

isolation measures would severely damage the economy. While large public gatherings have been

banned and schools and universities have been closed, markets remain open. Magufuli has also

encouraged Tanzanians to gather and pray in churches and mosques claiming the coronavirus

cannot harm the bodies of the faithful.

44

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com

Tanzanian President John Magufuli was widely criticized for encouraging the public to continue to attend places of worship, rather than imposing stringent restrictions to mitigate the spread of the COVID-19 outbreak. Explaining his decision, the president stated, "We are not closing places of worship. That's where there is true healing. Corona is the devil and it cannot survive in the body of Jesus."

Daniel El-Noshokaty, the Resident Representative for Tanzania from the Konrad Adenauer Stiftung (KAS), told DW that Tanzanians are still trying to practice social distancing as best they can – although it's easier for those who are able to stay at home.

"Most people are aware of the virus and most people are aware of how it spreads, so they're trying to isolate themselves as much as they can," he says. "But a lot of people just can't isolate themselves because they have to go out and earn money every day.

El-Noshokaty says he hopes Magufuli will eventually follow the examples of neighboring Kenya and Uganda, who introduced lockdown measures and subsequently saw a drop in new cases.

The World Health Organization (WHO) has chided Tanzania for its ongoing lack of cooperation and transparency in the global fight against the COVID-19 pandemic.

In the update, Prime Minister Kassim Majaliwa said the country of 56 million people had now recorded 480 cases of COVID-19 and 16 deaths. The new tally represents a 69% jump in just five days.

Majaliwa offered no explanation for the government's silence on coronavirus numbers, though he cautioned against the "tendency of some people to issue false statistics which leads to unnecessary unrest in society."

I hope the government will change their mind. But since the president has ruled out a lockdown and since he's not very well known for changing his mind, I don't think that anything will change soon.

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com



Of top concern is that throughout the country, public transportation is still running, with dire implications for the transmission of COVID-19. Passengers are routinely crammed into buses, with riders overflowing the seats and aisles, putting them at a higher risk of transmission. The problem is that alternatives to public transportation are expensive, especially to the almost 70 percent of Tanzania's population that lives in poverty (on less than two dollars a day). Further, Dar es Salaam is a large and ever-expanding city, not easily accessible by foot. This leaves average Tanzanians little choice but to risk exposure by taking public transportation and sitting in congested traffic for prolonged periods of time—against the World Health Organization's plea for social distancing. Although the government's call to avoid "unnecessary personal contact such as handshakes and kissing," was a good first step, as the number of cases continue to rise, more aggressive restrictive strategies are required to mitigate the spread of COVID-19. These measures need to change the daily routine of Tanzanians in order to be effective.

South Africa

With 1,655 confirmed cases as of April 6, 2020, the highest so far in Africa, the authorities have taken steps to limit and prevent the spread of COVID-19, including the 21-day nationwide lockdown declared by President Cyril Ramaphosa on March 23. The authorities deployed 24,389 security forces, including the army and police, to enforce regulations prohibiting people from leaving their homes except for essential purposes.

South Africa did not record the first case of Covid-19 in Africa, but it now has the highest number of reported cases on the continent.

Having had the benefit of watching governments respond to the outbreak of the pandemic in Asia, Europe and the United States, President Cyril Ramaphosa on March 15, 2020, with only 61 confirmed cases and no deaths, declared a National State of Disaster that imposed a number of travel and other restrictions. Eight days later, the President took the further unprecedented step of announcing a national lockdown – a series of measures designed to stem the spread of the Covid-19 virus in the country.

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com

In addition to the lockdown measures, the South African Government, the National Treasury of South Africa and the South African Reserve Bank announced a number of fiscal, monetary and other interventions to bolster the economy and provide a safety net for the most economically vulnerable. These interventions include, among others support for critical Businesses, bridge financing, solidarity fund, employee support, unemployment insurance, tax Subsidies, debt relief fund and bank relief.

Rwanda

As one of the fastest-growing economies on the continent, Rwanda earned a reputation for innovation in many sectors, including health care. The country provides nearly universal healthcare to its thirteen million citizens. It also uses drones to deliver essential medical products, such as blood donations, around the country, which reduces the wait time for patients in dire need. After the first positive case of COVID-19 hit on March 8, there was little surprise that the government formed and implemented a robust nationwide response. The country's timely reaction was aided by its previous success in combating Ebola from entering its borders in 2019.

Rwanda's previous response to the Ebola scare in 2019 prepared the government for its current response to COVID-19. In its successful efforts to prevent Ebola from crossing the border from the Democratic Republic of Congo, Rwanda's Ministry of Health established handwashing stations and ThermoScan thermometer checks for every person entering the country. Before the first confirmed case, the government pursued the same strategy to combat the spread of COVID-19. All border posts—which represent high-risk exposure areas—were manned by trained officials with fever scanners, and the government established handwashing stations in the bus park of the nation's capital.

However, as the COVID-19 cases in Rwanda have increased, the government has adopted newer and stricter measures to mitigate the exposure, including:

(i) Citizens practicing social distancing. Further, the government has banned gatherings at places of worship, schools, weddings, and sports events.

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com



- (ii) The suspension of all commercial flights to and from Rwanda for thirty days and indefinite suspension of domestic travel between cities and districts.
- (iii) The closing of all non-essential businesses. Only those providing essential services such as medical care, telecommunications, security, and banking will be allowed to move.
- (iv) The encouragement of citizens and legal residents to use mobile money and online banking whenever possible to limit the transfer of paper money.
- (v) A two-week country-wide lockdown, which began at midnight of March
- 21. Non-essential movements outside the home are not permitted

On March 17, to mitigate the possibility of price gouging during this shutdown period, the government implemented fixed prices on food goods across the nation. The measure also helps stabilize food prices, which increased over twenty percent across the nation this past year. Heavy rains crippled domestic production, while the usual food imports from Uganda were absent as the Gatuna border has remained closed for over a year. Alongside the fixed prices, the government also capped the amount of each product an individual can buy each day—producing fears that shortages may emerge in certain parts of the country. According to sources on the ground, Rwandans are also afraid that they will not be paid their normal salaries during the country lockdown—especially impacting those who live paycheck to paycheck and may not have the means to feed their families during this shutdown. In a televised address, Anasthase Shayaka, a local government minister attempted to curb these fears, assuring Rwandans affected by the lockdown that they would not starve.

Despite the robust government response, the government's capacity to test the Rwandan people for COVID-19 falls on the limited functions of the Kigali-based National Reference Laboratory. The New Times reports that the laboratory had tested an estimated nine hundred people before the first confirmed positive case emerged. Now, fourteen days later, the number of confirmed cases has risen to thirty-six (as of March 24). These cases have included a mix of Rwandan nationals returning home, foreign nationals entering Rwanda, and a Rwandan with no

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com



history of travel—indicating that Rwanda is experiencing community-level spread. Daniel Ngamije, of Rwanda's Ministry of Health, has stated that through process tracing, the first seventeen confirmed patients interacted with more than 680 people—demonstrating the magnitude of the possible spread in a country with a high population density. The Ministry, through official statements released daily via social media, has continually advised Rwandans and legal residents to wash their hands regularly and maintain a physical distance of at least one meter from other people. However, throughout the country, whether it be the congested urban hub of Kigali or the busy footpaths of the country's rural hills, enforcing the shutdown and social distancing measures may serve as the largest barrier to mitigating the spread of the disease.

Despite the clear need for rapid testing of suspected carriers, in the two weeks since the first confirmed case, the laboratory has only been able to test an estimated three hundred people. According to the New Times, tests are currently taking four to five hours to process. With limited staff, the laboratory only has the capacity to complete twenty to thirty tests a day. Now that the fourteen-day incubation period of patient zero has passed, the number of tests that will require analysis will continue to grow, which will most likely overwhelm the current capacity of the laboratory. Quicker testing options, like the ones introduced in the United States that only have a 45-minute detection time, are required in Rwanda to keep up with the demand. Without extensive testing, government knowledge of how far and where the virus has spread will become increasingly more difficult to determine—limiting the ability to get ahead of the virus.

The Way forward and Prospects for Africa

The Afro-Chinese connection and its ramifications on the spread of the virus is important to explore. M Gilbert, G Pullano, G Pinotti, *et al.*(February 2020) observed that since China is Africa's leading commercial partner, there are large travel volumes through which severe acute respiratory syndrome coronavirus 2 could reach the continent. It is interesting to note that several African governments have independently implemented measures to prevent and control possible case importations from China.

Having bemoaned the approach by our analysts, advisors and academicians in the wake of the global financial crises in 2008/2009, we would want to avoid the temptation of falling into the same swamp of lamentation and focus our energy and pondering on advocating pragmatic



solutions to tackling the snowballing effect of the several years of haphazard policies that have plagued our economies and threatened our global competitiveness. Critical among my considerations are agriculture, manufacturing and trade, infrastructure development, research, innovation and technology.



Conclusion and Recommendations

It is obvious from the foregoing that the surging challenges facing Africa could be dealt with if both the leadership and the people take concrete and bold steps to devise solutions and strategies to counter the challenges taking into cognisance the culture, the nature, scope and the wealth of the African setting. Any development model that ignores these considerations will yield little impact or fail completely. Development must be done the African way and improved or added on through the adoption of development concepts from the West and the East that fit the African prism.

The politicking, scheming, intriguing and blame game must halt on all sides-parties in power and in opposition. Both the leaderships and governances prior to the pandemic and now are responsible for Africa's current status quo. All African citizens including technocrats, public and

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com



civil servants and civil society organisations must get to work. This is not the time to pay lip service, over criticise at talk shows and do stance but rather time to act and support the current leaderships to correct the off beam. All hands must be on deck!

Technocrats working at various government agencies and parastatals who have over the years deliberately obliterated and thwarted initiatives of the ordinary African youth and entrepreneurs due to their parochial interests ought to desist from such malicious acts. For example, a local television station in Ghana, Atinka TV, showed a clip where some village boys succeeded in producing fuel from plastic waste that was being used by the motorcyclists in the village. The poor boys approached the officials for assistance to improve their system and make it safe. The boys were prohibited and shut down. Another one who was changing plastic waste into pavers and tiles also met the same fate. The annihilation caused by this singular act to Africa's development evidently abounds on the continent. In fact, as a matter of urgency, the current African Leaderships must take steps to re-orientate the minds of staff working in these agencies in line with their development agendas in the interest of all.

The masses must also desist from making unsavoury remarks, buying into gibberish conspiracy theories but rather redirect their energy into innovation and invention as seen by a few at this crucial time on the continent. The invention by Jude Osei Kelvin in the production of a solar-powered handwashing sink and the COVID-19 prevention electronic bucket produced by Owusu Dapaah and Richard Boateng all from Ghana are classical and good initiatives that must be embraced by all. Both the existing and emerging entrepreneurs must be encouraged to collaborate, speed up and scale up. The examples of Colgate-Palmolive and others in the West where resources are being matched to support the system at this crucial time should serve as a lesson to the African entrepreneur that synergy delivers not just status and profit but also saves and sustains humanity in critical times. After all, businesses thrive on numbers. The survival of the human race is of course crucial for these initiatives and businesses.

Analysts and academicians from Africa must spend more time and energy on analysing and advising the African leaderships and masses on the intricacies of new global development models and their implications for African economies if adopted. The funding needs for research, learning, initiatives and development ought to receive priorities in National budgets. The need to review the curriculum to allow for newer skill sets and knowledge to match the needs of the

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com



countries must be seen as a silver bullet. Africans must nature and produce their own version of Microsoft, Facebook, GE and Alibaba among others to support the states during crucial times as we are currently observing in the West and the East. Nurturing and supporting businesses based on race, ethnic and political lines ought to be discouraged on the continent. If for nothing at all, at least, the pandemic has brought to the fore how collaborative and cohesive effort by all in times like this is the prudent thing to do (Ozfidan, Duman, & Aydin, 2020). Vigorous and consistent effort to empower everyone in normal times is of the essence. The right technology mix and money have to be pulled off to train and create jobs for the youth through the establishment of competency based learning centers. The demands by the youth in the various African countries are not going to be wished away. The economy and the political systems must be structurally transformed to fix the various economic and political related issues that plague and affect the global competitiveness and economic success of Africa. The way banks are structured to safeguard depositors' funds should be extended to the areas such as agriculture, power generation and manufacturing. Policy issues must be resolved by governments and politicians (Kocabas, Ozfidan, & Burlbaw, 2019). The African leadership must encourage the promotion of sound policies that will drive growth, strong institutions, good regulatory systems, investment in critical and strategic sectors and good governance. The leadership must also embrace basic principles of the market in order to attract the needed investments to the continent.

The Development banks including African Development Bank and other funding agencies on the continent through their country offices need to interact with the grassroots to identify prospects and initiatives for funding instead of always deploying the top down approach where they always fund initiates through the central governments.

Laudable economic rescue packages being offered to businesses by governments ought to be streamlined and targeted to achieve the intended impact. Those in charge of administering the social reliefs must ensure pandemic control protocols including social distancing and good hygiene practices are strictly adhered to. Several videos going viral from many countries showing flagrant disregard for these protocols are not encouraging. An effective pandemic and health coordinating strategy must match any relief and economic recovery strategy. A peak between the two may be detrimental and may derail any success that may have been chalked. Replicating conventional solutions from the West to combat COVID-19 may not be an optimum panacea (Ncube, &

Electronic International Journal of Education, Arts, and Science

http://www.eijeas.com



Motalenyane, 2020). Africa has to adapt these conventional methods and WHO guidelines to its setting. Africa solutions ought to be "domesticated". Africa can not afford any misguided line of thought at this juncture.

Africa is endowed with enough resources to look after its people. It is time Africa looked within to solve its problems. One thing is certain, if a good number of Africans in the diaspora returned to join their compatriots on the continent to develop Africa, these 1st and 2nd worlds would be largely constrained. Africa's dependence on the West and others has never helped and will never help.

The Coronavirus pandemic has offered Africa an opportunity to assess its development fundamentals and take a holistic approach to address the lapses once and for all. Africa needs to leverage on the COVID-19 pandemic to boost its global competitiveness economically. A visionary leadership is one that foresees an opportunity and devises strategy to implement it before it arrives. Africa might never have another opportunity. The next pandemic may assume the proportion of a tsunami and be overwhelming.



References

- Briggs, H. (2020, April 6). *Coronavirus: Putting the spotlight on the global wildlife trade*. BBC News. https://www.bbc.com/news/science-environment-52125309
- Boatemaa, V. A. (2020, May 8). *GUTA outlines criteria for gov't's GHS600m stimulus package*. Atkina Media Village. https://www.atinkaonline.com/fm/guta-outlines-criteria-for-govts-ghs600m-stimulus-package/
- Bloomberg. (2018, May 22). *BMW*, *Volkswagen*, *Ford*, *and other car manufacturers in massive battle with South Africa*. Business Tech.

 https://businesstech.co.za/news/motoring/246127/bmw-volkswagen-ford-and-other-car-manufacturers-in-massive-battle-with-south-africa/
- Columbia University: Department of Epidemiology. (2020, June 22). *COVID-19 risk mapping*. https://columbia.maps.arcgis.com/apps/webappviewer/index.html?id=ade6ba85450c4325 a12a5b9c09ba796c
- Edwards, N. (2020, April 1). *Rwanda's successes and challenges in response to COVID-19*. https://atlanticcouncil.org/blogs/africasource/rwandas-successes-and-challenges-in-response-to-covid-19/
- Edwards, N. (2020, April 2). *Tanzania's mild response to COVID-19 and its implications for the 2020 elections*. https://atlanticcouncil.org/blogs/africasource/tanzanias-mild-response-to-covid-19-and-its-implications-for-the-2020-elections/
- EcoHealth Alliance. (n.d.). *PREDICT*. https://www.ecohealthalliance.org/program/predict
 Egyptian Streets. (2020, April 29). *Egypt's list of measures to combat COVID-19*.

 https://egyptianstreets.com/2020/04/29/recap-heres-egypts-list-of-measures-to-combat-covid-19/
- GeoDS Lab@UW-Madison. (2020). *COVID-19*. https://geods.geography.wisc.edu/covid-19-physical-distancing-the-coronavirus-originate-virus-hunters-find-genetic-clues-in-bats
- Gilbert, M. G., Pullano, Pinotti, G., et al. (February 2020) Preparedness and vulnerability of African countries against importations of COVID-19: A modelling study. In Lancet, (2020, February 19). Google Scholar. https://doi.org/10.1016/S0140-6736(20)30411-6 Garbe, A., Ogurlu, U., Logan, N., & Cook, P. (2020). Parents' Experiences with Remote

Electronic International Journal of Education, Arts, and Science



- Education during COVID-19 School Closures. *American Journal of Qualitative Research*, 4(3), 45-65. https://doi.org/10.29333/ajgr/8471
- GhanaWeb. (2020, March 17). *Coronavirus: Ethiopia announces measures to combat pandemic*. https://www.ghanaweb.com/GhanaHomePage/africa/Coronavirus-Ethiopia-announces-measures-to-combat-pandemic-896215
- Human Rights Watch. (2020, April 7). *South Africa: Set rights-centered COVID-19 measures*. https://www.hrw.org/news/2020/04/07/south-africa-set-rights-centered-covid-19-measures#
- Houmfa, M., & Guensberg, C. (2020, May 7). *Madagascar's COVID-19 'cure' raises pride, health concerns and political risks*. Retrieved May 8 2019, from https://www.voanews.com/covid-19-pandemic/madagascars-covid-19-cure-raises-pride-health-concerns-and-political-risks
- Nyenswah, T. (2020, April 6). *Africa has a COVID-19 time bomb to defuse*. World Economic Forum. https://www.weforum.org/agenda/2020/04/africa-covid-19-time-bomb-defuse/
- Lemmenmeier, A. (2010/2011). Operation Feed Yourself: Ghana's experiment towards food self-sufficiency under Colonel Acheampong 1972-1978.

 https://infoclio.ch/en/node/125697
- Graphic Online. (2020, May 6). FDA registers 45 companies to produce local PPEs.

 https://www.graphic.com.gh/news/general-news/fda-registers-45-companies-to-produce-local-ppes.html
- Ojha, A. (2020). Is Pandemic a Class-Ridden? An Appraisal from New York City. *Journal of Ethnic and Cultural Studies*, 7(3), 129-141.
- Graphic Online. (2020). *President Akufo-Addo's May Day Celebration Speech [FULL TEXT]*. https://www.graphic.com.gh/features/features/president-akufo-addo-s-may-day-celebration-speech-full-text.html
- Ncube, S., & Motalenyane, A. M. (2020). Social distancing, cultural and psychological effects on learners in a rural setting in Zimbabwe. *Journal of Ethnic and Cultural Studies*, 7(3), 200-209.
- Mugabe, T. (2020, March 24). *Zimbabwe: New Measures to Stop COVID-19*. The Herald: All Africa. https://allafrica.com/stories/202003240211.html

Electronic International Journal of Education, Arts, and Science



- The Herald. (2017/2020). Willowvale Motor Industries reopens.

 https://www.herald.co.zw/willowvale-motor-industries-reopens-%E2%80%A2-over-5-000-jobs-to-be-created-%E2%80%A2-firm-to-produce-3-000-units-in-3-years/
- K.P.M.G. (2020, June 14). *Government and institution measures in response to COVID-19*. https://home.kpmg/xx/en/home/insights/2020/04/nigeria-government-and-institution-measures-in-response-to-covid.html
- H.R.W. (2020, April 14). *Nigeria: Protect most vulnerable in COVID-19 response*. https://www.hrw.org/news/2020/04/14/nigeria-protect-most-vulnerable-covid-19-response#
- Ministry of Health: Republic of Ghana. (2020, March 15). *President Akufo-Addo addresses*nation on measures taken by gov't to combat The Coronavirus Pandemic.

 https://www.moh.gov.gh/president-akufo-addo-addresses-nation-on-measures-taken-by-govt-to-combat-the-coronavirus-pandemic/
- One District: One Factory. (2020). *Background & context*. http://www.1district1factory.gov.gh/about.php
- Soludo, C. C. (2020, April 24). *COVID-19: Can Africa afford lockdowns?*. Premium Times. https://opinion.premiumtimesng.com/2020/04/24/covid-19-can-africa-afford-lockdowns-by-chukwuma-charles-soludo/
- Jayarak, K. et. al (2020. April). Finding Africa's path: Shaping bold solutions to save lives and livelihoods in the COVID-19 crisis. McKinsley & Company.
- Johns Hopkins University. COVID-19 Dashboard by the Centre for Systems 48 Science and Engineering (CSSE).

 https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740f
 https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740f
 https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740f
- Jones, K., et al. (2008). *Global trends in emerging infectious diseases*. Nature 451 (7181): 990-4. https://doi.org/10.1038/nature06536
- Kerski, J. (2020, March 15). Teaching and learning about the Coronavirus (COVID-19) with web maps, dashboards, and infographics. https://community.esri.com/community/education/blog/2020/03/16/teachingabout-the-coronavirus-covid-19-with-web-maps-dashboards-and-infographics

Electronic International Journal of Education, Arts, and Science



- Kocabas, S., Ozfidan, B., & Burlbaw, L. M. (2019). American STEM education in its global, national, and linguistic contexts. *Eurasia Journal of Mathematics, Science and Technology Education*, *16*(1), 125-146. doi: 10.29333/ejmste/108618
- Moghalu, K. C. (2014). Emerging Africa: How the global economy's last frontier can prosper and matter.
- Morse, S., et al. (2012. *Prediction and prevention of the next pandemic zoonosis*. The Lancet. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(12)61684-5/fulltext
- Olalowo, I. E. (2020). Accounts and Thoughts of Overage Children: A Qualitative Study on the Physical and Emotional Environment of Preschools in Ibadan, Nigeria. *American Journal of Qualitative Research*, 4(3), 1-13. https://doi.org/10.29333/ajqr/8390
- Ozfidan, B., Savas, C.A., & Demir, H. (2019). The moderating effect of organizational justice on the relationship between integrity and organizational citizenship behavior in educational institutions. *Revista de Cercetare si Interventie Sociala*. 66 (4), 75-87. doi:10.33788/rcis.66.5
- Ozfidan, B., Duman, J., & Aydin, H. (2020). Parents' perceptions in STEM-oriented public schools: Correlations among ethnic, linguistic, and socio-cultural factors. *Educational Studies*, 46 (3), 1-21. doi: 10.1080/03055698.2020.1793299
- Mules, I. (2020, May 1). *Tanzania under fire from WHO for lackluster response to COVID-19 pandemic*. MSN News. https://www.msn.com/en-us/news/world/tanzania-under-fire-from-who-for-lackluster-response-to-covid-19-pandemic/ar-BB13tEDj
- Maron, D. F. (2020, April 15). 'Wet markets' likely launched the coronavirus: Here's what you need to know. National Geographic.

 https://www.nationalgeographic.com/animals/2020/04/coronavirus-linked-to-chinese-wet-markets/#close
- The New York Times. (2020, April 14). *Coronavirus map: Tracking the global outbreak*. https://www.nytimes.com/interactive/2020/world/coronavirus-maps.html
- National Public Radio. (2020, March 16). Tracking the pandemic: How quickly is the coronavirus spreading state by state.
 - $\underline{https://www.npr.org/sections/healthshots/2020/03/16/816707182/map-tracking-the-spread-of-the-coronavirus-in-the-u-s$

Electronic International Journal of Education, Arts, and Science



- Kwong, E. (2020, April 15). Where did this coronavirus originate? Virus hunters find genetic clues in bats. National Public Radio.
- Parker, C (March 2020). Covid-19 Action Platform. World Economic Forum.
- Rahiem, M., & Rahim, H. (2020). The Sultan and the Soup: A Javanese Cultural Response to COVID-19. *Journal of Ethnic and Cultural Studies*, 8(1), 43-65.
- Schneidman, W., Mclaren, M., & Taylor, C. (2020, April 6). South Africa's economic response to the COVID-19 pandemic. Covington: Africa.

 https://www.covafrica.com/2020/04/south-africas-economic-response-to-the-covid-19-pandemic/
- Walters, J. (2014). *Seven modern plagues and how we are causing them.* Centers for Disease Control and Prevention. : https://www.cdc.gov/onehealth/index.html
- Washington Post. (2020, April 15). *Mapping the worldwide spread of coronavirus*. https://www.washingtonpost.com/graphics/2020/world/mapping-spread-new-coronavirus/
- Walsh, B. (2020, March 25). *COVID-19: The history of pandemics*. BBC News. https://www.bbc.com/future/article/20200325-covid-19-the-history-of-pandemics
- World Health Organization: Africa. (2020). *African countries move from COVID-19 readiness to response as many confirm cases*. https://www.afro.who.int/health-topics/coronavirus-covid-19