International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 02 | Feb - 2021 ISSN: 2582-3930

Impact of digital surge during Covid-19 pandemic

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Abstract

The Covid-19 pandemic has led to an inevitable surge in the use of digital technologies due to the social distancing norms and nationwide lockdowns. People and organizations all over the world have had to adjust to new ways of work and life. We explore possible scenarios of the digital surge and the research issues that arise.

An increase in digitalization is leading firms and educational institutions to shift to work-from-home (WFH). Block chain 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 presenters. Workplace monitoring and techno stress issues will become prominent with an increase in digital presence. Online fraud is likely to grow, along with research on managing security. The regulation of the internet, a key resource, will be crucial post-pandemic.

Research may address the consequences and causes of the digital divide. Further, the issues of net neutrality and zero-rating plans will merit scrutiny. A key research issue will also be the impact and consequences of internet shutdowns, frequently resorted to by countries. Digital money, too, assumes importance in crisis situations and research will address their adoption, consequences, and mode. Aspects of surveillance and privacy gain importance with increased digital usage.

Key Words: Digital surge, Gig work, Internet governance, Digital payments, Post-pandemic

1. INTRODUCTION

At the end of May 2020, at the time of the writing of this study, more than 200 countries and territories worldwide were infected with the Corona virus pandemic. In this, many urban areas and even rural areas were included.

Lock-downs have been implemented with the spread of the pandemic in almost all nations, shutting down activities involving human gathering and interaction, including universities, schools, markets, churches, workplaces, airports, and train stations. The lockdown has resulted in most people turning to the internet and internet-based facilities from home to connect, interact, and continue their work duties.

Compared to pre-lockdown stages, internet providers have seen a 40 percent to 100 percent increase in use. Platforms for video conferencing such as Zoom have seen a 10-

Fold growth in use, and content delivery services such as Akamai have seen a 30% rise in content use. A 100 percent rise in internet traffic has been seen in cities like Bangalore.

The lockdowns across countries, with significant shifts in use habits and use behavior, have contributed to a growth in the use of information systems and networks. With meetings going entirely online, office work spreading to the workplace, with new evolving work habits, workers are transitioning to new "normal's". Most organizations, whether in industry, culture, or government, have come across these shifts.

The changes also came unexpectedly, with hardly any time for organizations and individuals to plan, prepare and introduce new arrangements and arrangements; they had to modify, try, explore, and find forms that had not existed before.

While the pandemic is now receding and stabilizing in some countries at the end of May 2020, in many other countries it is still on the rise, with severe risks. In most nations, experts are wary of the risk of re-emergence of the disease outbreak, and that lockdown standards should be cautiously and steadily relaxed with social isolation at the centre of the new normal.

It is in this sense that we see the use of information systems for some time in the near future to proceed in the same vein as during the lockout. In this boom in the use of information technology before and after the pandemic, we discuss the potential scenarios. Our evaluation of these results shows that a digital transition has taken place.

2. Scenarios and research issues of the digital surge

We address some of the most pressing issues regarding the post-pandemic digital surge in this chapter. The numerous directions on which IS research can concentrate in relation to impacts on technology are exposed by these themes.

Figure 1: eCommerce Sales chart

2.1. Increasing digitalization

If the use of video and audio conferencing technologies grows dramatically, to prepare for the boom, companies can scale up their technology infrastructure. This will lead to increased bandwidth expansion investments, network equipment, and Education is another field in which there is a drastic change to the online transaction mode. Schools, schools, and universities around the world have moved their classes to video conferencing platforms like Zoom and Google Meet since the beginning of the lockdown. Asynchronous networks such as edX and Courser have also seen a spike in enrollment along with these synchronous modes of teaching. For the next academic year, some institutions are now switching entirely to the online mode, with the exception of sessions that involve a physical presence, such as the University of Cambridge in the United Kingdom and the California State system in the United States (New York Times,2020).

Cloud, Internet-of-Things (IoT), Block Chain (BC), Artificial Intelligence (AI), and Machine Learning (ML) digital transformation technologies constitute a big part of what companies are adopting as part of their transformation initiatives.

The technology of the Block Chain (BC) provides an opportunity to establish safe and trustworthy frameworks for knowledge management. A transition to the digital domain is witnessing a seduction and healthcare facilities, BCs allow a way to protect and authenticate licences, health records, medical records, and prescriptions. Research on the design of such systems will become essential, along with preserving their ease-of-use and usefulness. Another challenge is that of developing structures that work with smart contracts, how contracts are validated, how these contracts are designed with multiple agents participating in a complex process chain, and how contract-related arbitration is managed. Additionally,

In terms of what needs to be encrypted and exchanged (such as for authenticating news and information sources), IS research can point to regulatory aspects of BCs and how protection would be handled. For example, government demand for access to private keys to display surveillance and monitoring blocks versus privacy and security from persecution requirements.

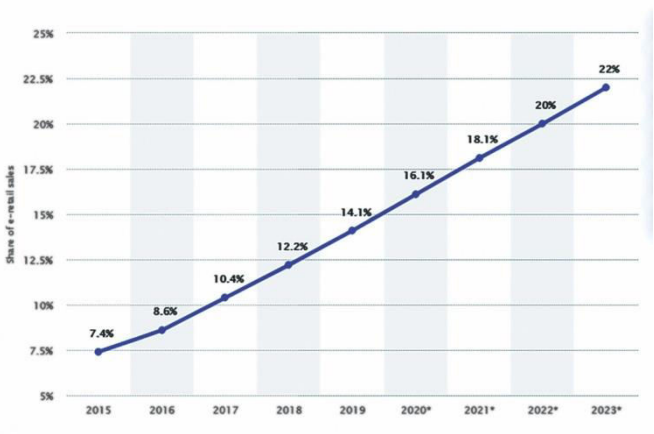

Figure 2: Growth of Email in pandemic

2.2. Work-from-home and gig workers

The gig economy is powered by online networks on an ad hoc, short-contract, and often informal basis that recruit employees. Umber and Airing worldwide and Ola and Swingy in India are well-known examples of these. Since the wide availability of smart phones from 2010 onwards, these networks have evolved enormously. Jobs working by these platforms suffered heavily during the lockdown, as demand for their services, taxi rides, rentals, or skills work, vanished (Bhattacharya, 2020). Furthermore, because there were no minimum wages for these jobs, their salaries fell drastically.

In the post-pandemic case, the gradual return of gig economy employees is likely to occur in the short term as manufacturing and service companies return to their old operations. However, we expect that the gig economy will flourish in the longer term as the danger of infection and spread recedes. The WFH culture will also push this.

In IS studies, work-from-home and gig work received publicity through telecommuting subjects, digital nomads, and virtual teams. One main challenge is the distribution and collaboration of work, across and within departments, and across projects.

In the post-pandemic world, as the numbers of WFH and gig workers grow, this problem will face an increase in size and significance. Research should concentrate, among others, on aspects of the design of work standards, work contracts, trust-building, and team building.

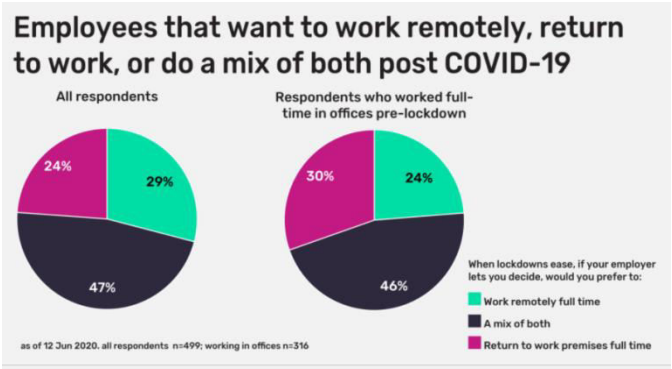

Figure 3: Remotely work survey

Telecommuting and virtual team study (Belanger, Collins, &Cheney, 2001; Morrison-Smith & Ruiz, 2020) in IS literature has a long history. Issues include the meaning of distance, whether temporal, spatial or cultural, and the psychological needs of staff, the help and design of technology for this form of job, and many others. For the post-pandemic era, this research is important.

In the post-pandemic environment, we expect the "dark side" of virtual teams and dispersed work to also take on significance. Substantive techno stress-related problems occur in these circumstances, particularly work overload and presenters. Study would have to discuss problems of collaborative work design, assessment, team success and motivation, tension, and the problem of continuous learning.

2.3. Workplace monitoring and techno stress

Another element of digital use by large parts of the working population is that of daily monitoring of the workplace and continuous on-the-job. Many operating from home using video conferencing technology are under constant scrutiny and "hyper-focused" are all interactions. Mobile technology makes contacting and finding employees at any moment simpler for managers and executives, recognizing that they can be contacted at all times. While there is early anecdotal evidence that this has contributed to a productivity boost, it has also led to increased techno stress where workers need to learn new technology, Be available at almost all times for work, remain all the time with digital devices, and cope with multi-tasking.

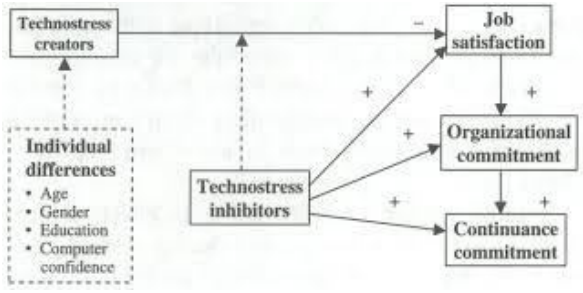

Figure 4: Techno stress inhibitors

Post-pandemic, it is likely that no-digital hours will be expected by workers' organizations, where they will find relief from the relentless job pressure. Research can address the issues of job equity, equilibrium, and stress management.

2.4. Online fraud

We are now seeing an increase in online fraud, scams, intrusions, and security breaches amid the boom in the use of digital technology. The pandemic has created an unstable scenario that encourages fraudsters to take advantage of the crisis by extracting money or information or creating vulnerabilities. Many consumers, some for the first time, are starting to rely on digital services extensively and are becoming targets for fraud and scams. Organizations and governments are aware of this danger and take countermeasures-for example, some governments have taken a hard stand against educational Zoom sessions, forcing the provider of the platform to improve protection.

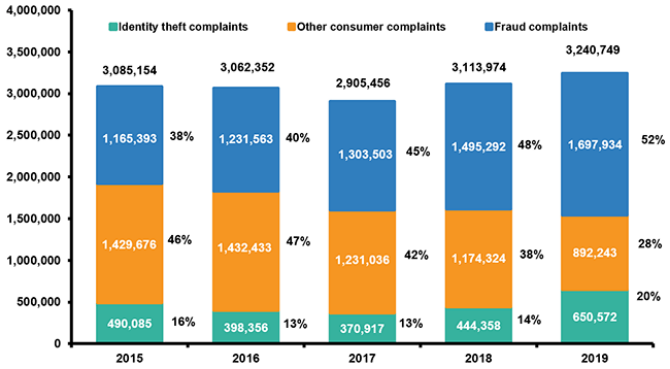

Figure 5: Complaints in pandemic

It is probable after the pandemic that these scams and frauds will raise in severity. Huge protection arrangements, along with comprehensive information campaigns by government agencies, will be enforced by organizations. Innovations in defense and companies providing security services will increase. Work is likely to concentrate on security management, analyzing the causes of breaches and their economic and social losses.

2.5. Internet access and digital divide

In the post-pandemic scenario, information technology, and especially the internet, will remain key, where innovation will drive the surge in usage. The management and control of the internet itself would be a crucial feature of this boom. Although the internet is a global resource and its protocols and functionality can not be regulated by any government, its local access and availability remain an in-country problem. Some nations, for certain reasons, have limited access to the internet during the pandemic.

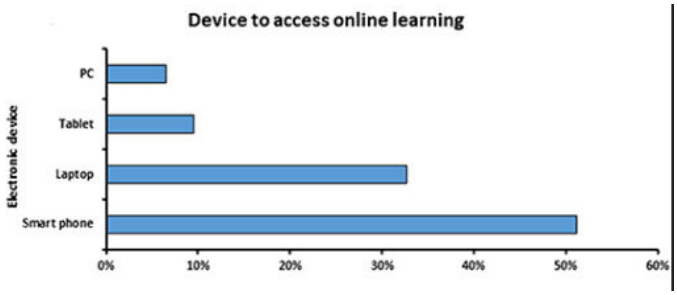

Figure 6: Devices to access online learning

After the pandemic, control of the internet will become important as it will remain a policy tool for governments. They can intercede on tracking, management of bandwidth, surveillance, intermediary accountability, and e-commerce aspects.

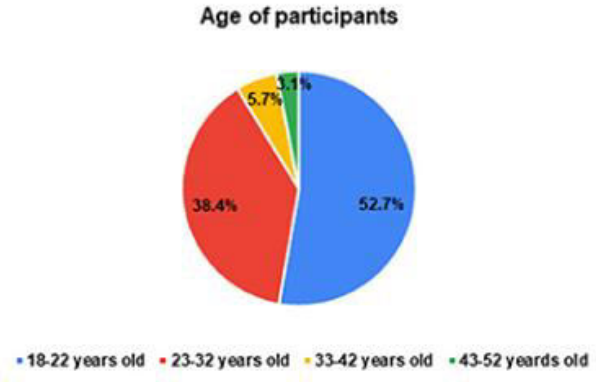

Figure 7: Age of participants

The pandemic has brought the world to a situation where complete isolation is faced by those not connected to the internet. New routines require access to the internet for most facilities, with strict social and physical distance measures in place.

2.6. Internet governance: net neutrality and zero-rating

For different purposes, heavy use of the internet during the pandemic has increased the data requirements of citizens. With a major digital divide in communities, the debate on zero-rating proposals has been renewed by this rise in the demand for Internet data.

Zero-rating plans allow businesses to allow consumers, without having to bear data charges, to access data from their sites and services. This is generally not strictly allowed since it contradicts the fundamental principles of net neutrality, where the same priority and cost must be granted to internet traffic.

For example, India has an outstanding record of controlling zero-rating plans. Although the government did not allow such proposals to be enforced, the Indian Telecom Regulatory Authority (TRAI) agreed in the aftermath of the pandemic to allow data and voice charges to be waived for some websites. The list consisted mainly of places relating to COVID-19, such as the World Health Organization and the Ministry of Health and Family Welfare of India. Some private players were also included in the list. The primary objective was to allow individuals to access information related to COVID-19 across all socio-economic levels.

2.8. Digital money

In the post-pandemic scenario, digital payments and digital currencies are likely to play a key role. Since digital payments are contact-less, governments will promote them and will possibly see a spike. The gig economics and WFH circumstances will also improve this.

Conventional payment media

	Prepayment card	Smartcard	Pseudo-cash	Digital cheque
Example	Library copier card	Mondex	Digicash's Ecash	PayPal
Transaction medium				
Intermediation cost?	No	No	Yes	Yes
Micro-suitable?	Yes	Yes	Yes	No
Settled instantly?	Yes	Yes	Yes	No
Payer anonymous?	Yes	Partially	Optionally	No
Verifiable?	No	No	Optionally	Yes
Peer-to-peer?	No	Yes	Yes	No
Offline?	Yes	Yes	No	No
Positive inventory?	Yes	Yes	Yes	No
Risk factors	Minimal (low inherent value)	Forgery	Fraud; double spending	Fraud
Defensive solutions		Security hardware; updates; policing	Security software; format updates	Security software; format updates

Table 1: Conventional payment media

There are two distinct digital money-related phenomena that during the pandemic helped the war. Second, it was believed that banknotes and coins contained the virus, and that 'dirty money' was preferred to digital payment. Online distribution services also allowed clients to make payments via digital payment systems such as a credit/debit card or mobile payment, with government mandates in many parts of India. This is likely to lead to a rise in the use of digital payments, leading to work on the dissemination of digital payment technologies. Second, there was a lack of jobs during the lockdown, and governments supplied assistance through payment applications and digital payment modes.

2.9. Surveillance and privacy

During lockdowns, surveillance and privacy issues are gaining popularity with digital use. Commentators, such as Yuval Harari, have written about the potential for 'under the skin' state surveillance as policymakers rely on digital means to track the pandemic's spread. As several governments have begun using mobile applications to track and track infected individuals, civil society has begun to track their contacts.

	Coworker		Respondent		Total	
Theme	*n*	%	*n*	%	*n*	%
Surveillance is acceptable	12	19	4	5	16	11
Should work at work	2	3	4	5	6	4
Applied fairly	2	3	4	5	6	4
Necessary	11	17	15	18	26	18
Part of life	18	28	7	9	25	17
Not secret	5	8	8	10	13	9
Used passively	2	3	1	1	3	2
Does not invade privacy	3	5	5	6	8	5
Not excessive	2	3	16	20	18	12
Done only for cause	7	11	18	22	25	17
Subtotal	64	44	82	56	146	100
Surveillance is problematic	2	4	0	—	2	2
Linked to fewer rewards	4	8	1	3	5	6
Invasion of privacy	11	22	6	17	17	20
Must modify behavior	11	22	4	11	15	17
Want more trust and freedom	8	16	7	20	15	17
Power inequity	1	2	1	3	2	2
Increased stress	1	2	5	14	6	7
Unclear policy or reasons	2	4	1	3	3	3
Benefits company exclusively	0	—	1	3	1	2
Dislike surveillance	11	22	9	26	20	23
Subtotal	51	59	35	41	86	100
Surveillance should be balanced	1	9	10	91	11	100

Table 2: Surveillance

Organizations have addressed questions about privacy and state surveillance. These measures of tracking populations with automated means for epidemiological reasons are likely to continue and become widespread after the pandemic. While privacy and surveillance issues are valid and need to be addressed, these digital tools are the most secure and successful way to monitor the spread of diseases.

3. Spotlight: The Digital Advantage: In the face of adversity, organizations that implement digital solutions have greater resilience and a leg up on the competition that will enable them to recover more quickly and pivot from protection to development..

3.1 Efficiency advantage: They use digital technology to streamline operations and automate manual processes, resulting in higher speed, less duplication and more emphasis on activities that generate revenue.

3.2 Productivity advantage: Their workers have already been set up to operate remotely, so their emphasis is on using interactive technologies and instruments to improve productivity for the staff and preserve the culture of the company.

3.3 Security advantage*:* In the present world, they are better equipped for and more resilient to the emergence of cyber threats.

3.4 Customer advantage: To track changes in demand and discover evolving consumer needs, they mine customer data.

3.5 Agility advantage: To make decisions quicker and move on them faster, they exploit data-driven insight. At any point, they have built-in cultural versatility to adapt or alter course.

Remote Work: According to Owl Labs, before the pandemic, only 30% of U.S. staff worked remotely 100% of the time. The switch to operating remotely full-time was a shock to the system for the other 70 percent, including the 38 percent of the overall U.S. workforce who only worked on-site, figuratively, and in some instances, very literally, when user demand surpassed system bandwidth. But the silver lining is that digital communication is improving in leaps and bounds, with such a high percentage of the working population now remote, both in terms of the complexity of the technologies to enable it and the level of comfort of employees with it.

Digital Content Consumption: In order to satisfy their entertainment needs, homebound customers are moving to digital service providers. Because of the corona virus, 51% of internet users worldwide are watching more shows on streaming platforms, according to Statistic numbers. 16 million new signups were seen by Netflix alone for its Meanwhile, several film studios have been promoting new releases to captive markets with streaming platforms early on.

Digital Health Solutions: To ease some of the burden put by the corona virus, most of America's healthcare system has gone digital. Telemedicine and remote diagnostics help patients get medical advice and diagnoses at home so that they do not have to visit the doctor's office or hospital, and 3D printing is used to speed up the manufacturing of essential medical supplies, such as PPE. Information-sharing is the best preventive medication in the absence of a vaccine or proven treatment. To effectively slow the spread of COVID-19 in East Asia, digital communication tracing has already been utilised.

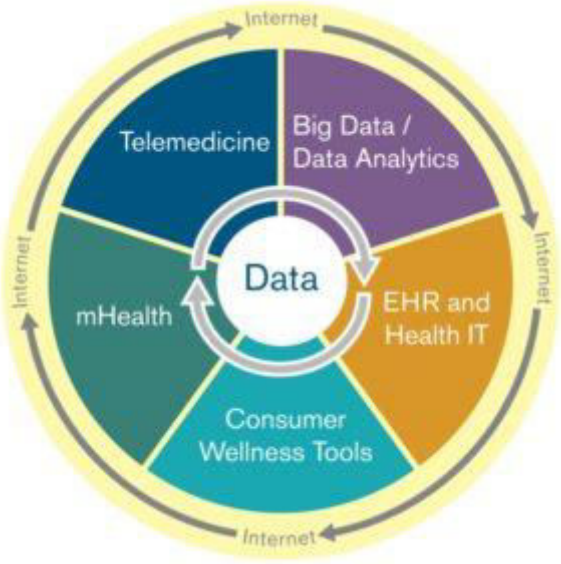

Figure 8: Internet impact

3. CONCLUSIONS

We understand that a pandemic can have severe consequences, including changing the political contour of the world, destroying empires, and creating nations. For the Covid-19 pandemic, we envisage a dramatic shift in digital usage with impacts on all aspects of work and life. How this change plays out remains largely dependent on our responses to and shaping of the emerging trends. In this paper, we have outlined what we see as some key trends and research issues that need to be examined urgently. They will have substantial consequences in the future.

ACKNOWLEDGEMENT

It gives me a great pleasure to present my research paper on “Impact of digital surge during Covid-19 pandemic”. I would like to express my deepest appreciation to all of the teachers who have supported me in the study and given sufficient guidance.

I'm very thankful to the Director of the Department. If this acknowledgment is unfinished, I would like to mention a sense of appreciation to our respected Principal, who gave me the direction, support and all the facilities available to work on this initiative.

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