A REVIEW PAPER ON IMPACT OF DIGITALIZATION DURING COVID-19

MS. ARTI, DR. GIRDHAR GOPAL

Department of Computer Science

Sanatan Dharma College, Ambala Cantt

Email: sachdeva.arti8@gmail.com

ABSTRACT:

The COVID-19 pandemic severely harmed India's and other countries' manufacturing sectors. In India, the impact is causing the various sectors to grow at a negative rate. Many industries were doing well before the epidemic, but they have now been dragged down by it. As a result, it is critical to analyse and cater data on those industries that have been severely damaged by the pandemic. COVID-19 pandemic has affected many sectors like economy, people livelihood, migrant workers, education and banking sector etc. Due to COVID-19, some measures like physical distancing and quarantine has been used, various human behaviors shifted from offline to online resulting in diffusion of digital technology. With the use of digital technology, the situation improves to a great extent. Mostly, every sector shifted their work online to improve their status. This paper mainly focuses on impact of COVID-19 on different sectors and digital initiatives taken by Government as well as various sectors of the country.

Keywords: *Outbreak, Contact tracing, Clinical Management.*

Introduction:

The Coronavirus or COVID-19 pandemic, which began in late 2019 in Wuhan, China, has had a direct and indirect impact on every aspect of life around the world. In India alone, it has affected around 2, 81, 75,044 confirmed cases with a mortality toll of 3, 31,895 till 2 June, 2021 [1].

The emergence of Corona Virus disease (COVID-19) has led the world to an unprecedented public health crisis. Despite relying with some well public health standards, governments worldwide have had different degrees of success in reducing COVID-19's impact. As the pandemic fuels lockdowns, most countries and municipalities are pursuing digital government strategies, many with innovative initiatives, according to the recently launched United Nations E-Government Survey 2020 [2].

Digitalization is the way towards digital business and an essential part of moving towards digital transformation. Digitalization doesn't mean digitizing and optimizing existing processes but reengineering, replacing and increasing business processes for digital business. Different definitions of digitalization are given by various authors. Some of them are:

Author	Definition
Maxwell and McCain	Digital technology takes information and breaks it down into its smallest components. By transforming an analogue signal into discrete pieces, digitalization makes it possible to manipulate information, text, graphics, software code, audio, and video in ways never before thought of, thus its informating, transforming capabilities [3]
Thorseng and Griot	The transformation of existing socio-technical structures that were previously mediated by non-digital artefacts or relationships into ones that are mediated by digitized artefacts and relationships with newly embedded digital capabilities [4]
Machekhina	Digitalization means transformation of all information types (text, sound, visuals, video and other data from various sources) into the digital language [5]

ISBN: 978-81-954645-5-5

Governments around the world have been exploring innovative ways to engage the public and deliver clear, up-to-date information, while working alongside and with stakeholders to decrease the surge in misinformation and disinformation as a result of the pandemic.

They've implemented new tools including COVID-19 information portals, hackathons, and e-services for medical goods delivery, virtual medical consultations, and self-diagnosis apps, among others. Apps for tracking and tracing, as well as apps for working and studying from home, were quickly used in several nations. 94% of companies are doing their businesses on cloud. When they move more data on the cloud anything is being done is to replicate existing services in digital format.

Covid-19 has modernised the way of consumers, as well as businesses, by changing the way people work, shop and spend their free time. Digital technologies, such as delivery applications, online shopping, contactless payments and mobile banking may provide a safe way for both consumers and businesses to deal their day-to-day tasks without compromising their health or safety during crisis. As a result, businesses have to adopt digitized services in order to stay relevant.

Some businesses have quickly adapted the concept of home working and the digitalisation of their services, others have been forced to limit their activity, or even cease it and close down.

When COVID-19 appeared, internet connectivity in the country had been improved by 500% in the past five years, 90% of population has internet access in their homes via their phones, and personal computers.

Impact of Covid-19:

1. **Indian Economy:** The COVID 19 has made a huge impact on the Indian economy. The country's GDP growth is being harmed by the coronavirus-induced lockdown, which is causing considerable disruption across multiple sectors.
    - Restaurant Services: The National Restaurant Association of India (NRAI) which address most of Indian cafes had encouraged its individuals to close down their feast in administrations when the lockdown started which significantly affected the eat ins, bars, bistros and furthermore food conveyance stages, for example, Swiggy and Zomato which confronted drop of 60% in income.
    - Raw materials: Almost 55% of hardware imported by India begin from China. These imports have dropped to 40% because of the pandemic Also China imports 25% of India's automotive part [6].The lockdown has likewise brought about decreased fares of crude materials like natural synthetics, cotton, mineral fills bringing about generous import/export imbalance for India.
    - Textile industry: Because of the discontinuing of activity of material industrial facilities in China, the fare of crude materials like cotton, other texture, and yarn from India has been significantly influenced. The crude material inaccessibility, exhaustion in work power and working capital requirements has brought about diminished requests and buying limits.
2. **People's Livelihood:** Pandemic has been affecting the lives of people on a very large scale. Activities like Border closures, trade restrictions and confinement measures have been preventing farmers from selling and buying their crops, thus disrupting domestic and international food supply chains and reducing access to healthy, safe and diverse diets [1].
3. **Education:** The global epidemic of the COVID-19 pandemic has spread worldwide, affecting almost all countries and territories. The pandemic has also had a severe impact on higher education as universities shut their premises and countries barred their borders in response to lockdown measures. Although higher education institutions have discontinued face-to-face lectures and replace it with online learning. Transitioning from traditional face-to-face learning to online learning can be an entirely different experience for the learners and the educators, which they must adapt to with little or no other alternatives available [7]
4. **Migrant Workers:** Migrants are most vulnerable to urban disasters and epidemics. The first case of COVID-19 surfaced in China on January 30, 2020, and following the out-break the lock down in the entire country was announced on 24th March for a period of 21 days. The challenges faced by these migrant workers were related to food, shelter, loss of wages, fear of getting infected and anxiety. Many migrants lost their lives either due to hardship on the way, hunger, hunger and accident or comorbidity and some even committed suicide [8].

ISBN: 978-81-954645-5-5

5. **Banking Sector:** The Indian economy was already struggling before towards the Covid-19 outbreak, but the epidemic worsened the problem. According to a recent assessment by the RBI (India's central bank), the virus has harmed better enterprises, organisations, and firms which were operating well prior to the outbreak. Banks must now reduce risks and restructure loans using a high risk-averse strategy, reserving bad debts due to a lack of risk appetite [9].

Digital technology initiatives used in pandemic:

1. **Tracking:** Big data and artificial intelligence (AI) have helped a lot to handle Covid-19 pandemic and the tracking of people to check the spread of infection. Various tools like Migration maps which is used to track the location of person whether they come in contact with infected person or not [10].
2. **Screening:** At the entrances to workplaces, schools, and public transportation, people's temperatures are taken. The thermometer data is analysed, observed and utilised to spot growing hotspots and Infection clusters where testing could be started. Also Iceland has launched and asymptomatic people are often tested. Iceland collects data using mobile technologies, integrates these data with patient-reported symptoms and combines with other types of data, such as clinical and genomic data to reveal information about the spread.
3. **Contact tracing:** In the event of an infectious disease outbreak, contact tracing is an important part of the public health response. The goal of this advice is to emphasise the importance of community participation and engagement in the contact tracing process. The information supplied can be utilised alone or in conjunction with other materials that support strategies, implementation plans, or training and capacity-building modules [1].

   Tools used for contact tracing:

   - **Outbreak response tools:** it facilitate all elements of contact tracing activities, from case investigation to identification, listing and tracing of contacts to data management and analysis. They are especially useful for initial localized outbreak response, early cluster investigations, and limited populations. Some may have monitoring dashboards [11].
   - **Proximity tracing /tracking tools:** Proximity tracing tools can help identify contacts by determining when individuals have been in close physical contact with a case, using either GPS position or Bluetooth signals.
   - **Symptom tracking tools:** Symptom tracking tools may be beneficial in the context of contact tracing to aid daily contact monitoring. Through mobile phone apps or SMS technologies, consumers can self-check and self-report indications and symptoms [11].
4. **Quarantine and Self-isolation:** Individuals who have been exposed to or infected with the virus could be quarantined using digital technology. Quick response (QR) systems have been used to fill out individuals' symptom surveys to record their temperature that will be used by authorities to monitor health and control movement. The QR code provides COVID-19 health status certificate and travel pass, with three colour codes indicating low, medium, and high risk. Individuals with green codes are allowed to move freely, while those with red codes must self-isolate for 14 days [11].
5. **Clinical Management:** WHO develops the most up-to-date technical recommendations for clinical management of COVID-19 patients based on continual assessments of new evidence supplied by the worldwide community and first responders [1]. A cloud-based AI-assisted CT service is used to detect COVID-19 pneumonia cases. This technology processes CT images in seconds, differentiating COVID-19 from other lung diseases and speeding up the diagnostic process substantially [11].

Despite the numerous benefits of employing the aforementioned technologies, there are some drawbacks.

ISBN: 978-81-954645-5-5

Tool	**Drawbacks**
Tracking	✓ Could breach privacy ✓ Involves high costs, ✓ Requires management and regulation.
Screening	✓ 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	✓ 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	✓ Violates civil liberties. ✓ Could restrict access to food and essential services. ✓ Fails to detect individuals who leave quarantine without devices.
Clinical management	✓ Could breach privacy. ✓ Fails to accurately diagnose patients. ✓ Involves high costs. ✓ Equipment may malfunction.

Future Scope:

The McKinsey Global Institute prepared a report **" [12]"** to highlights the rapid use of Digital technologies and their value to Indian economy by 2025. The Future perspectives of this report are:

1. Companies that digitise quickly would be considered easier to benefit from India's huge, connected market, which is estimated to rise to 700 million smartphone users and 840 million internet users by 2023.
2. Core digital sectors could double their GDP contribution i.e. from $355 billion to $435 billion, may account from 8 to 10 percent of India's GDP by 2025.
3. Digitalization can improve government services sector and the efficiency of India's job market.
4. Digital revolutions in Indian agriculture can help add $50 billion to $65 billion of economic value by 2025.
5. With teleconsultation and digitised healthcare, India could save up to $10 billion in 2025.
6. It is estimated that e-commerce allows digital retail to increase its share of trade from 5 percent now to about 15 percent by 2025.

Conclusion:

COVID-19 pandemic has pushed the whole world into state of uncertainty. The whole world is trying to measure this pandemic. It is obvious that we are trying to adapt the changes in our life that may be permanent. The entire world has

ISBN: 978-81-954645-5-5

moved towards the digital technology to overcome the impact of COVID-19. Companies shift their work remotely and allow their employees to work from home. Students are directed to attend their classes online so that their learning doesn't affected in any way. Restaurants take their orders online and provide home delivery. The important learning we have learnt so far is digital initiatives like contact tracing, tracking, screening for infection and clinical management plays a great role to inspect and handle COVID-19 situation.

References

[1] "Corona Virus Disease Report," (WHO) World Health Organization.

[2] " News: COVID-19 and the role of digital technologies for achieving the SDGs," UNCTAD.

[3] M. T. and M. L., "Gateway or gatekeeper: the implications of copyright and digitalization on education," Commun. Educ 46(3), pp. 141-157, 1997.

[4] T. A. and G. M., "Digitalization as institutional work: a case of designing a tool for changing diabetes care," Inform. Technol. People 30(1), pp. 227-243, 2017.

[5] M. O., "Digital of education as a trend of its modernization and reforming," Revista Espacious 38(40), pp. 26-31, 2017.

[6] D. K. K. Das and S. Patnaik, "THE IMPACT OF COVID 19 IN INDIAN ECONOMY – AN EMPIRICAL STUDY," International Journal of Electrical Engineering and Technology (IJEET), pp. 194-202, 2020.

[7] S. Pokhrel and R. Chhetri, "A Literature Review on Impact of COVID-19 Pandemic on Teaching and Learning," Higher Education for the Future, p. 133–141, 2021.

[8] R. Bhagat, R. R.S., H. Sahoo, A. K. Roy and D. Govil, "The COVID-19, Migration and Livelihood in India," ResearchGate, 2020.

[9] A. K. Mishra, A. Patel and S. Jain, "Impact of Covid-19 Outbreak on Performance of Indian Banking," International Semantic Intelligence Conference, pp. 25-27, 2021.

[10] S. Whitelaw, M. A. Mamas, E. Topol and H. G. C. V. Spall, "Applications of digital technology in COVID-19 pandemic," Lancet Digital Health, p. 2: e435–40, 2020.

[11] "Digital tools for COVID-19 contact tracing," World Health Organization, pp. CC BY-NC-SA 3.0 IGO, 2020.

[12] "Digital India: Technology to transform a connected nation," Mckinsey Global Institute.

ISBN: 978-81-954645-5-5