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Global Pandemics Corona Virus (COVID-19) Pandemonium Disruption Educational Sector Blues and Global Issues Arising Therefrom

By Kwesi Atta Sakyi, Dr Geoffrey Mweshi & David Musona

ZCAS University

Abstract- In this paper, we survey the topic of pandemics with specific reference to the Global Corona Virus pandemic which is dubbed COVID-19, and we trace the background of pandemics in the past. Our objective in this paper is to share our experiences as well as to examine the impact of the pandemic on businesses, especially the educational sector, and also on other sectors. In this paper, we take a multidisciplinary approach as well as a compendious approach of surveying a broad swathe of issues. At the same time, we use a narrative approach, providing commentaries and descriptive analysis, and a flashback of history in the literature review. We rely mainly on secondary data for the discussion and analysis as the nature of the topic is still fresh and delicate for us to conduct primary research. Besides, we believe that the problem at hand is on-going, all encompassing, and it may be premature at this stage for us to come to some definitive conclusions. The theoretical model which we use in the analysis is the macro-environmental model which is popularly and variously called the PEST, PESTLE, PESTEL, SLEPT, or STEEPLE model, popular in management studies and used by Social Scientists in their exegesis and discourses.

Keywords: *climate change, recession, depression, quantitative easing, leadership, politics, human rights, ethics, strategic communication, pandemics, statesmanship, interdependence, malthusian spectre, unemployment, doomsday, keynesian economics, welfare economics, new world order, PESTEL, capitalism.*

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Abstract- In this paper, we survey the topic of pandemics with specific reference to the Global Corona Virus pandemic which is dubbed COVID-19, and we trace the background of pandemics in the past. Our objective in this paper is to share our experiences as well as to examine the impact of the pandemic on businesses, especially the educational sector, and also on other sectors. In this paper, we take a multidisciplinary approach as well as a compendious approach of surveying a broad swathe of issues. At the same time, we use a narrative approach, providing commentaries and descriptive analysis, and a flashback of history in the literature review. We rely mainly on secondary data for the discussion and analysis as the nature of the topic is still fresh and delicate for us to conduct primary research. Besides, we believe that the problem at hand is on-going, all encompassing, and it may be premature at this stage for us to come to some definitive conclusions. The theoretical model which we use in the analysis is the macro-environmental model which is popularly and variously called the PEST, PESTLE, PESTEL, SLEPT, or STEEPLE model, popular in management studies and used by Social Scientists in their exegesis and discourses. We chose this model because the COVID-19 pandemic impacted on lives around the globe, and it affected every facet of life, hence the need to take a holistic approach that is exploratory, and based on Grounded Theory. Our findings and discussions concentrated on the effects of lockdowns on businesses, especially on the educational sector, as well as on social aspects of following scientific recommendations such as observing social distance, wearing masks, washing hands, avoiding gatherings, and avoiding unnecessary travel. In this paper, we also examined how lecturers' and students' work were affected under the circumstances, as well as discussing the novelty ways which lecturers and students adopted to cope with the challenging situation of the new normal. Furthermore, we discussed issues of political leadership, the direction of geopolitics, and general responses to the outbreak of the pandemic. In this paper, we concluded that the disruptive nature of the pandemic had brought about a paradigm shift in the way business is conducted, and challenged people to explore new methods of sustaining themselves, their businesses, their lifestyles, and their jobs. Furthermore, we were bold to make some forecasts, based on historical trends, in order to warn people to be on

the alert. We ended the paper by making recommendations to stakeholders and first-line or frontline disaster response agencies and authorities.

Keywords: climate change, recession, depression, quantitative easing, leadership, politics, human rights, ethics, strategic communication, pandemics, statesmanship, interdependence, malthusian spectre, unemployment, doomsday, keynesian economics, welfare economics, new world order, PESTEL, capitalism.

I. INTRODUCTION

In this paper, we chose to adopt a title that will do justice to the topic from a multidisciplinary point of view, and at the same time, help us take a stand with a bias or slant towards the educational sector, where we ply our trade as lecturers or academics. In fact, it will be a big lie and understatement to submit that the outbreak of this pandemic which is dubbed COVID-19 will leave the world the same as it was prior to the outbreak, towards the tail end of 2019.

Indeed, the year 2020 will go down in history as unprecedented in the annals of human history, in terms of how the pandemic shook the depths and foundations of human civilization, and caused hysteria, pandemonium, disruption, bedlam, and horror so much so that 2020 can fittingly be called *Anus Mirabilis* or the Horrible Year, in terms of the number of deaths from the disease around the world, which is now estimated in the region of about approximately 500,000 worldwide, with countries that are severely affected including USA, Brazil, Spain, Italy, Iran, UK, France, Russia, China, South Korea, and Turkey, among many others (See Tables 2 and 4 below).

Sometime ago, some great philosophers observed that man's greatest enemy is man himself, and that the history of mankind teaches man that man never learns from the lessons of history, and thus history inexorably repeats itself many times, leading to the often-quoted saying that there is nothing new under the sun. Isaac Newton, the great English scientist, was on record as having said that he could predict with accuracy the orbits or paths of the heavenly bodies but when it came to the lunacy and stupidity of human beings, he was nowhere near predicting where their paths would go.

Author α: Head of Research, ZCAS University, Lusaka, Zambia, Directorate of Research, Consultancy and Innovation (DRCI).
e-mails: kwesiattasakyi449@gmail.com, Kwesi.Sakyi@zcas.edu.zm
Author ο: Dean Social Sciences, ZCAS University, Lusaka, Zambia.
e-mail: Dr.Geoffrey.Mweshi@zcas.edu.zm
Author ρ: Head of Economics, ZCAS University, Lusaka, Zambia.
e-mail: david.musona@zcas.edu.zm

It is extremely sad to note that while many women heads of state have shown sterling leadership in the face of COVID-19, many of our male political leaders world-wide, have failed the acid test of leadership, sadly so in so-called advanced and developed countries. Wild bush fires in Australia, Spain, France, Brazil, California, and Africa were inexplicable before the outbreak of the COVID-19 pandemic, and some people speculated that these incidents could be the work of Aliens or extra-terrestrial beings who are at war with humans because of the callousness of a few towards the majority poor, vulnerable and weak.

We think some aliens from space are watching us and giving us warning signs, as the onset of the Corona Virus pandemic is unprecedented, and perhaps a wake-up call to all humankind to get our act together to mend our selfish ways. Treaties which were signed in the past on Biological and Chemical warfare, as well as those on the non-proliferation of nuclear missiles, need to be re-examined. However, an unseen minuscule virus has shown humankind how powerless and extremely weak we are, against the forces of nature.

We saw in this pandemic, how economic gains in the USA were wiped out totally by COVID-19, leading to a forecast of 30% decrease in growth of GDP in the USA, and 3% decrease in growth world-wide (World Bank; IMF; World Economic Forum).

Prior to the pandemic outbreak in Wuhan in China in December 2019, the UK had entered the last phase of the protracted Brexit imbroglio, which had raged for three years, and when everyone was about to heave a sigh of relief, boom, COVID-19 struck like a bolt from the blue, to hit all of humankind. Prior to the COVID-19 pandemic outbreak, the USA had emerged from a dramatic presidential impeachment trial, which drew a chasm across the rank and file of American society (CNN, 2019).

The Congressional hearings were a tell-tale saga with the writing on the wall that the evidence against the incumbent president's impeachment meant that there was going to be a change of the guards. That was not to be because of the vast powers invested in the Executive monarch of America. Before the pandemic outbreak, USA-Russia relations were heavily frayed, with heavy economic sanctions slapped on Russia. The earlier tango dance between North Korea and USA was also put on the back burner.

USA-China relations became an off and on affair, like a Ping-Pong game, with no clear direction given, concerning trade relations and the tit-for-tat war of imposing economic sanctions. The rest of the world became spectators to conflicting signals which were given to the rest of the world. Matters came to a head when the news broke out that a new devastating virus had emerged from nowhere in China, in the city of Wuhan, in Hubei Province.

According to WHO, the virus was an unknown strain of H1N1. We think that with many glaciers thawing all around the globe, ancient virulent viruses, which had lain dormant for millions of years, have suddenly been released into the world, hence medical scientists having no clue to COVID-19. This informs us to pay particular attention to the issue of global warming and climate change.

The pandemonium, hysteria, and disruption which Covid-19 has caused in the world will take many years for it to be forgotten, and also it will take several years to recover from its devastating impact. Henceforth, going forward, the whole human-made systems of the world have been shaken at their foundations, as this is the time to seriously reflect deeply, and reinvent the world, as well as sharpen our reflexes, in order to come up with better-honed technology to deal with such disruptions. We have been shown to be highly vulnerable to the forces of nature, and that our current civilization and technology are not good enough to withstand severe natural disruptions.

Even with regard to wild raging bush fires, we have shown our incompetence and incapacity of dousing such random wild fire outbreaks that cover millions of hectares. COVID-19 has exposed the frailty of human-made institutions, and has also pointed out to us that we live in a world of interdependence, complementarity, and that we are fast-moving towards global convergence, which will one day bring a New World Order of one world government that is controlled by the internet, Artificial Intelligence (AI) and Machine Learning (ML) (Kissinger, 2015; Huntington, 2007; Toffler, 1995)

a) *Educational Sector Blues*

According to Light (2020), a regression analysis which he carried out in 50 USA states showed a good fit between the normal Gaussian Curve and his estimate of variables that caused the spread of the COVID-19 virus in the USA. Light (2020) found out that Coffee hubs, where people sit to socialize, were among the potent sites for the spread of the virus. Also, his results showed that the states with lots of universities in big cities, with many international students, were highly infectious areas. Furthermore, Light (2020) revealed that those above 65 years were not so mobile, so they were not great spreaders but that they were most vulnerable to the COVID-19 pandemic.

The old people are the most vulnerable due to their weak immune systems. This informs us that schools, colleges, and universities are epicentres of the spread of the virus, therefore foreign students have to be quarantined when they arrive either way in their home countries or their host study countries. Already, some countries are planning to expel millions of foreign students who are mainly from Asia, principally from China, India, South Korea, and Japan.

This will be lose-lose situation for the countries involved. The USA will cease to be a major attraction for foreign students who want to study overseas in prestigious Ivy League and Russell Group universities such as Harvard, MIT, Yale, Caltec, Princeton, Oxford, Cambridge, McGill, Imperial College, and Cornell, among many others. There will be a shift from American universities to the UK and European universities, particularly to the Scandinavian countries and Canada, which offer stable political and social environments.

b) Conspiracy Theories and Global Trending Issues

Prior to the outbreak of the Corona Virus pandemic, the world was going through a series of crisis including wars in Syria, Yemen, South Sudan and Afghanistan. The USA and the Taliban were trying to broker a peace deal in Afghanistan, which was often made unworkable by violations in Afghanistan. In the Middle East, the intractable hostility between the Israelis and Palestinians knew no limit, after decades of belligerent and bellicose stance on either part.

Some eminent economists were calling for a New World Economic Order to replace moribund economic arrangements such as crude one-sided capitalism in world trade arrangements, which heavily favour the rich countries in the North, at the expense of the poor majority in the Southern hemisphere (Piketty, 2014). Before the Corona Virus outbreak, oil prices had plunged to their lowest level in recorded history, around 20 dollars per barrel. The world geopolitical order beggared belief, as USA-Russia and USA-China relations reached their nadir or doldrums, all in the name of the needless show of flexing muscles to show who really rules and dominates the world scene in a post-Cold War unipolar world.

To us as observers, that was the apogee of leadership failure and lack of illustrious leadership or statesmanship. The old brinkmanship style of leadership was nowhere to be found, and the world was poorer for that. In Africa, political leadership in many African countries had sunk to rock bottom, with wanton corruption scandals being the order of the day. As a result of massive corruption, many masses suffer deprivation, want and lack of access to basic social amenities such as medical care, access to clean water, and all-weather passable roads.

The USA wielded the big stick of economic sanctions to punish Iran, Cuba, China, Russia, and Venezuela, while the whole world looked on helplessly, as the act disrupted world trade and distorted the face of economic diplomacy. The world at large is worse off for this act of America. Many innocent souls were lost and continue to be lost in senseless proxy wars in Yemen and Syria. Looming large in the background of all these human atrocities, was an Act of God, global warming, which caused lots of wild bush fires, droughts, hurricanes, glacier thaws, locust and army worm

infestations, among a legion of catastrophes and calamities.

We wonder whether or not the world is seeing the spectre of the end of human species, which was written about long ago by Thomas Robert Malthus wrote in 1789, which made economics to earn the opprobrious epithet of the *Dismal Science* (Hunt et al., 2011). We wonder again whether COVID-19 was sent by God as a sign and warning to humankind, to flatten the curve of the bulge in human hubris, and human inhumanity, shown to other people by way of racial segregation, pillage, mistreatment, oppression and suppression, annihilation through ethnic cleansing, among other atrocities.

The COVID-19 pandemic, in our own estimation, may be a sure sign from outer space, perhaps from aliens who are watching over us, and who are the original owners of the earth, and creators of humankind. For the first time in our lives, we were told by astronomers and scientists that our closest neighbour galaxy, Andromeda, came closest to our Milky Way Galaxy, and our earth after 500 million years (Wikipedia, n.d.). Perhaps cosmic influence from outer space could explain the Corona Virus pandemic conundrum. Many years ago, a British economist by the name of Jevons, tried to propound a theory that economic behaviour of consumers was directly correlated with the changing phases of the moon, a claim which some cynics deemed as spurious correlation (Hunt & Lautzenheiser, 2011; Moroney, 1962; Stafford, 1978; Yeoman, 1968; Francis, 2015).

II. LITERATURE REVIEW

a) Global Pandemics

We notice a trend in Influenza outbreaks which follows a 100-year cycle. The deadly influenza of 1919 is followed by this COVID-19 in 2020, a year with repeating digits of 2020, like that of 1919. If we go by this trend, then we should expect a bigger influenza outbreak in the year 2121, 100 years from now. Or is it sheer coincidence? Some of the deadly epidemics and pandemics in our recent history include the SARS and MERS in Asia, Ebola in the Congo and parts of West Africa, Measles in the USA, cholera in Haiti, India, Zimbabwe, and Bangladesh (Wikipedia, n.d.). Table 1 below shows a record of some of the deadly pandemics in recorded history.

Table 1: A random selection of pandemic outbreaks in historical times

	Year	Pandemic	Location	Impact
1.	1200 BC	Influenza epidemic	Babylon, Mesopotamia	
2.	429-426 BC	Plague of Athens	Greece, Egypt, North Africa	
3.	165-150 AD	Antonine Plague	Roman Empire	
4.	165-180 AD	Smallpox	Roman Empire	25-100 million deaths
5.	541-542 AD	Plague of Justinian	Europe, West Asia	
6.	1346-1353 AD	Black Death, Bubonic Plague	Europe, Western Asia	75 million to 200 million deaths
7.	1510	Influenza	Europe, North Africa,	5 to 8 million deaths
8.	1596-1602	Spanish Plague	Spain	600,000 -700,000 deaths
9.	1772-1773	Persian Plague	Persia	2 million deaths
10.	1812	Russian Typhus	Russia	300,000 deaths
11.	1812-1819	Ottoman Plague	Turkey	300,000 deaths
12.	1855-1960	Bubonic Plague	Worldwide	12 million deaths in India and China
13.	1918 -1919	Influenza	Worldwide	50 million deaths with 675,000 deaths in USA and 100,000 deaths in Ghana (Gold Coast)
15.	1957 – 1958	Influenza	Worldwide	4 million deaths
16.	1968-1970	Hong Kong Flu	Hong Kong	
17.	1981 to date	HIV/AIDS	Worldwide	32 million to 44 million deaths

(Source: Wikipedia-List of Epidemics)

One of the deadliest pandemics recorded in history was the Black Death, which occurred from 1347 to 1353 in Europe. It was estimated to have claimed between 75 million and 200 million lives of people, about 60% of the population of Europe (Britannica.com; nationalgeographic.com). It was believed to have been caused by the bacterium, *Yersina pestis*, which is found among wild rodents. Britannica.com (n.d.) stated that in 1347, 12 ships arrived in Messina, Sicily in Italy, from the Black Sea area in Asia. The pandemic spread very fast, as there were no antibiotics and disinfectants at the time. The only precautions taken then were isolation and quarantine. It is considered to be the greatest catastrophe that ever happened to the human race (Britannica.com, n.d.).

III. METHODOLOGY

Our objective in this paper is to examine some pertinent issues pertaining to the COVID-19 pandemic, by sharing our insights and experiences as well as discussing some of the topical issues which have impacted the world of work, particularly the education sector. We decided to adopt a secondary desk research approach, due to the nature of the topic, which is a novelty. We did this because, for us to approach the topic from the Social Sciences perspective, we needed to adopt a multidisciplinary approach in order to cover a wide array of issues, and to provide some theoretical underpinnings as framework for analysis. We wanted an encyclopaedic and compendious approach that would integrate the COVID-19 experience into a synthesis from the Social Science perspective, in an exploratory and innovative way.

The approach we adopted here in this paper is partially anecdotal, and partially, a narrative commentary, with observational analysis of issues as they unfolded. The approach is also qualitative, as no

primary data was collected for analysis. There is no existing theory about pandemics; that being the case, we approached this survey article from our own observations and personal insights, as direct participants in the unfolding scenario. However, we came up with some models from management, economics, and geography to explain some issues and to apply them to enrich our discussion and analysis. Finally, we put forward recommendations at the end to help frontline response organisations enhance their disaster-preparedness awareness.

IV. FINDINGS AND ANALYSIS

We can see from Table 2 below that South Africa and Egypt have the highest number of Corona-related deaths of 6,650 and 1,994 deaths respectively in Africa, with other African countries recording less than 1,000 cases of deaths in each country.

Table 2: Statistics of Corona Cases in African Countries as on August 11th 2020

Country	Infections/Cases	Ranking	Deaths	Ranking
1. Congo DR	2,113	10	17	10
2. Egypt	43,326	2	1,994	2
3. Ethiopia	23,591	5	420	3
4. Ghana	41,212	3	215	7
5. Ivory Coast	6,666	8	35	9
6. Kenya	26,928	4	423	4
7. Nigeria	17,457	6	303	5
8. South Africa	341,974	1	6,650	1
9. Tanzania	461	12	0	12
10. Uganda	1,297	11	9	11
11. Zambia	8,210	7	241	6
12. Zimbabwe	4,748	9	104	8

(Source: *Johns Hopkins University Online*)

Here, we apply the Spearman Rank Coefficient formula for rho:

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$$

(Source: <https://www.statisticshowto.com/wp-content/uploads/2015/01/rank-correlation-coefficient-formula.jpg>)

The Pearson's Product-Moment correlation formula, which uses raw score data is tedious to work with. Below is the Pearson product-moment correlation coefficient formula (Hussey et al., 2014; Lucey, 2002):

$$r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{[n\Sigma x^2 - (\Sigma x)^2][n\Sigma y^2 - (\Sigma y)^2]}}$$

(Source: <https://www.statisticshowto.com/wp-content/uploads/2009/11/pearsons.gif>)

However, our experience informs us that both formulas produce identical results. We notice that the correlation coefficient for African countries, between number of Infections and number of Deaths is 0.8601. This implies that the mortality rate is affected by the number of infections in Africa.

R = 0.8601

Table 3: Spearman Correlation Rankings for African Countries between PCI and Deaths

Country	Deaths	Ranking	PCI	Ranking
1. Congo DR	2,113	10	545	12
2. Egypt	43,326	2	3020	2
3. Ethiopia	23,591	3	857	10
4. Ghana	41,212	7	2202	5
5. Ivory Coast	6,666	9	2286	3
6. Kenya	26,928	4	1816	6
7. Nigeria	17,457	5	2230	4
8. South Africa	341,974	1	6001	1
9. Tanzania	461	12	1122	9
10. Uganda	1,297	11	777	11
11. Zambia	8,210	6	1291	8
12. Zimbabwe	4,748	8	1464	7

The correlation coefficient between Deaths and per capita income (PCI) for African countries is 0.60839, which also shows some strong correlation of 0.60839. (R = 0.60839)

This suggests that African countries are affected negatively by the impact of the corona virus because of their weak economies, and high levels of poverty. We make bold to put forward this model for Africa.

Corona Deaths = f (poverty (P), levels of health and other public and social infrastructure (I), lifestyle (L) or

$$CD = P*I*L$$

Where CD represents deaths from Corona Virus

P represents poverty levels

I represents quality and quantity of social and public infrastructure available

L represents lifestyle of the people

This model suggests direct links between corona virus deaths, and levels of poverty, quality and quantity of public and social infrastructure, and lifestyles. African governments therefore have to work hard to improve on these variables by working with the UN and other multilateral agencies, using the 17 UN Sustainable Development Goals (SDGs) as drivers of change and development.



Table 4: Statistics of Corona Cases in Non-African Countries as on August 11th 2020

Country	Infections/Cases	Ranking	Deaths	Ranking
1. Brazil	3,057,470	2	101,752	2
2. China	88,906	10	4,689	11
3. France	239,349	9	30,327	6
4. Italy	250,825	8	35,209	5
5. Iran	328,844	5	18,616	8
6. Mexico	485,836	4	53,003	3
7. Russia	890,799	3	14,973	9
8. S. Korea	6,636	12	146	12
9. Spain	322,980	6	28,576	7
10. Turkey	24,1997	11	5,858	10
11. UK	313,392	7	46,611	4
12. USA	5,094,400	1	163,463	1

(Source: Johns Hopkins University Online)

For the Non-African countries, including some of the BRICS countries (Brazil, Russia, India, China, and South Africa), the correlation coefficient between corona-related Deaths and Infections is 0.73427, ($R = 0.73427$), which suggests a strong correlation for

these developed, and emerging countries. This compares favourably well with the figure for the African countries, which was ($R = 0.8601$). The higher figure for African countries suggests that their poor health infrastructure is a cause of deaths from COVID-19.

Table 5: Spearman Correlation Rankings for Non-African Countries between PCI and Deaths

Country	Deaths	Ranking	PCI	Ranking
1. Brazil	101,752	2	8,717	11
2. China	4,689	11	10,261	8
3. France	30,327	6	40,494	3
4. Italy	35,209	5	33,190	4
5. Iran	18,616	8	5,520	12
6. Mexico	53,003	3	9,863	9
7. Russia	14,973	9	11,585	7
8. S. Korea	146	12	31,762	5
9. Spain	28,576	7	29,614	6
10. Turkey	5,858	10	9,042	10
11. UK	46,611	4	42,300	2
12. USA	163,463	1	65,281	1

The correlation coefficient between per capita income (PCI) and Deaths for the emerging and developed Non-African countries is ($R = 0.26573$), showing weak correlation. We can therefore conclude that per capita income in these affluent countries, has nothing directly to do with deaths, even though levels of wealth and high PCI could influence lifestyles, and precipitate underlying diseases from opulence such as cancer, high blood pressure, cardio-vascular diseases, and diabetes, diseases associated with obesity, over-indulgence, and addiction to high cholesterol diets. We therefore make bold to suggest the following model for the developed and emerging countries:

Corona Deaths = f (Lifestyle (L), Underlying Diseases (U), and Wealth (W))

$$CD = L \cdot U \cdot W$$

The emerging and developed countries need to work on lifestyles such as eating habits, holiday travel, and taking care of underlying diseases such as Diabetes, Hypertension, Cardiovascular diseases and Cancer. Having too much wealth is also a problem in

the sense that it influences lifestyles, particularly those associated with over-indulgence in drinking, eating, smoking, over-dependence on drug supplements and prescriptions, and unhealthy social habits such as self-isolation from family members.

V. THEORETICAL MODELLING

a) Growth formula

When we want to estimate the population growth of an organism, we either use the compound interest formula

$$P_1 = P_0 (1 + r)^n \quad (\text{source})$$

where P_1 is the current population to be estimated

P_0 is the previously known population

r is the rate of growth

n is the number of years since the last known population size, P_0 .

We can also use the alternate formula $A_1 = A_0 e^{rt}$ where e is the base of natural logarithm and t is the same as n in the previous formula, representing time.

These two formulae can be used to estimate the population of a country in normal times.

b) Decay formula

The decay formulas are used for a population that is decreasing, such as in the case of the Corona virus pandemic. However, the above two growth formulas have to be modified for them to become decay formulas thus, a change in sign from the positive to the negative sign, thus:

$$P_1 = P_0(1 - r)^n \quad \text{and} \quad A_1 = A_0 e^{-rt}$$

c) Normal Curve Formula

The normal curve equation can be used to produce a regression of an event to find out whether the situation occurred normally or not, by making some reasonable assumptions about the variables that are chosen in the examination of the phenomenon (Light, 2020). The moment generating function for tracing all the Z points on the normal curve is given as the integral from negative infinity to positive infinity of

$$M(t) = E(e^{tx}) = 1/\sigma \sqrt{2\pi} \int_{-\infty}^{\infty} e^{tx} e^{-(x-\mu)^2/2\sigma^2} dx$$

Stirling's approximation for estimating the area under the normal curve is:

$$n! = \sqrt{2\pi n} n^n e^{-n} = N = 1 \text{ or } (n/e)^n \sqrt{2\pi n} \text{ for large } n \text{ (Britannica, n.d.; Spiegel 1982: 27; Yamane, 1973)}$$

d) Gravity Model

The gravity model is used in geography to estimate the Force of interaction between and among cities, as it measures both stock and flow concepts of population interactions among cities.

$$F = g M_1 M_2 / d^2$$

Where F is the force of attraction between two population concentrations or locations,

g is a gravitational constant such as the force of gravity

M_1 represents mass of population in one location

M_2 represents another mass of population

d represents the distance between the two masses of population (this distance is squared in the formula)

The model can be useful in identifying centres which serve as magnets to draw people to them, and in this way, measures can be put in place to check movements of people to cities, in order to slow down spread of diseases such as COVID-19.

e) Keynesian Multiplier Model

Following the Great Depression of 1929, which economists had failed to predict, James Maynard Keynes, wrote his book *Growth, Employment and Investment* in an attempt to come up with a credible theory as a solution. He proffered the idea of demand-side economics, and government direct intervention in

the market, an idea which was anathema and anti-thesis to the supply-siders or neo-capitalists (Froeb & McCann, 2009; Begg et al. 2011; Beardshaw et al., 2001; Lipsey & Crystal, 2010).

Keynes argued that, through government intervention, by undertaking massive national infrastructure projects such as building roads, railways, power stations, universities, ports and airports, the economy could be kick-started to influence many other sectors, an idea he called the multiplier concept (Anderton, 2000; Maunder, et al., 2000; Mankiw, 2008; Petersen & Lewis, 1999; Sloman & Garratt, 2010). Keynes diagnosed the problem to be one of under-consumption, and lack of investor confidence in the markets, which needed government intervention. The supply-side monetarists thought otherwise, and said that the depression was caused by shortage of money supply as a result of wrong policies by the Federal Reserve Bank (history.com, n.d.; Keat et al, 2013; Frank & Bernanke, 2007; Witztum, 2005).

There are two types of multipliers, namely the open economy multiplier, and the closed economy multiplier (Gough, 2000; Grant, 2008; Hayes, n.d.; Pindyck & Rubenfeld, 2013). The former is expressed as the reciprocal of withdrawals or leakages from the national circular flow of income or GDP, namely Savings, Tax, and Imports:

$$K_O = 1/S + T + M$$

while the closed economy multiplier is:

$$K_C = 1/S.$$

In a closed economy, we assume that there are no inflows and outflows or no external trade, and no government intervention in the market (Begg et al. 2013; Salvatore, 2014; Anderton, 2000; Maunder et al., 2000; Baye, 2010). This is because in a closed economy, using the Circular Flow of Incomes and Goods and Services, we have Injections ($J = I + G + X$) and Withdrawals ($W = S + T + M$). In the closed economy model, we assume G , X , T , and M do not exist. G represents government expenditure, T represents tax revenue to government, X represents value of exports and M represents the value of imports. In this scenario, we find that the closed economy multiplier in the autarky or no trade situation has a bigger bang or impact via the multiplier.

It can be seen that the closed economy multiplier has a bigger bang or impact than the open economy multiplier (Begg et al., 2011; Beardshaw et al, 2001). Therefore, in a post-COVID-19 recovery phase, we think that it will be germane to apply the Keynesian multiplier concept, in leading economies to recovery, by having massive government injections via Open Market Operations, whereby the Central Bank buys or redeems bonds and treasury bills, so as to help pump money into the circular flow of goods, services and money in the

economy. At the same time, government can issue new bonds for moneybags and financial institutions to buy, in order to raise huge sums for reinvestment (Mankiw, 2008; Witztum, 2005; Watkin, n.d.). Furthermore, the government, through the central or Federal Reserve Bank could resort to quantitative easing or printing money and lending it to government for improving liquidity in the economy through bailouts for sinking private sector firms. Also, we can see a situation whereby, to create more domestic jobs, some countries might practise mercantilist policies by restricting external trade by imposing restrictions on imports.

f) Corona Virus Pandemic Response Model

We are convinced that the following factors directly (positively), and indirectly (negatively), influenced national response to the emergency:

Positive factors:

- i. High Quality of National Infrastructure (HI)
- ii. High Levels of Innovation (HL)
- iii. Reliance on Scientific evidence (RS)
- iv. Innovative Technological Interventions such as use of drones for deliveries of samples (IT)
- v. High Emergency Response Pre-Preparedness (ER)

- vi. High GDP (GP)
- vii. High Literacy Rate (LR)
- viii. Liberal Centralist Approach to Policy Implementation (LC)
- ix. Proactive Leadership (PL)

Negative Factors:

- Poverty (PV)
- Politicisation of Issues (PI)
- Bureaucracy (BU)
- Cynicism (CY)
- Long Geographical Distances (LG)
- Weak Internal Supply Chains (WS)
- Decentralised Governance System (DG)
- Religious Fanaticism (RF)
- Collectivist Approach to Living (CL)
- High Levels of Self-Indulgence (SI)
- Low Levels of Personal Hygiene (LH)
- Lack of Access to Water (LW)
- Poorly-Equipped Hospitals (PH)

We derive this model for Corona Virus Response:

$$\text{CVR} = F (HI*HL*RS*IT*ER*GP*LR*LC*PL/ \\ PV*PI*BU*CY*LG*WS*DGF*RF*CL*SI*LH*LW*PH)$$

In an econometric model, we can apply this in an equation with beta coefficients and X variables as:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 - b_{11}X_{11} - b_{12}X_{12} - b_{13}X_{13} - b_{14}X_{14} - b_{15}X_{15} - b_{16}X_{16} - b_{17}X_{17} - b_{18}X_{18} - b_{19}X_{19} - b_{20}X_{20} - b_{21}X_{21} - b_{22}X_{22} - b_{23}X_{23}$$

VI. DISCUSSION

a) Policy Dilemmas and Philosophical Reflections

"Imagination is more important than knowledge. For knowledge is limited, whereas imagination embraces the entire world, stimulating progress, giving birth to evolution."

Albert Einstein (Wikiversity.org, n.d.)

We acknowledge the veracity of the above quotation by Einstein that imagination or serendipity is more important than knowledge. When Einstein made that statement, he was challenging us to develop fertile minds to be able to challenge our faculties in order to break new ground. Knowledge gives us insight about true and factual knowledge, which in turn enlightens our path towards the journey to the destination of innovation, creativity, discovery and breakthroughs. Sometimes, the rigour of the scientific method or empirical research methods of verification keep us entrapped and fettered to the chains of old and moribund ideas.

Therefore, it is advisable sometimes to forsake scientific objectivity in science, and to look up to fiction, day-dreaming and myth or superstition to be able to step outside the limits or circumference of known knowledge, and venture into the murky waters of

uncharted oceans, to be able to break new grounds. This is what we term academic risk-taking. First, it is imperative and important to acquire as much knowledge as possible, to be able to gain insight for making educated guesses.

Academic risk-taking requires us to sometimes put forward pseudo-truths inadvertently, so that other researchers are challenged to prove or disprove them. In this way, we come across proofs, dis-proofs, counter-proofs, and counter-dis-proofs. This back and forth tango dance eventually ends up in an endpoint of convergence of knowledge, and its extension, despite earlier divergences.

In this period of COVID-19, researchers, academicians and scientists all over the world are challenged to don on their gear in finding lasting solutions to COVID-19-related challenges and disruptions, especially in finding a vaccine for the pandemic. Table 6 below captures some of the vaccine development projects around the world. These involve billions of dollars provided by governments and the private sector sponsors, such as the Gates Foundation.

Table 6: COVID-19 Vaccine Development Projects

Company	Country	Comment
1. Fosun Pharma	China	
2. BioNTech	Germany	
3. Pfizer	USA	
4. Sinopharm	China	
5. Johnson & Johnson	USA	
6. GlaxoSmithCline	USA	
7. University of Oxford	UK	
8. University of Cambridge	UK	
9. Imperial College	UK	
10. Gates Foundation	USA	
11. CEPI	Norway, India, Gates Foundation	
12. Moderna	USA	
13. Merck	Switzerland	
14. AstraZeneca	Switzerland	
15. Military	China	
16. CloverBioPharm	China	
17. Sinovac	China	
18. CanSinoBiologics	Canada, China	
19. Governments	Japan, Canada, Brazil, India, Australia, Russia, Singapore, South Korea, South Africa	

(Source: [cfr.org/backgrounder/what is the world doing to create COVID 19 vaccine?](https://cfr.org/backgrounder/what-is-the-world-doing-to-create-covid-19-vaccine) 2020; history.today)

The period of COVID-19 represents a period of decision making under uncertainty and lack of adequate data to go by. It presents policy dilemmas to policy makers. In this scenario, we need to resort to philosophical concepts to guide us on the way forward. For example, Aristotle came up with his theory of Eudemonism or philosophy that, man by nature, seeks the highest form of happiness and pleasure, as the essence of living. Thus, policy makers in these gloomy times should make it their duty to seek the highest form of happiness for those they govern, by reducing the pain of losses from COVID-19 related deaths, by supporting families with some form of support and interventions, such as monetary payments or doles or social cash transfers to vulnerable people in society.

Also, they should seek the greatest good for the greatest number or follow the concept of utilitarianism, which was championed by John Stuart Mills and Jeremy Bentham (Hunt & Lautzenheiser, 2009). In all scenarios, some collateral damage cannot be avoided. However, the damage should be minimized as much as possible by providing frontline workers with adequate personal protective equipment (PPE), and providing adequate incentives for these workers who risk their lives to save others. We can here make reference to the Trolley problem analogy, which was developed at MIT in the US, to exemplify the dilemma of choosing between two evils, with the injunction always to choose the lesser of two evils.

In making decisions, we believe that policy makers should subject their actions to transparency, and also they should examine their actions through critical thinking by weighing the pros and cons in a

holistic manner, and yielding to technical advice based on scientifically-proven facts. Their motives should be pure, altruistic, and in line with the law, norms and professed policy as enshrined in the manifesto of the ruling government. We have witnessed many instances of double standards by high profile public figures and leaders, whose actions during COVID-19, ran counter to what they professed to stand for.

We believe much can be achieved by these leaders if they subject their actions to philosophical examination, by using philosophical and scientific tenets and approaches such as epistemological, deontological, ontological, and teleological principles. For example, an epistemological approach examines the logic and rationality of an action. A deontological approach looks at means and actions taken in solving a problem, whether they are legal, ethical or humane (Stanford.edu; Wikipedia, n.d.).

An ontological view examines issues from world viewpoint of what is socially feasible and acceptable or the philosophy of being and existence, which is metaphysical and spiritual (Wikipedia), while a teleological view examines results and consequences of actions, in order to judge them as being moral or ethical (Britannica). Here, our attention is not focused much on the means used in achieving those results, but on the morality of the consequences of our actions (Britannica.com; Wikipedia, n.d.)

b) Great Depression

The Great Depression of October 1929 was unprecedented in world history, as it started in the USA with the bubble burst of the booming stock market on Wall Street, which earlier on had evoked great optimism

and euphoria, with people having orgies of parties to celebrate their huge financial gains on the stock market. The joy or euphoria of celebrations suddenly evaporated, and it turned into a nightmare scenario of weeping and gnashing of teeth, as shares plummeted to their lowest levels ever. Many businesses collapsed as they went bankrupt (Hunt & Lautzenheiser, 2009; Wikipedia, n.d.).

Millions of people went out of jobs, and there were endless queues of people lining up at soup centres for free helpings, while farmers who could not find market for their milk emptied kegs of them into the drainages. Life was reduced to its lowest ebb. Shall we say that the outbreak of COVID-19 has also brought about an unprecedented scenario of lockdowns on businesses, schools and colleges, air travel, restaurants, bars, and hotels, and it has affected greatly the hospitality and tourism sectors, more than other sectors. What COVID-19 has done to the world cannot be imagined as the world post-COVID will never be the same again (history.com). The huge financial and social losses are incalculable and unquantifiable.

We need to revisit some of the New Deal economic recovery measures which former presidents Harry Truman and Franklin Delano Roosevelt took, such as the construction of the Hoover Dam, and expansion of the Federal railway systems across the length and breadth of America (Britannica, n.d; Wikipedia, n.d.; Hunt et al. 2009). COVID-19 has flattened the economic landscape of the world so much so that we need new economic models other than capitalism to overcome the huge losses incurred (cf. Piketty, 2014). This new model should be a Pan-continental arrangement of countries working together to rebuild the world economy, irrespective of political ideologies (Kissinger, 2015; Huntington, 2007). We need a proto-welfarism system modelled on the Canadian and Scandinavian systems, in order to survive post-COVID (Piketty, 2014.; Fukuyama, 1993; Grant, 2008)

STEEPLE- Origin of model

The acronym STEEPLE was first put forward by Johnson, Scholes, and Wittington in their famous book, *Exploring Corporate Strategy*. The model is used by firms and organisations to scan the macro environment when engaging in their strategic plans, so that they have sustainable, viable, and environmental-fit plans (Cole, 2004; Rue & Byars, 2009). Amitai Etzioni of Harvard, called it *environmental scanning*, while Rosabeth Moss Kanter called it *tuning in into the environment* (Britannica.com)

i. Social

Socially, COVID-19 has been traumatic and disruptive in separating families, especially during critical moments when families should be closer together such as during weddings, funerals, ceremonies, and hospitalization, among others.

Observing social distancing has created cold relationships, giving impression of not caring for one another, and this may have affected conjugal relations as well as familial relations, such as one between mother and daughter. The agony of not having a chance to hug or kiss a loved one in a moment of joy and celebration has been psychologically agonizing and traumatizing.

After surviving COVID-19, every human being needs to go for psycho-social counselling, on how to adjust and embrace the new normal. Children will need to be reassured that they are loved and cared for. Socially, wearing masks has come to stay, and masks will be part of the dressing paraphernalia for a long time to come. Many years ago, we had a premonition that air quality would become so bad that oxygen masks would be on sale, to help people breathe. We guess that those in the mask-making business will be having booming business, and as such, investors can invest their money safely in businesses that engage in producing masks, oxygen tanks, Personnel Protective Equipment (PPEs) and medical supplies.

Entrepreneurs can flock to the shops of seamstresses and tailors to engage them before they get snapped up by competitors. The youth can learn skills in demand as seamstresses and tailors, and they will always have their jobs on demand. During the COVID-19 outbreak, all manner of clothing materials were used for making masks, with plain ones much preferred while multi-coloured ones looked like women's bra or G-strings, which made some people look weird and scary. Many familiar faces suddenly became unrecognizable. The wearing of masks politics took centre stage on our TV screens, with some security personnel enforcers of wearing face masks in some shops in America, being put in harm's way by being shot and killed by resistors of mask-wearing.

Many holiday makers around the world were marooned, and distanced from their loved ones, warning us that we should ponder carefully now before making any future holiday plans. Holiday makers who arrived in other countries were looked down upon with scorn as they were deemed as suspects of COVID-19, and veritable carriers of the virus. Some were taken into forced quarantine, in some extreme cases. Even some returning citizens were caught in the flak, as they were not so welcome in their own countries, and were given the rigmarole and run around, by asking them to produce certification, showing that they had tested COVID-19 negative in their country of origin.

As a result, many of our friends or African Diasporaans were marooned, and they could not visit or return to their native countries to see their loved ones. COVID-19 caused many weddings, social gatherings and birthday celebrations to be either put on hold, or such celebrations were made low key, which was not satisfactory by normal standards. Some unfortunate

celebrants got caught up in police brutalities, such as being flogged mercilessly, being detained and brutally assaulted, even to the point of dying, and being frog-marched or given a heavy fine.

Washing of hands became the new norm, with sales of detergents, sanitizers and washing basins booming in sales. Handshakes were dispensed with, as it created some air of suspicion among close associates. The cultural aspect of greeting by hand was dispensed with and replaced by bows, Namasti, bowing from afar and clasping hands, greeting by foot-to foot greeting, and elbow-to-elbow salutations. COVID-19 impinged on people's long-established cultural norms. Those who are social animals could not have the chance to attend gatherings in order to show off their social skills. This could have led to pent-up feelings, with psychological impact of denying people of self-expression.

With lockdowns inside homes, people resorted to binge eating and drinking orgies, giving rise to concerns of obesity, coronary problems, and people feeling claustrophobic, especially children who need free range running and careering around. Home-confinement for children is harmful for the healthy development of children's psycho-motor skills, aesthetic faculty development, which is facilitated and enhanced by outdoor activities, and general mental and cognitive development. Parents had challenges caging their children at home, as the age gap became difficult to bridge.

Children became glued to Netflix and other TV channels, playing video games, watching cartoons and becoming obese through being couch potatoes. Confinement at home caused binge eating, stress, agony and uncertainty, as many had lost their jobs or were told to work from home, at some reduced income, through telecommuting or teleworking. Men suddenly grew beards, and the ladies went with their hair unattended to in tussled manner. People with creative genius took to exploring and enhancing their talent, through experimentation with musical compositions, artwork, dance moves, painting, gardening and working with pets and animals.

This helped technophiles display their ICT skills, and the technophobes to play catch-up by learning new IT skills in order to cope with work. Social media platforms such as Facebook, WhatsApp, Twitter, Instagram, Pinterest and LinkedIn experienced heavy traffic, resulting in vendors making a kill in profits. For example, profits for businesses such as Apple, Amazon, Facebook, Ali Baba, Netflix and Microsoft, Huawei, and WhatsApp soared. House orders and home deliveries became the new norm under lockdown. Many confined individuals discovered new hobbies. Ali Baba, e-Bay and Lastminute.com had their businesses soaring, while others in tourism, hospitality and personal care services

such as hairdressing, manicure and pedicure, had no chance to operate under lockdown.

Construction, personal services, and manufacturing industries were the hardest hit, as they could not operate without their workers, who were under lockdown. Under lockdown, it would be presumed that there would be many births, with plenty of COVID-19 babies being born. However, the issue of stress, trauma, and uncertainty caused fear, panic and danger of contracting the virus. It made it difficult for couples to engage in procreation as high adrenalin and cortisol levels were not germane for sexual arousal. So perhaps, there could be no baby boom. It could be a fifty-fifty matter, of either baby boom or baby slash burst.

Technological- We can state that electronic communication, using applications such as WhatsApp, WizIQ, ZOOM, Microsoft Team, Facebook, Astria Learning, Twitter, MOODLE, and LinkedIn helped people connect, so as to carry on normal business without interruption. However, in a developing country such as Zambia, where internet speed is based on 3G and 4G technologies, and also electricity supply is erratic due to frequent power outages from the power supplier, ZESCO, it was not easy to get business going, as people spent lots of money to acquire gadgets, to have alternate power supply and also to subscribe to fast internet providers.

Many government workers were left behind, as many of them were not as computer-literate as their counterparts in the private sector. This shows that, in the post-COVID-19 era, the SMART Zambia Agenda that was declared by the Zambian government in 2016 has to be accelerated and given teeth to bite, by empowering many citizens with ICT skills and ICT gadgets. COVID-19 is indeed an eye-opener to the fact that we have to jack up our act so that we are not left behind by other countries.

Economic- The outbreak of COVID-19 towards the end of 2019 in Wuhan, China and its subsequent spread to all parts of the world has spelt doom for the global economy, as recession and depression are forecast. The hardest hit sectors are air travel, tourism and the hospitality industries. In Africa, the highest tourist destinations are Morocco, South Africa, Kenya, Mauritius, Cape Verde, Tunisia, Tanzania, Gambia, and Botswana. These countries are therefore hardest hit from heavy losses of income.

The WTO estimates that about 21 million people are directly and indirectly employed by the tourism sector, and that the sector generates 9% of Africa's GDP (BBC Focus on Africa, 25 May 2020). Also those engaged in providing small-scale personal services such as hair salons, chauffeur services, among others are those heavily affected. These sectors will need government rescue plans, and access to soft bank loans (Zambia, 2020).



Massive unemployment is looming large, quantitative easing, crowding out effect, bulging national debt, over-taxation, inter-generational debt, overheating of the economy, and inflation are some of the economic fallout from COVID-19 pandemic.

In the aftermath of the Cold War, Capitalists won the war against the Communists, but in the post-COVID-19 era, the short-term gain of the capitalists has translated into a win for the Socialists and Welfare states, such as Sweden, China, UK, and the countries with liberal centrist systems of nationalistic discipline, patriotism, and order such as South Korea, Sweden, Germany, Russia, Japan, Canada, Iceland and all the Scandinavian countries.

Thomas Robert Malthus' Spectre chases us up to this day. Malthus had warned in his time that if humans did not check their promiscuity and fecundity or tendency to be prolific procreators, then the means of sustenance or food supply, which would be growing at a pitiable arithmetic rate, would not be able to keep up pace with the rapid geometric rate of population explosion, which would result in nature's intervention through famine, wars, natural calamities, and epidemics that would decimate the population (Hunt et al., 2009).

It was a Doomsday scenario which was painted by Malthus, known as the Malthusian spectre. During the COVID-19 pandemic outbreak, Strategic Communication by Governor Cuomo of New York State, in the USA, has been exceptional in a true leadership style. The period of the pandemic saw geopolitical issues such as Oil glut, due to the Russia-Saudi stand-off, as Saudi is seen as a surrogate state of the USA by Russia, and there is the perennial USA-China trade war, the Turkey-Syria tango, the UAE-Yemen saga, the WHO denigration and chastisement by the USA for its leadership being pro-China, prompting Ireland to quadruple its contribution to WHO, and China also pledging to give 2 billion dollars to WHO over a period. The polemic war of words was and is unending.

Ethical- During the COVID-19 era, we found Individual freedom clashing with centrist and political directives from the central government (Huntington, 2007). There is struggle for space among individuals, constituent states, and the central federal government, particularly exemplified in the USA unfolding drama, more so than in any other country. Individuals are protesting against the idea of using technological applications for contact tracing, and for tracking, in the fight against the spread of corona virus. On the one hand, individuals are protective of their privacy and private space, and on the other hand, the state has duty to safeguard the health and security of its citizens. So there is a clash and conflict of interests between the state and individuals, which requires new governance and administrative models to be developed, or existing liberal democratic systems to be revisited (Deutsch, 1980).

However, much depends on culture and religion of a country. In Turkey, for instance, they are largely Muslim by religion, and they are relatively liberal and scientifically exposed, so they were able to implement early contact tracing interventions to reduce the impact of the pandemic. The situation was bad in Iran, where the impact of western-imposed sanctions was brutally felt, as the biting economic hardship was telling on the COVID death toll. It cost thousands of many lives, as they could not import necessary basic supplies such as PPEs, medicines and equipment.

South Korea is largely a Christian nation, with a collectivist culture, which enabled them to submit themselves for contact tracing without much resistance. The same applied to China, where they have a commandist ideology of state rule, and collectivist culture or socialism/communism. It is clear that western countries, in contrast, have miserably failed the litmus test of statehood survival, as they place individual freedom above national safety, in emergencies like COVOD-19. Western countries, notably the USA, which claims to be the standard bearer of democracy, fared badly in containing the spread of the corona virus, as national guidelines were not adhered to, and there was a lot of confusion, wrangling, and indecision between the Federal and state governments.

Political- The political lesson that the COVID-19 pandemic has taught the world is that no country is an island, as we live in an interdependent world of complementarity and supplementarity. This calls for a rethink of a multilateral world order in what Kissinger and others have been calling for over a long time now, as a New World Order that is apolitical, collectivist, and devoid of geopolitics (Kissinger, 2015; CFR, 2020; Chomsky, 2017). The model of independent, individualistic and selfish societies should come to an end for us to embrace the idea of community, good neighbourliness, and having a universal turn of mind rather than what some leaders have projected as ultra-nationalistic tendencies, irredentism, and insularity. We need to revisit the 1649 Westphalian concept of the nation-state. It is sad that political leadership and statesmanship have been debased by what can be termed Twitter-Leadership, instead of the more formal press conferences held to announce policy or to engage the various publics.

Legal- It is sad that in the 21st century, parts of the Congo, Sudan, and Nigeria suffer terror and indignities from terrorists, rebels, and religious zealots. Human rights are in jeopardy in such environments, and they cannot be sustained or enforced, as women are raped and children are abducted to become child soldiers. Some greedy adventurists and capitalists are ripping apart virgin forests and desecrating the land in search of gold, diamonds, Coltan, tantalite, and other minerals, without paying attention to the 17 UN Sustainable

Development Goals (SDGs). In these devastated areas, it is hard to extend assistance to COVID-19 victims. Some citizens are pleading their Constitutional rights of freedom of association and movement, under lockdown strictures, provoking conflict of interest between individual freedoms on the one hand, and interest and security of the state on the other hand.

Environmental- During the five or so months of lockdown, there was less mobility of humans, so much so that it was noticed by environmental watchers that the amount of CFC and carbon emissions reduced drastically, and some depleted parts of the ozone layer recovered (the-scientist.com). Many animals in zoos and game parks were free from the glare of millions of visitors, and they started breeding in numbers (the-scientist.com). This tells us that we need to follow the lockdown model of declaring a period of pause on some activities, for a reasonable period for the natural ecosystem to recover, so that we can sustain and maintain healthy balance between production and consumption. This will be in line with the SDGs of the UN. The lockdown reduced air travel considerably, which improved air quality and also many manufacturing activities in the worst polluting countries stopped, especially in China, India, USA, South Korea, Japan, and others in South East Asia.

c) COVID-19 Challenges

As the model of PESTEL or STEEPLE shows above, the impact and effects of COVID-19 are wide-ranging. The most affected people are those in the insurance business because when there is economic recession and depression, people are not making enough income to be able to afford paying insurance premiums or obtaining insurance cover, unless it is mandatory in the type of business (Zambia, 2020). Ordinary insurance like life assurance suffers from low patronage in COVID times.

This means that in the post-COVID-19 era, insurance firms have to diversify their products to come up with new and innovative products in order to increase sales. The incidence of the pandemic and its adverse effects are an Act of God or Force majeure, which cannot be insured against. This therefore calls for government intervention and support for individuals and SMEs or small scale enterprises, which will need government bailout for them to sustain the tempo of their businesses. The trickiest part for business owners is that, despite low custom or turnover, they have to pay rentals, wage bills, electricity and water bills, service loans, and maintain structures, fittings and machinery. Many may declare bankruptcies in order to be let off the hook.

Those who took mortgages to build or own houses will be hard put to it paying back their mortgages, and in some cases, some of their houses will be repossessed by the mortgage firms for breach of

contract. Many tenants in rented apartments will be served eviction notices to quit for failure to honour contractual obligations. Some of these affected tenants may seek personal bank loans, which also will not be forthcoming because banks are sceptical to give personal loans, especially during this period of uncertainty, high deaths from the pandemic, and also because there are no jobs to serve as collateral for loans. Property values may fall post-COVID era so property hunters can have a buyers' market.

This also means that the most lucrative aspect of banking, lending money, will be adversely affected, and banks will make low turnover. This is the time for borrowers to renegotiate loans by asking for moratorium or long and extended periods to service loans. As there are lockdowns and less mobility, there will be greater demand for ICT gadgets like laptops, smartphones, and desktops and tablets, e-books and online trading, which requires internet connectivity from the Internet Service Providers (ISPs) such as MTN, Airtel, Zamtel, i-Connect, Huawei, and Hai, and Liquid Telecommunications. Investors can look to invest in these industries.

This is the time for NGOs and philanthropic organisations to donate ICT gadgets to schools, colleges and universities, as part of their Corporate Social Responsibility (CSR). Many youth and employees need to be given liberal credit terms to be able to own computers and other ICT accessories, which will promote their work online. Retailers of these items have to roll out sales promotion schemes to accelerate sales. COVID-19 poses many challenges but also provides many opportunities for businesses to exploit. Airlines, hotels, transporters, manufacturers, and generally, those in the tourism, travel, and hospitality industries are the hardest hit. Despite that, there are still opportunities to exploit by being innovative and using internet connectivity to create and exploit many opportunities such as promoting travel packages which are mouth-watering, and which are on liberal terms, to entice and retain customers.

Government and private sector joint partnership (Public-Private Partnerships-PPPs) initiatives have to be developed and launched to encourage consumption by borrowing a leaf from John Maynard Keynes' under-consumption and multiplier models (Begg et al., 2013). Rich people and moneybags can be enticed to save more, by offering them attractive customer value propositions, and high yields on government bonds and treasury bills. The majority poor however, have to be wooed and cajoled to consume more, so that the economy can be kick-started. The government sector has to be expanded at some considerable pace, but not too fast as to create crowding out effect for the private sector players.

Economists contend that there are too many leakages in the government sector, so capital should be put in the hands of the private sector to husband capital



resources better. However, in the initial stages of recovery, it is imperative for the government to lead the way for others to follow. Government, through the Federal Reserve/Central Bank, can use quantitative easing by expanding money supply by printing more money to issue onto the market. Government can gain from this practice through Seigniorage or the difference between the cost of printing money and the face value of the money printed, and put into circulation.

We will be wrong to assume that the negative impact of COVID-19 is heaviest on the developing countries than on the developed countries.

The developed countries could be worst hit in the short run but they have greater resilience to bounce back quicker. The effect of this pandemic will have very long term impact on the developing countries, because of weaker institutions and slow capacity to recover, caused by heavy indebtedness, poor infrastructure, low levels of productivity, weak oversight systems, high levels of illiteracy, and poor earnings from raw commodity exports, such as timber, crude oil, copper, bauxite, rubber, cocoa, coffee, tobacco and cotton.

All in all, the post-COVID-19 era calls for a new type of entrepreneur who is smart, and who does business mainly online. Supply chain bullwhip effect is where bottlenecks in supply cause supply imbalances at one end of the supply chain, creating shortages on one end, and over-supply at the other end. There is need to decentralize supply hubs to reduce this effect.

This can be overcome by creating regional hubs, and also decentralizing most activities by using strategies such as nearest neighbour method for deliveries, in order to reduce delivery costs, ordering supplies in bulk through centralized ordering system, reducing rejects and returns by incorporating customers in the process of manufacturing, outsourcing supplies cheaply from support industries, among many other strategies (study.com, n.d.; Salvatore, 2014).

VII. EDUCATION SECTOR

a) Lecturers

During the Lockdown, Lecturers had many heaven-sent opportunities to catch up on research and producing quality publishable articles. Also, they had ample room to reflect on their delivery modes, and how to improve on student engagement through multi-media Blended Learning activities. The issue of how to examine students in high schools, colleges and universities has become a raging talking point. Many Higher Educational Authorities (HEAs) have inflexible rules and guidelines which will make examining students online very problematic, because some students lack exposure to online Computer-Based Examinations (CBEs) and many have suddenly developed phobias or become technophobic. Students should be encouraged to hone their typing skills and to take the Computer

Driving Licence online test of proficiency. The progression rules from the HEAs for university students who sit exams have to be made flexible to be in line with the new normal.

A few students are Geeks or technophiles, and they have excellent typing speeds to cope with online examinations. Online examination questions should be Case Studies and problem-solving centred, which will obviate the need for students to google answers or to cheat. Some universities around the world are threatening to either reduce salaries of lecturers or lay off some of them, as COVID-19 has eroded revenue base and caused many potential students to withdraw or relocate. Many lecturers with Visiting Professorship accreditation to other universities have had to suspend their Sabbatical leave, and stay at home. However, a lot of academics have taken the bull by the horns to dive deep into writing profusely, thereby increasing the volume of publications world-wide.

b) Students

During the COVID-19 pandemic disruption, students in universities and colleges were sent home and told to access e-learning platforms for delivery of lectures, submission of assignments by uploading them on our portal, and taking exams online from any location. Students complained bitterly about not being able to connect either due to power outages or due to not being able to afford computers, as they have to pay at internet cafes to access services. Before the online exams, many students developed cold feet, and kicked against writing exams online, because they said they were slow in typing. Some threatened to boycott the exams, and they petitioned the authorities to no avail. About 96 per cent of the 3000-student number wrote the exam, and about the same percentage passed the exams, which was commendable for ZCAS University in Lusaka.

Students forgot that the new normal is to work online, as ICT skills are required these days of all employees, so they have a golden opportunity to upgrade their ICT skills during this new normal period. From that experience, going forward, our University has decided to cease with face-to face engagement, as the threat of the pandemic is still there to contend with. Our university has also decided to have blended learning, by exploring many modes of delivery online, as well as random engagements of face-to-face, when the authorities declare it safe to do so.

VIII. NATIONAL ECONOMIC CHALLENGES AND OPPORTUNITIES

The fight against the COVID-19 pandemic has squandered massive resources which should have been deployed for development purposes. Luckily, many donations were received from friendly countries in Europe, America and Asia. Economic growth has been

slowed down as during the pandemic, the economy was down to one third of its installed capacity, and during the post-pandemic recovery period, up to two thirds capacity. We hope that full capacity or back to normal growth rate can take a year or two to attain.

We expect the government to embark on massive economic recovery plans, by undertaking infrastructural development plans such as housing and road construction. However, the high levels of both domestic and external debts constrain growth. A new strategy will be to concentrate on high-yielding service industries such as ICT, whereby young people can be trained to develop software for sale to giant technology firms outside Africa. This means that government should set up technopreneur enterprise theme parks and incubation hubs, to increase output of technological solutions for export.

This can be a green field investment. Government has to use ICT to reach out to rural populations so that they can sell their surplus produce on the market. Reaching out to the rural population using ICT intervention will help reduce poverty, and to close the national technological divide between urban areas and rural areas. Young entrepreneurs and technopreneurs who set up as born global companies have to be supported by government by giving them start-up loans to accelerate development in the rural areas.

The post-COVID era is the time for government to increase funding for Research and Development (R & D) for research institutions and universities to come up with solutions to national problems, such as combating the ill-effects of global warming, and arresting the problem of youth unemployment. The post-COVID era will require government to increase its networking activities, by increasing sub-regional, regional, continental and global networks through collaborations, in order to increase national capacity in combating many threats, such as outbreak of infectious diseases, control of pests such as army worms and locusts, among others. Such increased collaborations with the AU, EU, and UN can and will enhance and build local capacity for combating the ravages of global warming.

IX. FORECASTS

a) *Kondratief Cycle*

Kondratief was a Russian economist who put forward his economic theory of long cycles lasting about 50 years. In economics, normal cycles are short periods of about 7 years. We last had a serious global pandemic in 1919 (National geographic.com, n.d.) and we have had one in 2020. In 2121, which is about hundred years from now, we may have a major recurrence of an epidemic, since we see a pattern of repeating numbers, 1919, 2020, and then 2121.

b) *American Civil War II 2031*

It is believed that wars make countries tick, so a particular party in America stokes war when it is in power. America has been engaged in wars, on average, every 85 years since 1776. In 1776, there was the War of Independence between the Federalist states and Britain which ended in defeat for Britain, as America had support from many European sympathisers, notably France.

In 1861, America was engaged in the Civil War between the Northern States rooting for abolition of slavery, and the Southerners who were against it. America again was involved in the Second World War in 1942, after Japan bombed Pearl Harbour in Hawaii. We can see from these accounts that almost every 85 years or so, America is at war either internally or externally. We cannot say which one the one to come soon in 2031 will be, but it is most likely going to be either an internal war of secession, or an external war with an emerging great world power. We hope we are not sounding like Nostradamus, that 16th Century seer in Italy, who gave many predictions in his Quatrain treatise, concerning our times up to the year 3297, when he predicts the end of the world will come (holybooks.com)

c) *Great Depression II 2030*

The Great Depression occurred at the beginning of 1929 and ended around 1933 (history.com; Wikipedia.com). It started ten years after the great 1919 Influenza pandemic. If history repeats itself, then we are in for a second dose of the Great Depression 2 in 2030, because it will coincide with the time of the American war around 2031. After COVID-19, the world will never be the same again. Short term palliative measures will be put in place but these cannot solve a problem of a great magnitude. It is most likely that the solutions put in place post-COVID, will collapse ten years down the line, unless world leaders show great foresight, commitment, sacrifice and political goodwill to succeed, as a global body collective. The European Union have shown the way with their great 750 trillion euros recovery plan.

It is most likely that most short term palliative measures taken by countries in isolation will buckle after a few years, and cave in again ten years down the line. The capitalist system as we know it now, will also collapse and a new world system will be needed to replace it, which will be more humanistic and driven by no country in particular (cf. Piketty, 2014; Huntington; Fukuyama, Chomsky, Toffler).

This will see the end of capitalism as predicted by Fukuyama and others, and the end of the dollar as the currency of international trade. Western Civilization as we know it now will be replaced by a pan-global civilization, led by countries in the Far East, where the global axis of power will shift to. This is because increase in internet connectivity will make Africa become a centre of a new trading bloc, astride the west and



east, and many students from the west, north and east will troop to Africa to attend universities and pursue new adventures

d) COVID-19 recurrence 2121

We last had a serious global pandemic in 1919 and we have had one in 2020. In 2121, which is about hundred years from now, we may have a major recurrence of an epidemic, since we see a pattern of repeating numbers, 1919, 2020, and then 2121. Are these cosmic magic numbers? Well, science meets superstition and it is difficult to determine which holds sway.

X. CONCLUSION

Recommendations

- Disaster preparedness and management: Countries and multilateral institutions should increase funding for capacity-building in rising to the challenges of natural disasters such as outbreak of pandemics, tsunamis, wild fires, floods, drought, earthquakes, and storms, among others
- Reform of UN: The reform of the archaic, moribund, and bureaucratic structures of the UN needs to be attended to as a matter of urgency in order for it to be in line with 21st century needs and demands
- Strengthening of WHO pandemic response: The WHO and other Disaster Response Agencies such as MSF, UNICEF, CARITAS, and WFP should restructure their pandemic alert systems as currently the structures in place are not robust and flexible enough as seen in the dilly-dallying before declaring COVID-19 a pandemic. These institutions need massive donor funding for them to operate efficiently and effectively
- Global Pandemic Alert Group: An independent global watchdog of scientists should be set up with links to all countries of the world to advise governments and multilateral institutions on pandemics. This could be made up of scientists and medical personnel from different countries
- Global Eminent Persons Group: To augment global political leadership, we should have in place in each continent and regions a group of seasoned and retired leaders who can be called upon for advice in case of emergencies like COVID-19

Global Emergencies Response Relief Groups:

- One per cent of all food stocks should be reserved for emergencies in all countries by keeping food reserves in food banks
- Seed Banks should be set up in each country and region of the world

- Every country should set aside 1 per cent of its GDP for disaster preparedness and emergency relief operations
- Enforcement of ban on all game meat in all countries
- Relook at political leadership in Africa and parts of the world by ensuring that elections are free and fair to elect credible leaders
- Time for Reform of Global Institutions such as the UN and its agencies
- Time to resolve global pandemic of Youth Unemployment by deploying many youth throughout the world to work on disaster mitigation and disaster preparedness programmes in all countries. This is an avenue for creating massive jobs
- Great Depression 2 to occur in 2030, ten years after COVID-19, so there should be global disaster management inspectorate teams in each region of the world to inspect country-preparedness of all countries who sign on the programme
- Improvement of hospital infrastructure worldwide by providing adequate PPEs, equipment and training medical and paramedical staff in emergency procedures and protocols.

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