

Cybernetic Communication Roles in Managing Corona Virus Pandemic Risk: Nigeria Case

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ABSTRACT

Computer and Internet-Based Communication Technologies aka Cybernetic Communication play important role in communication over a distance. This work gauged uses of cybernetic communication as major means of communication during COVID-19 outbreak based on measured (Social Distance, Self-Quarantine, Isolation, Lockdown) put in place by the government to curtail spreading of the disease in Nigeria. Data were randomly collected through online publication, newsprints, and telephone calls from 290 sampled population. Data Collected were discussed and analyses using Pie chart, Percentile, and Histogram as statistical tools. Findings shows that Cybernetic communication play major role to bridge the communication gaps between the Nigerian people during the outbreak of the Covid-19 outbreak as majority of Nigerians spent more hours using cybernetic tools to communicate and more money was spent on airtime and data to keep their mobile phone running during the trying period of COVID-19 rash. Majority of the sampled population spent their useful time on social medial as in Facebook, whatsapp, Instagram, YouTube and for social interactions and meetings. The implications of our findings are: majority of Nigeria may have computer linked diseases or syndrome such Sleeping Problems and others due to prolong uses of computers; the cybernetic tools (mobile phones, computer, laptop etc.) used by the infected people may be a carrier of the symptoms in the nearest future; Nigerians spent more on data and airtime credit in this trying period and it may affect their financial economy later. This work ends with proposal for roles to be played by Nigeria government and other stakeholders in cybernetic sustained communication processes for pandemic response and to prevent future outbreak of covid-19 after overcoming recent happenings, and also recommended organization strategy for workforce continuity and recovery.

Keywords - COVID-19, Cybernetic Communication, Digital Communication, Nigeria, E-readiness, Social Distancing, Self-Quarantine, and Isolation, Virtual Office Work.

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I. INTRODUCTION

Disease with spread across large region with no stable number of infected people is an epidemic disease. In the history there have been number of pandemic diseases such as Smallpox, Tuberculosis, Black Death, 1918 Spanish flu, 2009 H1N1, HIV/AIDS. In recent time World Health Organization has declared COVID-19 disease a pandemic since 11th of March 2020. Coronavirus was first discovered in Wuhan, Hebei, China in late December 2019 and within three months more than 190 countries and territories including Nigeria has been affected [1, 2, 3, 4, & 5]. The Nigeria government confirmed first case on the 27th of February 2020 [6].

As at the time of completing this research the confirmed case in Nigeria was 2558 with 87 number of deaths and it spread across 34 states and Federal Capital territory Abuja. Lagos is epicenter of the disease with 1107 cases follow by Kano with 342 cases [7]. The hit case is still trending with 195 new cases and 5 death confirmed as of 6th may 2020 reported by Nigeria Council for Disease Control.

“Recent decades have seen a dramatic rise in global pandemics. From the Severe Acute Respiratory Syndrome (SARS) pandemic in 2003, to Avian Influenza in 2006, H1N1 in 2009, Ebola in 2014, and the appearance of the Zika virus in Latin America in 2015, these developments

are inextricably bound up in modern socio-technical developments and processes of globalization” [8].

Consequent to the outbreak and recent hit and spread in Nigeria several measured which include Social Distance, Self-Quarantine, Isolation, and Lockdown has been taken by the government of Nigeria both at the Federal and State levels.

The president of Nigeria in a nationwide broadcast on Sunday 30th of March 2020 announced total lockdown that would last for 14days, earlier before then all Federal and State institutions has been closed down for a month starting from Monday 23rd March 2020. Several other non-medical intervention to prevent the spreading has been put in place and adopted by people of Nigeria. Some the non-medical interventions are personal preventive measures, social distancing, self-quarantine, and Isolation. The question now is during this period of social distancing, self-quarantine, Isolation and lock-down measured adopted by Nigeria governments to curtail the spread and managing of corona virus out break how do we communicate to one another? No doubt the answer is that communication is now dominated with the use of cybernetic tools and technologies.

The focus of this work is to investigate the spread and effect of COVID-19 outbreak and the role of cybernetic communication tools and technologies during this crucial time and also determine present and future implication of

using cybernetic communication during the trying period on Nigerian.

II. LITERATURE REVIEW

Origin, Transmission, and Managing of Pandemic Disease Majority of approach use in managing spread of pandemic globally are social distancing, self-quarantine, and Isolation and lock down [9]. "The coronavirus disease 19 (COVID-19) is a highly transmittable and pathogenic viral infection caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which emerged in Wuhan, China and spread around the world. Genomic analysis revealed that SARS-CoV-2 is phylogenetically related to severe acute respiratory syndrome-like (SARS-like) bat viruses, therefore bats could be the possible primary reservoir" [10].

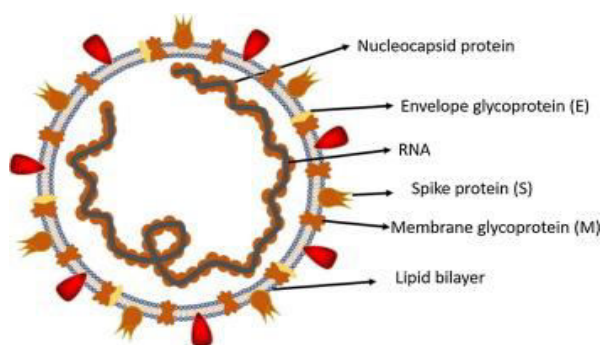


Fig 1. Structure of respiratory syndrome causing human coronavirus

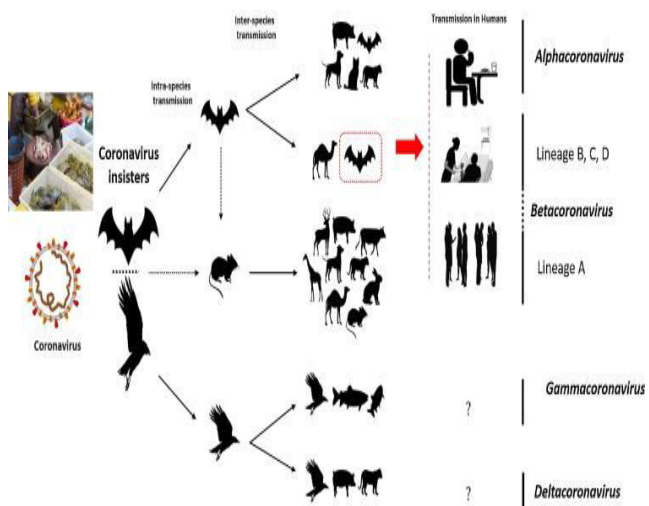


Fig 2. Mode of transmission of coronaviruses

"It is possible that a progenitor of SARS-CoV-2 jumped into humans, acquiring [new genomic features] through adaptation during undetected human-to-human transmission, the second scenario is that the new coronavirus crossed from animals into humans before it became capable of causing human disease" [11].

COVID-19 Fatality Rate

Death Rate = $\frac{\text{number of death}}{\text{number of cases}}$ = Chance of dying from the virus

"Estimating the case fatality ratio for COVID-19 in real time during its epidemic is very challenging the fatality rate is high in patient with pre-existing medical condition like Cardiovascular disease, Diabetes, Chronic respiratory disease, Hypertension, and Cancer" [12].

III. METHODS

Data were gathered through Questionnaire, online publication, newsprints, and telephone calls. Data gathered were presented in table and in figures as follows.

Table 1. Age Range of Respondent

Age Ranges	Respondent
18 - 30	118
31- 45	102
46 - 60	49
Greater than 60	21

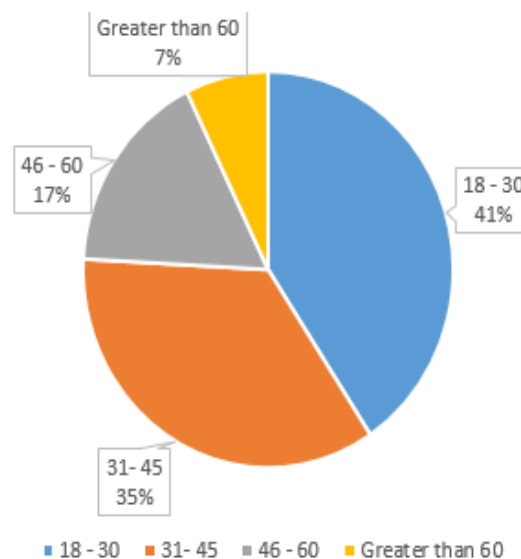


Figure 3. Pictorial Representation of Respondents Age (yrs.)

Table 2. Length of Interaction with phones and/or Computer systems in (hrs.) per day during Lockdown

Length of Interaction with Phones and/or Computer systems in (hrs.) per day	Respondents
Less than 1	9
Between 1 and 2	17
Between 2 and 3	27

Between 3 and 4	31
Between 4 and 5	51
Between 5 and 6	49
Between 6 and 7	53
Between 7 and 8	31
Over 8hrs	22

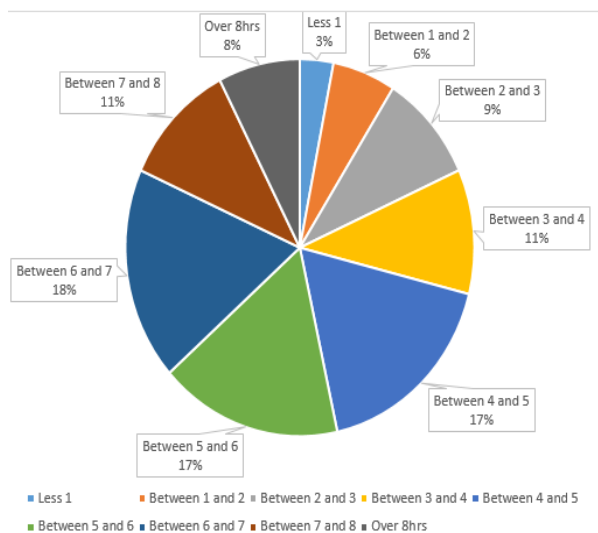


Figure 4. Interaction with Phones and/or Computer systems in (hrs.) per day during lockdown

Table 3. Length of Interaction with phones and/or Computer systems in (hrs.) per day before Lockdown

Length of Interaction with Phones and/or Computer systems in (hrs.) per day	Respondents
Less than 1	71
Between 1 and 2	97
Between 2 and 3	61
Between 3 and 4	17
Between 4 and 5	15
Between 5 and 6	11
Between 6 and 7	9
Between 7 and 8	7
Over 8hrs	2

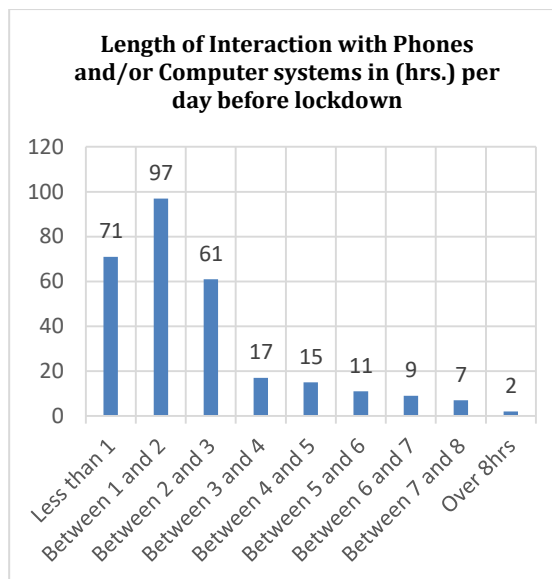


Figure 5. Length of Interaction with Phones and/or Computer systems in (hrs.) per day before lockdown

Table 4: Expense on Internet Connection in Naira during Lock Down

Expenses On Internet During Lockdown	Respondents
Less than 1000	31
Greater than or equal to 2000	47
Between 2000 and 3000	73
Between 3000 and 4000	87
Between 4000 and 5000	33
Greater than 5000	19

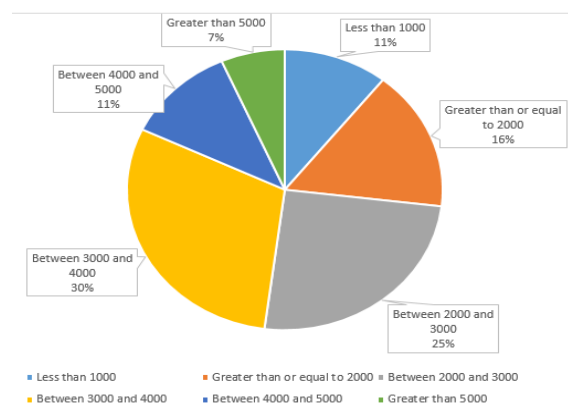


Figure 6. : Expense on Internet Connection in Naira during Lock Down

Table 5. Expenses on Internet before Lockdown

Expenses On Internet Before Lockdown	Respondents
Less than 1000	57
Greater than or equal to 2000	119
Between 2000 and 3000	61
Between 3000 and 4000	21
Between 4000 and 5000	23
Greater than 5000	9

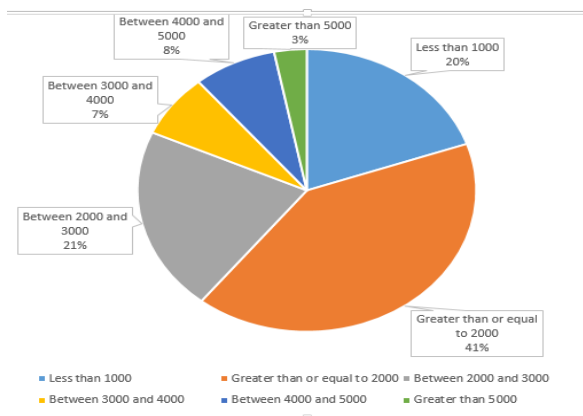


Figure 7. Expenses on Internet before Lockdown

Table 6. Purpose of Using Phone & Computers during Lockdown

Purpose	Purpose of Using Phone
Social Interaction	123
Business	31
Watching And Play Games	107
None of Mentioned Functions	29

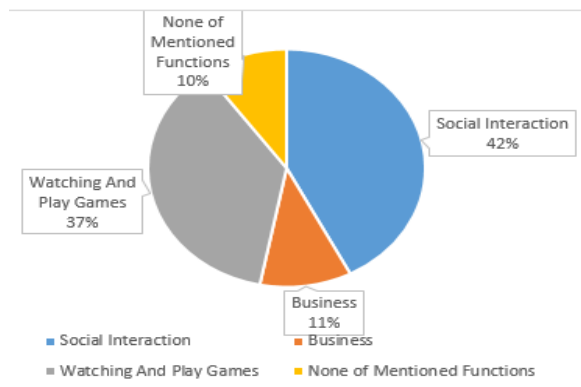


Figure 8. Purpose of Using Phone & Computers during Lockdown

Table 7. Corona Hit Case in Nigeria as at May 3rd 2020 (source: NCDCCD 2020).

States	Total Case	Discharge	Death	Active Case
Lagos	1107	247	30	830
Kano	342	7	6	329
FCT	278	40	3	235
Gombe	96	0	0	96
Borno	82	0	12	70
Kaduna	81	8	1	72
Ogun	80	10	2	68
Bauchi	71	6	0	65
Sokoto	66	1	8	57
Edo	52	10	3	39
Katsina	46	6	7	33
Osun	36	22	3	11
Oyo	34	9	2	23
Delta	17	4	2	11
Kwara	16	8	0	8
Rivers	14	2	2	10
Ondo	13	3	0	10
Yobe	13	0	1	12
Kebbi	12	0	0	12
Zamfara	12	0	1	11
Nasarawa	12	0	0	12
Ekiti	11	2	1	8
Enugu	8	2	0	6
Taraba	8	0	0	8
Jigawa	7	0	1	6
Bayelsa	5	0	0	5
Ebonyi	5	0	0	5
Adamawa	6	0	0	6
Niger	3	1	0	2
Plateau	3	0	0	3
Abia	2	1	0	1
Imo	2	0	0	2
Anambra	1	1	0	0
Akwa Ibom	16	10	2	4
Benue	1	0	0	1

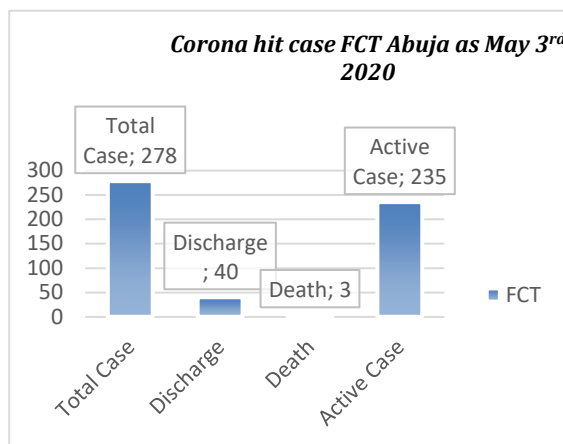


Figure 9. Corona hit case FCT Abuja as May 3rd 2020

Table 8. Corona hit case FCT Abuja as May 3rd 2020

States	Total Case	Discharge	Death	Active Case
FCT	278	40	3	235

Table 9. Corona hit case Northern Regions as May 3rd 2020

States	Total Case	Discharge	Death	Active Case
Kano	342	7	6	329
Gombe	96	0	0	96
Borno	82	0	12	70
Kaduna	81	8	1	72
Bauchi	71	6	0	65
Sokoto	66	1	8	57
Katsina	46	6	7	33
Yobe	13	0	1	12

Kwara	16	8	0	8
Kebbi	12	0	0	12
Zamfara	12	0	1	11
Nasarawa	12	0	0	12
Jigawa	7	0	1	6
Taraba	8	0	0	8
Niger	3	1	0	2
Adamawa	6	0	0	6
Plateau	3	0	0	3
Benue	1	0	0	1

Table 11. Corona Hit case South-East and South-South as May 3rd 2020

States	Total Case	Discharge	Death	Active Case
Bayelsa	5	0	0	5
Ebonyi	5	0	0	5
Imo	2	0	0	2
Abia	2	1	0	1
Anambra	1	1	0	0
Rivers	14	2	2	10
Delta	17	4	2	11
Edo	52	10	3	39
Enugu	8	2	0	6
Akwa Ibom	16	10	2	4

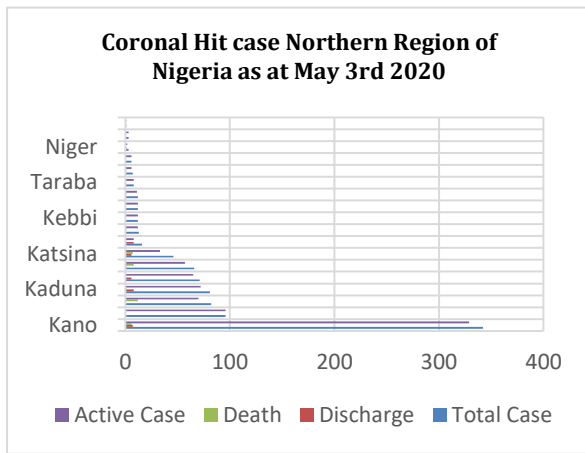
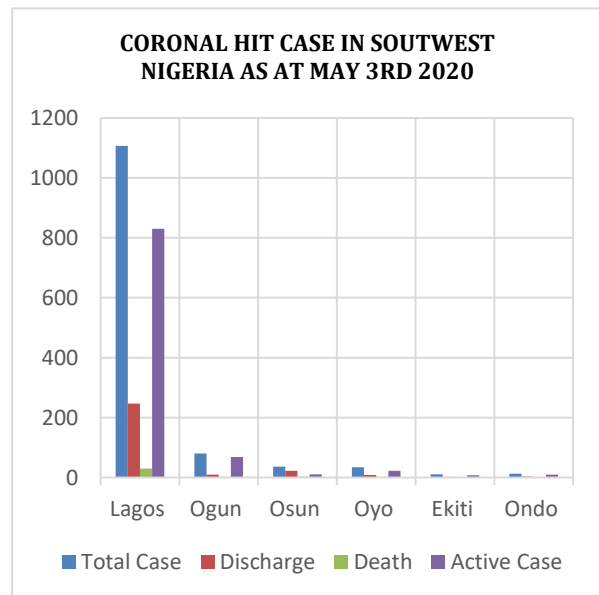


Figure 10. Coronal hit case Northern Region of Nigeria as at May 3rd 2020

Table 10. Corona Hit case South-West Nigeria as at May 3rd 2020

States	Total Case	Discharge	Death	Active Case
Lagos	1107	247	30	830
Ogun	80	10	2	68
Osun	36	22	3	11
Oyo	34	9	2	23
Ekiti	11	2	1	8
Ondo	13	3	0	10

Figure 11. Corona hit case in Southwest Nigeria as at May 3rd 2020



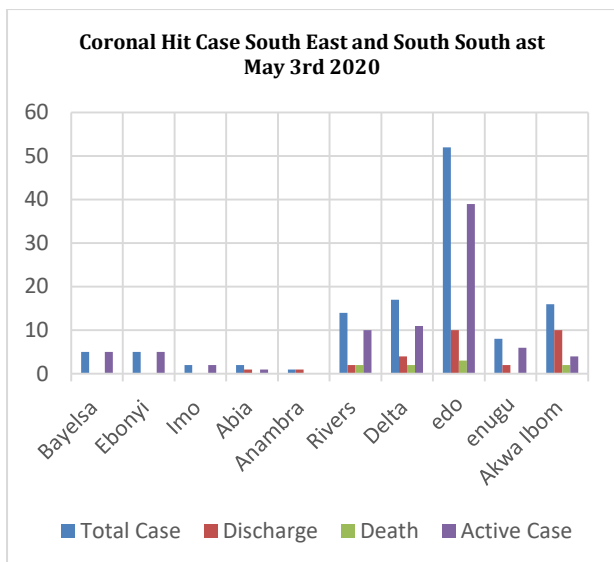


Figure 12. Corona hit case in South-East and South-South of Nigeria as at May 3rd 2020

Table 12. Coronal Hit Case Region by Region plus FCT Abuja

Regions	Total Case	Discharge	Death	Active Case
FCT Abuja	278	40	3	235
Northern Region	877	37	37	803
South East_South	122	30	9	83
South West	1281	293	38	950

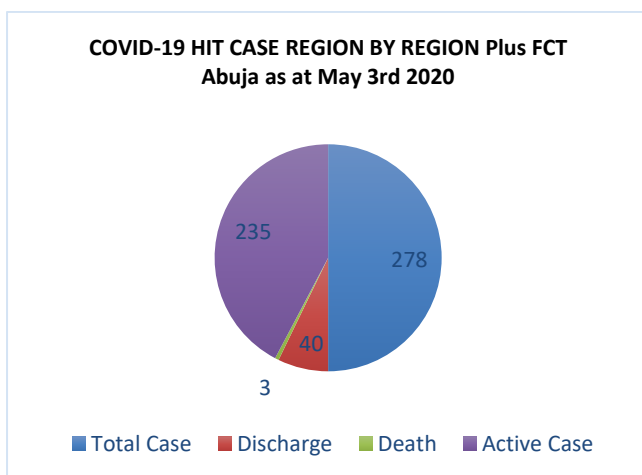


Figure 13. Corona Hit case Region by Region plus FCT Abuja as at May 3rd, 2020

IV. DISSICUSSION ANALYSIS AND FINDINGS

A. DISSICUSSION

Data gathered across 290 respondents from which majority are within age of 18-45yrs, the percentages according to age range 18-30, 31-45, 46-60, and above 60 are 41%, 35%, 17%, and 7% respectively. Table 13 and 3 gives data based on the period for which the respondents uses phones and/or Computer systems in (hrs.) per day during and before Lockdown. In table 4

and 5 we gathered data on respondent’s expense on purchasing air-time and data for using their phones or computer during and before lockdown. Table 6 gives data that depicts purpose of Using Phone & Computers during Lockdown. Table 7, gives the statistics of coronavirus hit case with the following classifications total hit case, total discharge, death, and active case as at May 3rd respectively. For easy of analysis and discussion table 7 was represented with classifications earlier mentioned according to the Regions (Northern, Southwest, South-South/South-East, and Federal Capital Territory) and the data gathered was presented in table 8, 9, 10, and 11.

B. FINDINGS AND IMPLICATION

Our findings from this research works are given as follows.

- Majority of the sampled population from this research spent more of their time on computer, mobile phones, and other digital device for communication during lockdown compared to when there is no lockdown. The implication of this finding is that majority of Nigerians may have computer linked diseases and syndrome like Sleeping Problems, Musculoskeletal Problems during and after lockdown.
- Also majority of the sample population spent more money to service their phone, computer, and other digital device as in buying airtime and data for connection to the internet during corona virus hit. The implication of this is that Nigerian may be affected negatively in term of finances after the lockdown.
- Phones and computer play major roles in bridging communication gap between the infected people and those not infected. The implications of this is that phone and devices used by those infected with corona virus may be a carrier of the symptoms in the nearest future although we don’t have medical fact for the assertion.

On general note, we discovered that level of E-readiness of Nigeria as in resources and government policy is not commensurate to mitigate or managing COVID-19 using Computer and other digital technology device, consequently Nigeria is at greatest risk corona virus spread having the most limited ICT capacity and determination to manage and mitigate COVID-19 risk. In all lockdown has brought a lot of hardship to Nigerians especially those that that their livelihood and survival depends on daily hustling.

C. RECOMMENDATION

Based on our findings we recommended that:

- Government should deploy free technology-supported communication tools to promote communication among the citizenry during the trying period of lockdown.
- Government should continually sensitizing general public through electronic media, social media platform, and voice call to their mobile line via mobile service provider.

- Government should deploy mobile learning platform or leverage on available and make data available to students and teacher to teach students online.
- Government should ban importation of any used goods like cloths, vehicle, mobile phones and ICT devises from country mostly hit with coronavirus.
- ICT must be deploy for workforce continuity and recovery while workers should be given ICT allowance to buy data and voice call.
- On a lighter mode, all people subjected to prolong used of Computer and other digital devices for communication during COVID-19 lockdown should go for medical check-up for computer related disease earlier mentioned.

V. CONCLUSION

Many of the countries at greatest risk have the most limited digital communication capacity to manage and mitigate pandemic risk. The investments to improve pandemic preparedness through ICT is worthwhile especially during social, distancing, self-quarantine, isolation and lockdown as we are currently experiencing. If govement has invested on ICT through robust planning and strategy by having national database, managing of pandemic should have been easy especially in contacting and distribution of palliative measure to the affected citizens across the areas where the COVID-19 hit seriously. It is not too late for Nigeria to leverage on available ICT resources and statistical to build strong ethical and global ICT imperatives to detect and respond to pandemic threats.

FURTHER RESEARCH

We suggest that Post COVID-19 research should be carried out on Roles that Computer and Digital Communication Technologies played in Managing Pandemic Risk of coronal virus.

REFERENCES

- [1.] Lam, Tommy Tsan-Yuk; Shum, Marcus Ho-Hin; Zhu, Hua-Chen; Tong, Yi-Gang; Ni, Xue-Bing; Liao, Yun-Shi; Wei, Wei; Cheung, William Yiu-Man; Li, Wen-Juan; Li, Lian-Feng; Leung, Gabriel M.; Holmes, Edward C.; Hu, Yan-Ling; Guan, Yi (26 March 2020). "Identifying SARS-CoV-2 related coronaviruses in Malayan pangolins". *Nature*. doi:10.1038/s41586-020-2169-0. PMID 32218527. Retrieved 5th April 2020.
- [2.] WHO–China Joint Mission (16–24 February 2020). "Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19)" (PDF). World Health Organization. Retrieved 8 March 2020.
- [3.] Shao, Peng (17 March 2020). "Impact of city and residential unit lockdowns on prevention and control of COVID-19". *MedRxiv*: 2020.03.13.20035253. doi:10.1101/2020.03.13.20035253.
- [4.] Scmp News (2020). Shanghai neighbor Zhejiang imposes draconian quarantine". *South China Morning Post*. 6 February 2020. Archived from the original on 6 February 2020. Retrieved 10 April 2020.
- [5.] Marsh, Sarah (23 February 2020). "Four cruise ship passengers test positive in UK—as it happened". *The Guardian*. ISSN 0261-3077. Retrieved 22 April 2020.
- [6.] NCDC (2020) available at <https://ncdc.gov.ng/news/227/first-case-of-corona-virus-disease-confirmed-in-Nigeria> retrieved April 1, 2020.
- [7.] NCDC (4th May 2020), Nigeria's COVID-19 Situation Report. Report 65. Available at. [Covid-19.ncdc.gov.ng/](https://www.ncdc.gov.ng/). Retrieved 4th May 2020.
- [8.] Divine Paredes (February 202). ICT deepens role in pandemic response planning available at retrieved April 1st 2020. <https://www.cio.com/article/3526590/ict-deepens-role-in-pandemic-response-planning.html>
- [9.] Ben S Cooper, Richard J Pitman, W. John Edmunds, Nigel J Gay Delaying the International Spread of Pandemic Influenza Published: May 2, 2006 available at <https://doi.org/10.1371/journal.pmed.0030212>
- [10.] Muhammad. Adnan, Shereenab, Suliman, Khana. AbeerKazmic, Nadia. Bashira, Rabeea. Siddiquea, (2020). COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. *Journal of Advanced Research* Volume 24, Pages 91-98
- [11.] Jacinta, Bowler. 30 March 2020. The COVID-19 Virus May Have Been in Humans For Years, Study Suggests. Available at <https://www.sciencealert.com/the-new-coronavirus-could-have-been-percolating-innocently-in-humans-for-years>
- [12.] Shigui, Ruan. (March 2020). Likelihood of survival of coronavirus disease 2019 available at [https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(20\)3025](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)3025).