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ijirset@gmail.com

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Use of Technology in Covid Pandemic

Akanksha Singh¹, Prof. Sanjeev Kumar Trivedi²

Assistant Professor, Department of Electronics Engineering, Khwaja Moinuddin Chishti Language University,
Lucknow, UP, India

Professor, Department of Electronics Engineering, Khwaja Moinuddin Chishti Language University, Lucknow,
UP, India

ABSTRACT: A new survey finds that responses to COVID-19 have speeded the adoption of digital technologies by several years—and that many of these changes could be here for the long haul. The 281 empirical articles we have identified suggest that (1) 28 various forms of technologies have been used, ranging from computers to artificial intelligence, (2) 8 different populations of users are using these technologies, primarily medical professionals, (3) 32 generalized types of activities are involved, including providing health services remotely, analyzing data, and communicating, and (4) 35 various effects have been observed, such as improved patient outcomes, continued education, and decreased outbreak impact. Successful countries have adopted these technologies for pandemic planning, surveillance, testing, contact tracing, quarantine, and health care. An increase in digitalization is leading firms and educational institutions to shift to work-from-home (WFH). Blockchain technology will become important and will entail research on design and regulations. Gig workers and the gig economy is likely to increase in scale, raising questions of work allocation, collaboration, motivation, and aspects of work overload and presenteeism. The future of public health is likely to become increasingly digital, and we review the need for the alignment of international strategies for the regulation, evaluation and use of digital technologies to strengthen pandemic management, and future preparedness for COVID-19 and other infectious diseases. Future multi-stakeholder collaborations, including those with technology organizations, are needed to facilitate progress in overcoming the current pandemic, setting the stage for improved pandemic preparedness in the future. As lessons are assessed from the current pandemic, public officials should consider technology's role and continue to seek opportunities to supplement and improve on traditional approaches. Countries that have maintained low COVID-19 per-capita mortality rates appear to share strategies that include early surveillance, testing, contact tracing, and strict quarantine. The scale of coordination and data management required for effective implementation of these strategies has—in most successful countries—relied on adopting digital technology and integrating it into policy and health care.

I. INTRODUCTION

Most of the educational institutions have started to offer their courses online to make sure education is not disrupted due to the pandemic. Technologies used in distant learning include augmented reality, 3D printing, virtual reality, and robot teachers enabled with artificial intelligence.[1]

Online streaming of live shows and concerts have gained traction across the world. Several film production companies have also been releasing their movies via Over The Top (OTT) platforms such as Amazon Prime Video, Hotstar, Netflix, Zee5, Voot Select, etc.

The lockdown has helped people in realising the ease of viewing content on OTT platforms; it has changed how people are consuming content on a day-to-day basis. OTT platforms have witnessed a significant rise in both app downloads and viewership during the lockdown period.

Technology has also helped in educating people about the entire situation and reminding them to take the necessary precautions. Telecom operators such as BSNL, Jio, Airtel, etc.

CCTV cameras which are enabled with facial recognition feature have helped in identifying infected individuals who do not follow the rules and step out of their homes despite being quarantined.[2]

The online grocery market witnessed tremendous growth during the pandemic due to the soaring demand amongst consumers. Families, particularly with children and older people, preferred to place their grocery orders online. This, in turn, resulted in a significant increase of new users who are resorting to online apps for grocery deliveries.

COVID-19 has made us realise how meaningful human interactions are for making things work. The pandemic has severely impacted labour-intensive sectors such as food, retail, logistics, and manufacturing businesses. COVID-19 has resulted in a strong push to implement the usage of robots and also to speed up the robotics research.

Drones are being used for food deliveries, tracking population, transporting test kits, spraying disinfectant, and for delivering medicines to quarantine areas, etc.[3]

Companies such as Google, Facebook, are striving hard to ensure people get only accurate and verified information. Their objective is to make accurate information accessible to everyone so that there is complete transparency of the entire scenario, and people can be educated about the required steps to undertake well in advance.



Remote learning during covid-19 pandemic

Infrared and wireless thermometers have now become the most commonly used medical equipment at toll gates, entry and exit gates of offices, airports, shopping malls, hotels, railway stations, shops, hospitals, and other public places.

A lesson learnt from the COVID-19 pandemic has been to stay prepared well in advance against any crisis at both an individual and collective level. [4]

II. OBSERVATIONS

The effects that the COVID-19 crisis could have on the future of science, technology and innovation (STI) and its policies. Factors shaping the future of STI include the unequal effects of the crisis on research and development (R&D) across sectors, the accelerated adoption of digital tools and techniques, and changes in the openness, inclusiveness and agility of research and innovation ecosystems. STI policy could see fundamental changes as resilience, environmental sustainability and inclusiveness become more prominent objectives on policy agendas. The crisis could also spur experimentation with new tools, policy approaches and governance models.

While this has led to better, faster accessibility to services for the poor, these trends also have created a new class of poor — the digital poor — who, due to economic or geographic circumstances, are outside the mainstream of digital solutions. Free access to WiFi on public transport and in other public spaces, and kiosks in strategic locations to facilitate access to information on all Government services. We can choose to engage in a socially just transition to

sustainable development where people — complemented by the increased utilization of digital technology — can be afforded the luxury of a more enhanced quality of life.[5]



Technology hoping the best to fight covid time.

We've launched some STEM (Science, Technology, Engineering and Maths) activities to help parents keep their children occupied and engaged in learning. The STEM challenges have been tailored to different age groups and not only are the projects fun, but they can help spark a lifelong interest in a STEM subject area and potentially even start them on the path to a STEM career. Surprising rise of TikTok as a source of informal learning content. Previously the domain of young content creators, remote schooling saw teachers of all ages turn to the video platform to share bite-size (up to one minute) chunks of teaching, give inspirational feedback, set learning challenges or simply show students and parents how they were coping.

TikTok also been used as a place for educational organisations, public figures and celebrity scientists to produce bespoke learning content, as well as allowing teachers to put together materials for a wider audience.[6]

Even principals have used it to keep in contact with their school — making 60-second video addresses, motivational speeches and other alternatives to the traditional school assembly speech.

III. DISCUSSION

Machine learning is defined as "the use and development of computer systems that are able to learn and adapt without following explicit instructions, by using algorithms and statistical models to analyze and draw inferences from patterns in data," according to dictionary.com. Machine learning is a process by which a machine learns to become intelligent by itself. Chatbots are an example that allows for natural conversation to answer questions. For example, employees can ask a chatbot how much time they have left in their paid-time-off (PTO) bank. Chatbots can be used to have introductory conversations with job candidates, schedule interviews, send new-hire paperwork and help with the onboarding process.[7]

Companies and organizations are using drones, video chat, and mobile apps, among other tech solutions, to try to mount the difficult challenges surrounding these physical barriers. While they were originally aimed at improving efficiencies and reaching hard-to-access areas, their use has become more widespread and mainstream, including expansion into urban areas and into new services.



Health workers place orders by text message and a drone takes off from one of Zipline’s distribution centers. The drones can carry about 4 pounds of cargo, fly at up to 90 miles per hour, and reach their destination in an average of 30 minutes, according to the company.

A workplace experience app can connect users, keep employees informed in real-time and be a great base for everything work-related, from articles to company events. It can be utilised to keep a remote workforce connected, increase wellness and build a sense of community. And, to keep them informed of the latest Covid-19 workplace guidelines.[8]

Aarogya Setu uses contact tracing to record details of all the people you may have come in contact with, as you go about your normal activities. If any one of them, at a later point in time, tests positive for COVID-19, you are immediately informed and proactive medical intervention is arranged for you.



Prime Minister Narendra Modi, on Wednesday, while giving the keynote address at the fifth edition of VivaTech, said cooperation among nations on digital technologies needs to grow to insulate the world against the next pandemic.

Realizing the challenging need of global Dairy Trade, the Institute is continuously working to develop its R&D and HRD programmes to better serve the nation.

Not surprisingly, the demand for video conferencing apps has surged in recent weeks, with enterprise-focused mobile app downloads reaching 62 million during the week March 14-21 – the highest number ever seen.[9]

IV. RESULTS

Table showing Digital technology initiatives used in pandemic preparedness and response

	Functions	Digital technology	Countries	Advantages	Disadvantages
Tracking	Tracks disease activity in real time	Data dashboards; migration maps; machine learning; real-time data from smartphones and wearable technology	China; Singapore; Sweden; Taiwan; USA	Allows visual depiction of spread; directs border restrictions; guides resource allocation; informs forecasts	Could breach privacy; involves high costs; requires management and regulation



	Functions	Digital technology	Countries	Advantages	Disadvantages
Screening for infection	Screens individuals and populations for disease	Artificial intelligence; digital thermometers; mobile phone applications; thermal cameras; web-based toolkits	China; Iceland; Singapore; Taiwan	Provides information on disease prevalence and pathology; identifies individuals for testing, contact tracing, and isolation	Could breach privacy; fails to detect asymptomatic individuals if based on self-reported symptoms or monitoring of vital signs; involves high costs; requires management and regulation; requires validation of screening tools
Contact tracing	Identifies and tracks individuals who might have come into contact with an infected person	Global positioning systems; mobile phone applications; real-time monitoring of Korea mobile devices; wearable technology	Germany; Singapore; South	Identifies exposed individuals for testing and quarantine; tracks viral spread	Could breach privacy; might detect individuals who have not been exposed but have had contact; could fail to detect individuals who are exposed if the application is deactivated, the mobile device is absent, or Wi-Fi or cell connectivity is inadequate
Quarantine and self-isolation	Identifies and tracks infected individuals, and implements quarantine	Artificial intelligence; cameras and digital recorders; global positioning systems; mobile phone applications; quick response	Australia; China; Iceland; South Korea; Taiwan	Isolates infections; restricts travel	Violates civil liberties; could restrict access to food and essential services; fails to detect individuals who leave quarantine without devices



	Functions	Digital technology	Countries	Advantages	Disadvantages
		codes			
Clinical management	Diagnoses infected individuals; monitors clinical status; predicts clinical outcomes; provides capacity for telemedicine services and virtual care	Artificial intelligence for diagnostics; machine learning; virtual care or telemedicine platforms	Australia; Canada; China; Ireland; USA	Assists with clinical decision-making, diagnostics, and risk prediction; enables efficient service delivery; facilitates patient-centred, remote care; facilitates infection control	Could breach privacy; fails to accurately diagnose patients; involves high costs; equipment may malfunction

Technology attempts to understand the ways in which senior citizens made use of social networking sites and various digital platforms for managing life better. Secondly, it analyses the process of adopting technology, and finally, it examined the width and depth of the impact technology created in their life and also the permanence of this change. The analysis clearly suggests an increase in the digital life of elderly people. The process moved in distinct stages from utter confusion to relative ease in using technology, thereby significantly reducing the loneliness, and bringing relatively stable change in the way they lead their life.[10]

V. CONCLUSIONS

IoT has already found its use among healthcare providers. Today, connected patient imaging, health devices or applications, worker solutions, and ambulance programs are being adopted globally. But COVID-19 made the technology take on new applications to help the world combat the epidemic. Tracking quarantine, pre-screening and diagnosing, cleaning and disinfecting, innovative usage of drones, reducing in-home infections, are all “new normals” thanks to IoT. Smart speakers, lights, and security systems are being used to open doors and switch on lights to reduce in-home infections. These gadgets allow people to avoid touching the surfaces of doorknobs, switches, mail, packages, or anything that could easily spread germs.[11]

IBM Clinical Development system is an advanced Electronic Data Capture (EDC) platform that allows an accelerated delivery of medications to market and reduces the time and cost of clinical trials thanks to cognitive computing, patient data assets, and IoT. Additionally, the U.S. government had been in active talks with Facebook, Google, and others to determine how to use location data to glean insights for combating the COVID-19 pandemic.

There’s no doubt that the coronavirus pandemic has become a real-life test for everyone. It has caused tremendous damage, but at the same time, it has forced tech innovators to roll out advanced solutions, and it seems that they don’t plan on slowing down anytime soon.[12]

Healthcare providers across the globe are continually switching to smart technologies. So if you are in the smart technology niche, consider the current trends to steer your business in the right direction.



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