ENGINEERING LAW AND MANAGERIAL ECONOMICS TERM PAPER ON

‘ENGINEERING STRATEGIES FOR HANDLING COVID-19 FOR ENVIRONMENTAL HEALTH AND ECONOMIC SUSTAINABILITY’

PREPARED BY

CHINWENDU CHIBUOKEM ONYEDIKACHI

17/ENG02/016

COMPUTER ENGINEERING

COVID 19 (CORONA VIRUS DISEASE –19)

According to Wikipedia, Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The disease was first identified in December 2019 in Wuhan, the capital of China's Hubei province, and has since spread globally, resulting in the ongoing 2019–20 coronavirus pandemic. Common symptoms include fever, cough and shortness of breath. Other symptoms may include fatigue, muscle pain, diarrhea, sore throat, loss of smell and abdominal pain. While the majority of cases result in mild symptoms, some progress to viral pneumonia and multi-organ failure. As of 7 April 2020, more than 1.4 million cases have been reported in more than 200 countries and territories, resulting in more than 80,700 deaths. More than 297,000 people have recovered. Based on severity, the World Health Organization (WHO) declared the 2019–20 coronavirus outbreak a Public Health Emergency of International Concern (PHEIC) on 30 January 2020 and a pandemic on 11 March 2020. Local transmission of the disease has been recorded in many countries across all six WHO regions.

As seen above. The virus which has been declared a pandemic is accruing numbers on a daily as well as claiming lives. The pandemic is a danger to both environmental and industrial factors which aid in general development in the world. The data as confirmed by reliable sources(WHO), shows that the total number of lives claimed by this deadly virus is 80,759 (which is 5.7% of confirmed cases) and as it isn’t looking like it is going to stop anytime soon will claim a larger number of lives in the coming days.

However, the government all over the world have taken measures to slow the spread of this virus down and enable efficient tackling of this disease. Very affected countries include Italy, The USA, The UK, China etc. All of these countries listed above have gone into total lockdown leaving the streets empty as well as non-essential companies, organizations, groups shut down. It is very obvious that this would retard the economic progression of any of these countries. Despite this realization, the lockdown still has to go on for what is an economy without a labor force.

There are however methods/ways to sustain the economy of a country during this pandemic. Strategically and effectively employed by the government, would see sustainability in its economy as well as prevent heavy environmental consequences now and in the future.

This has to be done with efforts of all professionals ranging from the medical field, to the engineering field, to the law and order field as well as other professional fields even under lockdown.

WAYS ENVIRONMANTAL HEALTH IS AFFECTED BY THE COVID-19

In a very little time frame (2-3 months precisely), the world has been transformed (in a negative way). Thousands of people have already died, and hundreds of thousands more have fallen ill, from a coronavirus that was previously unknown before appearing in the city of Wuhan in December 2019. For millions of others who have not caught the disease, their entire way of life has changed by it.

According to BBC;

1. The streets of Wuhan, China, are deserted after authorities implemented a strict lockdown.
2. In Italy, the most extensive travel restrictions are in place since World War Two.
3. In London, the normally bustling pubs, bars and theatres have been closed and people have been told to stay in their homes.
4. Worldwide, flights are being cancelled or turning around in mid-air, as the aviation industry buckles. Those who are able to do so are holed up at home, practicing social distancing and working remotely.

It is all aimed at controlling the spread of Covid-19, and hopefully reducing the death toll. But all this change has also led to some unexpected consequences. As industries, transport networks and businesses have closed down, it has brought a sudden drop in carbon emissions. Compared with this time last year, levels of pollution in New York have reduced by nearly 50% because of measures to contain the virus.

“Sounds like good news, Doesn’t it?”

Talking about environmental health and leaving we humans out of it doesn’t seem ideal but if we are looking at it based on that, we can see that the environmental health has gone up by a bit.

The trees, flowers, plants, even the air we breathe as well as the ozone layer is benefiting from this “pandemic” which may seem as a “blessing” to them. This actually shows that we humans are the greatest danger to the environment.

Some countries report that the rivers found around them look clearer and cleaner than usual, free of all plastic and debris and waste often emitted into them by we humans.

Carbon di-oxide emissions into the air have gone down by a reasonable amount due to lockdown of industries worldwide.

Some parts of countries even report that recorded endangered animal species have surfaced.

The following listed above can be a head start for betterment of the environment when human activities resume. The achieved environmental state shouldn’t be tampered with and should be maintained effectively.

I wouldn’t say that the environmental aspect is a win because we humans make up a very vital and important part of the environment and we are the most affected by it.

The virus endangers us by destroying our respiratory system making it difficult for us to perform any respiratory activities (a very vital part of the body’s way to ensure its existence) and in turn killing us. Therefore, we are not safe.

**ENGINEERING STRATEGIES EMPLOYED TO HELP MAINTAIN ENVIRONMENTAL HEALTH**

The various fields found in Engineering can be very efficient to help maintaining the environmental health during this pandemic but the main focus will be the Computer Engineering field as it is my area of study and aspired expertise.

Computer Engineers can employ the following ways for the maintenance of the public environmental health;

1. Design of digital devices installed with a special software application that will help detect people with symptoms similar to the symptoms of the covid-19.
2. Provide the health aspect with better computerized methods of data accumulation and organization so as to help them take appropriate decisions in due time.
3. Provide better platforms for passing information across apart from the local media platforms. This may involve building applications/websites that help provide information about the virus as well as methods of preventing the virus and also symptoms one should watch out for in order to be part of infected suspects and lastly, measures that should be taken once one has these symptoms.
4. Employ the use of modern day advanced technology to help the medical experts and practitioners successfully tackle the rising pandemic.

The above following ways can help maintain the health of the environmental factors at risk and ensure public wellbeing.

WAYS IN WHICH THE ECONOMY IS AFFECTED BY THE COVID-19

There is little doubt that the pandemic will result in a very large cut in international trade as a result of falling global demand, both for consumption as well for investments. Sectors such as travel, tourism and construction would be particularly hard hit.

Sector-specific implications and impacts could vary. For example, the impacts on the global aviation and tourism sectors are a result of the implications of the pandemic on global travel. As discretionary spending by consumers continues to decline, cruise companies, hotels, and hospitality are facing declining demand and patronage. For example, in Hungary alone, about 40 to 50% of hotel reservations have been canceled. Also, the pandemic is placing up to 8 million jobs in the leisure and hospitality sector at risk, with travel crashes and cancellations expected to continue. Moody’s Analytics, a rating agency, stated that more than half of the jobs in the United States which is about 80 million may be in jeopardy.

The virus is also taking its toll on health facilities and infrastructures across the globe. Italy is currently the largest affected country with a number of deaths surpassing China, since the outbreak of coronavirus. Across northern Italy, the virus has pushed the country’s National Health Service to a breaking point, emphasizing the test that other countries, especially developing and low-income countries, might face in their approach to contain the virus spread. Most hospitals and health facilities that could not handle the hazards are resulting to operating below their capacity by taking a few regular health-related cases or shutting down.

There are limitations to the successes that can be recorded when demand shocks are combined with supply shocks. It is already apparent from the emergence of the current crisis that there are implications on the economy from both the demand and supply sides. Some of the demand factors include social distancing with consumers staying at home, limitations in spending and declining consumptions. On the supply side, factories are shutting down or cutting down production and output, while in other instances, staff work from home to limit physical contact.

What could be more devastating is the fact that the economic pains that accompanied the virus might not go away soon as envisaged.

The countries most likely to be hit hardest by the changing international trade patterns are China and India, who are major suppliers of components and services to the international markets.

However, a number of other countries, irrespective of whether they are exporters of raw materials or finished good, from Viet Nam to Bangladesh, and from Nigeria to Mexico, will suffer as a result of lower export revenues and balance of payments difficulties.

If, due to problems caused by the COVID-19 crisis, there is widespread defaults among poor countries this would pose serious problems for the global economy. It is therefore imperative that requests for debt forgiveness or rescheduling do not fall on deaf ears.

ENGINEERING STRATEGIES EMPLOYED TO HELP SUSTAIN THE ECONOMY

Focusing on Computer Engineering again as we did previously, the following ways can be used to help sustain the economy;

1. Provide economic experts with data analysis tools and applications designed to help monitor economic factors so as to enable them make mild or drastic decision to help sustain the economy.
2. Employ computerized technology (robots, machines) in the demand sector due to the limited work force to help boost manufacturing of high demand goods and services.