**IMPACT OF ICT IN COMBATING THE SPREAD OF COVID-19**

**BABA SHAMSUDDEEN MUSA**

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**A SEMINAR REPRESENTED TO THE DEPARTMENT OF COMPUTER SCIENCE, SCHOOL OF SCIENCE AND TECHNOLOGY, FEDERAL POLYTECHNIC MUBI, ADAMAWA STATE, NIGERIA**

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**Abstract**

*Information Technology and digital technologies have enabled people to easily and quickly share information during the crisis. Healthcare organizations and governments are making use of information technology to improve public health by spreading news related to the Coronavirus disease 2019 (COVID-19)* *to millions of people. Any breakthroughs, preventive measures, and medical advice that can help save lives are shared through networks and devices in a matter of seconds. In fact, organizations like the World Health Organization have created websites that offer rolling updates and top stories on the coronavirus. In addition to that, many organizations are streaming on social media in an attempt to inform people of the latest updates and information about the virus.*

**Keywords:**COVID‐19, global crisis, health informatics, ICT use, social informatics

**Introduction**

The objective of this paper is to explore the Information and Communication Technology (ICT) interventions and its strengths, weaknesses, opportunities and threats for the containment of the pandemic spread of novel Coronavirus (Gorbalenya, 2020). The research adopted a qualitative research approach, while the study data were collected through online content review and Focus Group Discussion (FGD). Starting with a preliminary set of about 1200 electronic resources or contents, 56 were selected for review study, applying an inclusion and exclusion criteria. The review study revealed ICT interventions that include websites and dashboards, mobile applications, robotics and drones, artificial intelligence (AI), data analytic, wearable and sensor technology, social media and learning tools, and interactive voice response (IVR) as well as explored their respective usages to combat the pandemic spread of COVID-19 (Gorbalenya, 2020).

COVID‐19 has become a global, transnational health threat. By June 15, 2020, the pandemic spread to more than 200 countries, infecting more than seven million people, as it turned into a global health crisis causing fundamental societal changes. Not only is this crisis challenging the public health system in each country, but it is also, more broadly, shaking up the social order. People's daily lives are changing under stay at home orders and many are overwhelmed with information (Couzin-Frankel, 2020).

In today's global network society, social structure and organizational arrangements are largely made up of information networks powered by informational and communication technologies (ICTs) (Gorbalenya, 2020). ICTs, broadly defined here to include internet, platforms, networks, phones, apps, and databases, as well as underlying infrastructure, are a pivotal factor in the existing social order, particularly during the COVID‐19 global pandemic. The importance of ICTs extends beyond identifying, tracing, understanding, managing, treating, and perceiving pandemics (Couzin-Frankel, 2020). More fundamentally, ICTs are our best chance to maintain social order during a pandemic.

Using ICTs during the COVID‐19 pandemic illustrates both the limitations of and opportunities for ICT use. On the negative side, this global health crisis is seen as an information crisis (Gorbalenya, 2020). There is insufficient information for decision making, unreliable information for healthy public debate, inaccessible information to meet people's daily information needs, and spread of misinformation, disinformation, and fake news. At the same time, ICTs allow for faster responses by supporting large‐scale participation and mass collaborations across state and national boundaries. This includes, for example: involving new entities in existing humanitarian collaboration network (e.g., volunteer and technical communities who assist during disasters, including pandemics); facilitating new forms of disaster relief activities (e.g., digital humanitarians, online self‐support groups); and enabling diverse civic engagement (e.g., digital archives of deleted posts to counter censorship, efforts to counter disinformation campaigns).

Later, the FGD was replicated with 22 participants and explored the possible strengths, weaknesses, opportunities, and threats (SWOT) of deploying such technologies to fight against the COVID-19 pandemic (Gorbalenya, 2020). This research not only explores the exiting status of ICT interventions to fight with the COVID-19 pandemic but also provides a number of implications for the government, practitioners, doctors, policymakers and researchers for the effective utilization of the existing ICT interventions and for the future potential research and technological development to the containment of the pandemic spread of COVID-19 and future pandemics (Gorbalenya, 2020).

Using ICTs for COVID‐19 crisis interventions is prevalent among governments and societies. ICT uses are associated with how these actors engage in the pandemic response action and survive in the crisis. Nonprofit organizations, key non‐state actors and an important bottom‐up approach to crisis response, have demonstrated great variations in ICTs uses to cope with the crisis. Their behaviors include, but are not limited to: developing online services, assisting governments’ digital initiative implementation, and keeping silent in the digital world. Underlying mechanisms that result in these diverse behaviors are still unknown. This study selected nonprofit organizations in China as a sample and traced their COVID‐related social media posts. By conducting a content analysis of these posts, this study focuses on identifying ICTs that nonprofits adopted in order to conduct crisis related activities. Taking the Chinese nonprofit sector as an example, this study is aimed: first, to identify the ICT ecology for nonprofit in China; and second, to understand the relationship between ICT utilization and nonprofits’ activities to respond to a public health crisis (Nicole, 2020).

**Literature Review**

ICT platforms include a wide variety of Media, such as: Facebook, YouTube, Twitter, Television, Radio etc. These platforms and many others can be used to create and publish knowledge and information about potential health and disease risks and interventions as well as healthy lifestyles and effective health policies and strategies (Couzin-Frankel, 2020). Social media platforms constitute a powerful means of communication that can be used to elevate public awareness of infectious diseases, particularly new ones, in terms of outbreak dates and spreading developments. Members of the public turn to both traditional and social media to obtain information on emerging infectious diseases which represent unprecedented risks to people (Couzin-Frankel, 2020). The public perceptions of these risks are shaped depending on how information is communicated across social media platforms. This in turn affects people’s behavior as well as the decisions they make. In addition to information dissemination through social media platforms, the users of these platforms participate in discussions and conversations by giving their own opinions and presenting their own experiences. However, information disseminated through social media platforms often lacks credibility because it is often generated by the users themselves rather than by medical specialists or professional health care institutions; therefore, this information may lack reliability, accuracy, correctness, or usefulness. As a result, the WHO has called for proactive and effective use of social media platforms to disseminate information on health issues, explicitly on emerging infectious diseases, to unspecialized persons and the general public (Couzin-Frankel, 2020).

Social media platforms have attracted the interest and attention of researchers and practitioners in the health domain, who use them for different purposes. These include professional training and development of clinicians; formation of health networks and support groups; provision of funding for health institutions; facilitation of cooperation and coordination among health professionals; monitoring of infectious diseases (Couzin-Frankel, 2020).

Even though social media platforms provide professionals in the public health domain with numerous valuable opportunities and benefits, usage of social media platforms by professionals is associated with several challenges, the most important of which are detecting infectious disease outbreaks, monitoring emergencies, predicting disease trends, and measuring the public’s awareness and responses. However, many studies have reviewed and explored the potential applications of social media platforms for public health communication. For example, Huebsch (2020), suggested that social media platforms allow health practitioners to establish a direct relationship with their clients and that health promotion planners must put forward their creative best to integrate social media platforms within their strategies to make full use of the potential of these platforms when marketing their products and services (Couzin-Frankel, 2020).

**Effects of ICT during the COVID-19 pandemic**

Participants reported that social media has a significant impact on spreading fear and panic related to the COVID-19 outbreak, with a potential negative influence on people’s mental health and psychological well-being (Musawi, 2020). Facebook was the most used social media network for spreading panic about the COVID-19 outbreak. We found a significant positive statistical correlation between self-reported social media use and the spread of panic related to COVID-19 (R=.8701) results showed that the majority of youths aged 18-35 years are facing psychological anxiety (Nicole, 2020).

Researchers reported a poll claiming that in the age of social media, anxiety about the coronavirus spreads faster than the virus itself, resulting in public panic worldwide. On the other hand, social media is also a practical platform for the spreading of public health messages to audiences (Nicole, 2020).

Hearing a lot of information and news about COVID-19 has affected the public and created panic, causing people to live with anxiety. Similarly, Rothschild and Fischer claimed that social media is spreading fear and panic among social media users. Correspondingly, in the discussion on social media Cellan-Jones stated that people depend on social media to gain information and facts about COVID-19, as some countries use filters, which is why social media gives some information but not all the facts (Nicole, 2020).

During lockdown, people are using social media platforms to gain information about COVID-19. The nature of the impact of social media panic among people varies depending on an individual's gender, age, and level of education. Social media has played a key role in spreading anxiety about the COVID-19 outbreak (Nicole, 2020).

**Advantages**

**Allows for an appropriate work/home balance.** Most businesses are conducted in major metropolitan areas, and employees were previously saddled with commutes, exhausting traffic jams, or queues for public transport. WFH, and especially with entire families quarantining together, employees have the opportunity to spend more time with family and home life. Fun Corp's surveys found employees are less stressed than before the pandemic. Unfortunately, world events have not and don't contribute to less stress (Musawi, 2020).

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**More top talent want to WFH.** "You pull from a larger talent pool," Litvinov's report said. By expanding geo-targeted employment, which had been previously possible but not common, it's now the norm and has drawn talent once uninterested in telecommuting to embracing it, and looking for positions that allowed for WFH and began completing applications for these open positions (Musawi, 2020).

**Budget friendly with better cost management.** Businesses can redistribute budgets and save on their operating costs. Expenses are now viewed in "a more reasonable and business-oriented way," while still considering the global economic crisis. Office, equipment, and rental fees can now be translated into helping the current financial situation. Musawi (2020).

**Wider search range benefits diversity and inclusion.** Companies can now recruit talent from cities or even countries they did not have previous access to, because the hires would be working in an office setting. The recruitment process has been opened up to more diversity and inclusion (Musawi, 2020).

**Disadvantages**

**Quarantining.** Even though there are tech employees who describe themselves as introverts, it turns out, the report found, they're not really so introverted. There's been no greater light shone on this than during quarantine and isolation. Isolation has greatly affected employees' and leaders' moods, and water-cooler talk proved essential, even for those who are self-described or perceived as unsociable (Musawi, 2020).

**Not home-office compatible.** Not everyone has a perfect space to work remotely, and it can be impossible to figure a way to have an effective and organized work area. They're not able to set up an arrangement conducive to full concentration, which can directly affect employee efficiency (Musawi, 2020).

**Productivity fails.** WFH can present an average fall in performance. And it does not boil down to a single failure, but rather a set of reasons. Based on an individual's personality and character they might not make WFH work for them. Notable, those who procrastinate and are easily distracted struggle with productivity (Musawi, 2020).

**Electronic communications can be easily misunderstood.** In addition to missing in-person chats and meetings, both formal and informal, many surveyed worried about the necessary digital communication systems, such as email, chat, social media, and text, and the potential for miscommunication (Musawi, 2020).

**No man is an island, at least when it comes to productivity.** Autonomy doesn't work for everyone, not everyone can efficiently self-organize work (Musawi, 2020).

**Conclusion**

The current COVID-19 pandemic is clearly an international public health problem. There have been rapid advances in what we know about the pathogen, how it infects cells and causes disease, and clinical characteristics of disease. Due to rapid transmission, countries around the world should increase attention into disease surveillance systems and scale up country readiness and response operations including establishing rapid response teams and improving the capacity of the national laboratory system.

**Recommendations**

1. It is recommended ICTs be used in complementing conventional public-health measures, and thereby contribute to reducing the human and economic impact of COVID-19.
2. In order for a strategy of containment and recovery to succeed, it is recommended to keep using public health measures to suppress the epidemic, that is to drive R < 1.
3. Besides the infection rate, it is also recommended to closely monitor the positivity rate and the case fatality ratio (death rate) and rely not so much on the recovery rate which is what seems to be happening currently.

**References**

Couzin-Frankel, J. (2020*).* Emerging coronaviruses: Genome structure, replication, and pathogenesis. *Journal of Medical Virology, 92*(4):418-423.

Gorbalenya, B. (2020). Individual, work-related and institutional factors associated with adherence to standard precautions. *Journal of Infection Control,* 2(2), 106–111.

Huebsch, V. (2020). Knowledge and practice of universal precautions among health care workers in four national hospitals in Kabul, Afghanistan. *Journal of Infection in Developing Countries, 2020*; 8 (4), 535–542.

Musawi, S. (2020). Redefining Technology Role in Education. *International Journal of Creative Education, 2(2),* 130.

Nicole, K. (2020). The continuing 2019 Covid-19 epidemic threat of novel coronaviruses to global health – the latest 2019 novel coronavirus outbreak in Wuhan, China. *International Journal of Infectious Diseases, 91(2),* 264-266.