Opinion

Social Cost of Digital Revolution: Challenges ahead

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There has been a significant absorption of digital technologies in our communities over the last decade. The side effect(s) of these technologies as a direct measure of systemic failures such as data breaches, security threats are being addressed by the regulating agencies around the world. The secondary effects of digital revolution which is responsible for creating undesirable social and behavioural issues in the communities are harder to comprehend. There is a lack of accountability among governing agencies and corporates to take ownership for these outcomes. Our track record as a community to introduce new technologies into the society and manage their long-term effects has been less than desirable. This review recommends that the technology promoters and regulators actively look at ways to introduce robust regulation measures for better accountability on the social impact of ongoing digital revolution.

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The Digital revolution is here and is happening irrespective of the speed at which the society or an individual is accepting these developments in their lives. Funded and driven by global corporations, lean and smart start-up groups, collaborations among hardware, software and infrastructure sectors, the pace of development of these technologies and speed of implementation has been remarkable. The digital revolution has been a blessing for the society by addressing some of the perennial problems across communication, commerce, healthcare and governance through innovative solutions to support an exploding population and user base.

The unusual added bonus here is the unprecedented adaptation of these new technologies in the market place. Technologies such as solar power, electric cars and medical alarms have taken decades to breakthrough barriers of the market place and for communities to appreciate and adopt them. In stark contrast, digital technologies are on a different platform. According to 'Statista' (Statista, 2018) the number of mobile applications available to download in March 2018 was at 3,600,000; an exponential rise from a meagre 30,000 in March 2010. These products/services can locate your missing phone, teach programming to students, monitor your health, allow online banking, video calling and the range of applications are limited only by one's imagination. We now have a situation where business growth and economy driven technologies are barging into the society with their offerings at a phenomenal rate, while the associated risks and long term effects are being uncovered by the communities' at a much slower rate.

This decade has seen a phenomenal growth of products and services developed by start-up companies with limited resources rushing their innovations to the global markets. Their efforts have been greatly supported by easy access to global open market platforms for rapid product launch into the society through internet and mobile networks.

Like every other technology in the world, these developments have created new dilemmas in our society. At the primary level, there is a direct association between a product or service and its effect on society. Recent incidences of data privacy breach by big multinationals, identity thefts, data breach of biometric information, security threats to the governments through wiki leaks, ongoing hacks of banking systems and ATMs fall into this category. Here we can co-relate the system failure with a company or product. In most situations, as a community we have gone too deeply into the technology adoption process to turn off or turn back from these developments. Our only hope and option is to make them more robust and address the new issues as they arise. Most of the corporations and governing agencies are working

towards bringing in new versions of software updates, bug fixing patches, regulations and so on. Looking back, how did we decide that these technologies are ready for the market?. If we had not rushed to adopt these technologies so quickly as a society, we might have given time for better understanding, testing and building more reliable systems in the first place. We could have developed robust regulatory systems to reduce risks within the banking sector, e-commerce and issues of national, public and private security concerns.

The risks at a secondary level with these technologies are even harder to comprehend and address. It is about how people use these products or technologies in a way that affects others and communities at large. It is about, how individuals/groups can use or manipulate these products for selfish gains. Typical outcomes could include, misuse of social media for cyber bullying, spreading religious hatred, creating mass hysteria on a racial abuse or road rage incident, political and lobby groups to progress their vested interests, etc. These activities fly around the boundaries of legality depending on the country and its current setup. From the global perspective, in most cases they are deemed as unethical or immoral.

At another level, there is an ever increasing body of evidence in the public domain to link the use of digital technologies behind many of the terrorist attacks in the recent years. They are used for planning, communications, co-ordination among teams, triggering explosive devices, engaging GPS guidance to track the targets and so on. At a slightly lower level of crime, we have digital technologies aiding drug distribution, robberies, kidnapping, counterfeiting and money laundering activities and so on. Our law enforcement agencies across the world are struggling to cope with speed and agility of technology adoption by criminal minded groups in our society. We created this situation in our communities with a tunnel vision thinking about the benefits of digital revolution and its economic windfalls.

When it comes to a physical product like a toaster, it needs to meet international/national safety standards before it can be launched into the market. It could be electrical safety, temperature hazards, warnings on conditions of use/abuse, user education needs and so on. What measures do we have in place to check the effects of new mobile applications or services that are being launched into the market place every day?. How do we ensure that these new technologies provide adequate safety to our communities covering various age groups, skill levels, and literacy levels of the users to understand the terms and conditions of legal agreements which service providers are routinely asking users to 'accept'?

Our current practices of introducing digital technologies/services into the society calls for a closer examination on how we assess the risks associated with them and how do we dispense system level controls for long term sustainability. There is a growing concern among medical professionals about the risks of these un-regulated health check apps on mobile devices available to the public and calls for improved accountability and regulations (Boulos et al., 2014). The rate of new technology introduction through digital platform is so rapid that even the people and agencies responsible for managing these systems have not had time or resources to understand their long-term implications. These technologies have a global reach and operate beyond the conventional boundaries of regional or national governance. While, there are reasonably well laid out regulations to protect people from physical injuries caused by machinery and equipment's, work or sports related activities, the damages from technologies leading to social or psychological issues are in their infancy.

In this era of digital revolution, data is in abundance. We are still evolving as a society to define the boundaries of 'Public' and 'Private' data. As a community these are grey areas, with evolving zones of acceptable limits for public and private information. We need to address issues around who owns our personal data and how we can manage and trust the service providers not to compromise the access to that information. As a society, we are in a state of transition across these issues. One segment of the society is concerned about their lack of digital connectivity with the rest of the world, while the other with full range of data connectivity is worried about data breach and privacy. The role of internet in our education system is a classic example of this dilemma. As a community, we want to embrace the digital revolution into the classrooms to enhance the quality of learning. At the same time, we are uncomfortable with the way it brings access to adult/inappropriate content for young minds or dealing with behavioural issues due to social media influence around the classrooms.

As a society, our track record for managing the impact of technology on our communities has been quite inadequate over the last century. While national governments and international agencies use GDP, quarterly exports, and foreign reserves as a measure of economy or nation's health, they do not take into account the cost we have to pay as a society to address the new emerging failure modes. How do we quantify the cost of healthcare support needed for our communities due to the smog we have created by allowing uncontrolled industrialisation in the mega cities?. How do we account for the cost of shutting down nuclear reactors we have built up over the years in a safe way for future generations? Based on a recent review (Furuya et. al., 2018), 'Asbestos' exposure causes an estimated 255,000 deaths annually in our world and according to the European Commission, it costs about 4 million EUR per cancer death as a measure of 'Value of Statistical Life'. This doesn't take into account the human sufferings and loss to the families from such incidents. As a society, how did we fail to see the effects of pollution from automobiles

globally? While our accountability and responsibilities were shifted and moved among various groups, the damage to the environment, the cost associated with healthcare and traffic management etc. were put down as a side effect of this evolution. As a society, we forgive and forget the role of past administrators and regulatory agencies for their inaction and passed on the burden of dealing with these mishaps to the next generation.

While, we expect the governments and regulatory agencies to manage the implications of new technology on our communities, with the digital revolution, new failure modes are appearing at a pace much faster than governments or public institutions can cope with. It is not uncommon for governments and regulating agencies to expect the industries to self-manage/develop a standard which is ethical and sustainable. Many a times this could be driven by their lack of understanding of the technologies or resources. The end result of this approach at the community level has been quite evident. Our current generation is coping by wearing masks for breathing air while children are playing in smog filled playgrounds. We are paying the price of pesticides in our food supply. The benefits of these technologies have become dubious over the decades. When we look at the way we introduced nuclear power into our society, the risks posed by these technologies on our communities were foreseeable. We collectively failed to introduce / regulate their adoption in a safe manner for long term sustainability. We lacked the vision to create a cohesive strategic plan to manage the implications of these technologies on our society.

As a society, we are constantly working towards building systems and processes across the globe for better quality of life. Human rights, Economic equality, Equal employment opportunity, Gender equality, Political equality, Access to healthcare, Education and so on. At a holistic level, we believe all the programs and developments on which we are currently working on are meant to make this planet a better place for everybody. The issue here is not to undermine the benefits these technologies have brought to our community. It is more about our ability to understand and look at the systems we have in place to control their growth

Challenges ahead are clear, 'How do we introduce new technologies into our communities in a sustainable and inclusive way'. If we choose to ignore and leave these issues to the corporates to address them, we will be responsible for creating the next crisis after global warming. Collectively, as a community we need to take a hard look at the way we introduce new products and technologies into society. We need to establish mechanisms for assessing medium to long term effects of these technologies at the global levels beyond economic, regional and national interests. We need to define the boundaries of 'unacceptability' that a product/service could breach in our societies. We cannot expect businesses to self-regulate the implications of their inventions and by its nature it will introduce the issues around conflict of interest of profit driven growth models. We need proactive and forward thinking civic minded technical/social agencies at the global helm to be accountable for our communities' long-term interests and be inclusive in their approach to the distribution of benefits to the wider society.

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