

Excessive Technological Dependency

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Introduction

There is a name that is used among individuals describing those born after 1980. It is called “Digital Natives” (Palfrey & Gasser, 2008). These digital natives were born into society when technology and digital systems were in heavy use. This generation is mundane to the rapid evolution of technology and can quickly learn how to operate it. The simplicity of technology has created a life that many individuals rely heavily upon. We expect that our lights in our home will come on with the flip of a switch and our vehicle to start with the turn of a key. However, technology fails and in many cases when that occurs, we tend to react negatively. Does this account for the fact that we depend on technology too much? This paper will address the idea of excessive dependence upon technology. We have transformed from a society that was built on trust, loyalty, and hard work to one that stands in line for the latest iPhone to be released to the public. We will discuss the history of technological evolution in order to understand the basis behind technological change and offer positive and negative attributes of technological evolution behind the expansion of society’s excessive technological dependence.

History of Technology

Human life is not new to processes of change. In science, we are taught at a young age about the concept of evolution. Even animals evolve over time to adapt to their surroundings and habitat. The history of technological change and evolution began as early as in the nineteenth century and most likely even before that time. Many consider that phases of technological change in society can be compared to that of the evolutionary process evident in other biological figures of life. Author, Joel Mokyr (2000) expressed

comparisons in his article on the evolutionary process of technological change referring to it as the process as evolutionary epistemology.

All evolutionary process are composed of a system that includes the history that is built within the population as well as the “evolutionary entities” that take place in the process which impose an impact upon the population. Mokyr (2000) compared epistemology to biological evolution stating, “In biology, the underlying structure is the genotype, while the manifested entity is the phenotype. In evolutionary epistemology the underlying structure is the knowledge base whose elements determine the traits of cultural entities” (Mokyr, 2000, pp. 52-53). Technology information changes and matures through techniques. These techniques are stored within storage systems, individuals, or organizations. As compared to biology, specifically genetics, a technique of information is somewhat analogous to the gene in the human body because the gene stores information that make up the individual in which it resides. Mokyr points out the difference indicating that a gene replicates and copies information, while techniques of information do not (p. 64). When techniques of information are relayed to other individuals, this information is not copied like the gene. It can be comprehended differently and can result in a different outcome. Mokyr explains that the evolutionary process of technology change can be viewed like the biology process in that as society changes and individuals gain additional knowledge; items of information go through an evolutionary process to create a technological evolution.

Mokyr’s ideas presented above represent more formal observation illustrating how technology has evolved over time. Other authors and technical experts agree with Mokyr’s observations and state that technology changes in a response to culture. Cultural

maturation and gain of knowledge allows individuals to think creatively on how to improve life in order to make it easier and more enjoyable to live. The life expectancy of technology is not pre-determined; it depends largely on culture and the population that use it. As culture changes, the technology must adapt; after all technology is developed as an easier alternative to a process, technique, or other aspects of human life. Technology must keep up with culture and it must maintain its purpose to make processes more effective. According to Burns, “Technological products are hardened history, frozen fragments of human and social endeavor” (2000, p. 300). Therefore, technology depends largely upon social and cultural innovation. In essence, technology evolves and changes because we as humans demand it and have the knowledge and means to do so.

To discuss our excessive dependence on technology, a detailed example will be provided in order to portray how our dependence upon technological innovation is not always such a good idea. Even though, technology has profoundly led to a more effective world, it can all tumble down like a large tree to the voice of “timber”.

Mobile and Wireless Technological Innovation

Mobile technology has grown over the years into a major dependence factor in society. Thanks to wireless network capability, mobile devices can now purchase items, connect to the Internet, etc. Access to wireless networks has increased across all parts of the nation and in various types of organizations and companies. According to technical experts, “Wireless networking is specifically appropriate for situations wherein installation of physical media is not feasible and which require on-the-spot access to information. Wireless networking makes it possible to have access to both voice and data” (Malladi & Agrawal, 2002, p. 144).

For example, wireless networks and technology are used in real estate agencies to provide access to databases listing homes and other real estate property for sale. From these listings, the real estate agent can compile a list of homes to show to potential buyers. Airports throughout the nation employ the use of wireless network enabled devices to scan baggage and luggage, which is then wirelessly communicated with the Airports host computer for processing (WAP) (Malladi & Agrawal, 2002).

Wireless networks have also provided access to communication data systems called a wireless LAN (WLAN) system. Hospital and large healthcare organizations use these WLAN systems to improve efficiency of various hospital tasks. The implementation of this wireless network system provides a "...fast and accurate transmission of patient information and can send timely alarms to key personnel for the patients' well-being" (Malladi & Agrawal, 2002, p. 145). WLAN systems in hospitals also allow physicians and other healthcare professionals to input patient information into a system that can be updated from anywhere within the organization. This improves the accuracy of maintaining patient records, as well as the speed. Physicians and laboratory scientists can order tests and procedures and technicians can perform the test and send the results back to the physician in order to relay to the patient. All of this is done over these WLAN systems to allow communication of information throughout the entire agency (Malladi & Agrawal, 2002). As you can tell from the discussion above, the use of wireless technology and mobile devices has made life much easier, not only for consumers but also for various workplaces and institutions. These positive characteristics of wireless technology are great, but there are negative consequences associated with the technological advancement of wireless technology.

Currently, wireless technology is used like a well that will never run dry. Like lots of other luxuries in life, it must be maintained so that these features can remain accessible to the public. The increase in the use of these devices and use of frequency for wireless capability has created problems that the nation will need to address in order to continue its use. Wireless devices use bandwidth to operate wirelessly over the Internet. When using mobile devices to download songs, videos, make purchases, and to complete any other Internet capable process, wireless bandwidth is used (Austin, 2011).

Wireless bandwidth is not a renewable resource. To continue the use of mobile devices with wireless capabilities, it is important for the nation to understand how soon wireless bandwidth can run out. This bandwidth issue is growing more and more each year thanks to technological innovations. Even social networking sites like Twitter, Instagram, and Facebook use bandwidth for consumers to access. Franchisers who supply these mobile and wireless capable products as well as the wireless industry and the government are aware of this problem (Austin, 2011). According to technical experts, the problem simply is, "...between the physical limitations of wireless and the available spectrum that the wireless carriers have to work with, the wireless pipes aren't big enough to transport all of the information (Austin, 2011, p. 55).

The public depends upon these mobile devices including tablets and smartphones throughout their day and relies on wireless networks to connect to their devices without hesitation. Much of this is a result of the dependence put upon wireless networks and technological devices that make life much simpler. Although we see how technology has been very beneficial in many areas of life and the advantages wireless technology brought to the world, we cannot assume that this technology is without blemish. As

discussed above, there is the possibility of a network breakdown in regards to wireless networks that will greatly affect numerous operations within many organizations and work environments, as well as our personal lives.

Excessive Dependence upon Technology

The possibilities of technology are amazing. There are so many areas where technology has been profound in leading towards a brighter future for tomorrow. It is no wonder why humans depend upon technology so much. The outlook and public acceptance of technology has expanded and grown into dependence. For example, prior to the technological innovation in medicine, patients looked to the doctor to improve their health condition, relying upon their knowledge and expertise. However as society advanced, patients trust in not only the physician but also various technological apparatuses to continue to carry out their life. Think of implantable pacemakers. This small device exists to repair the damages induced upon the body's natural electrical circuit system as a result of an injury or accident. The pacemaker "...provides the interface between the brain and the muscles so that movement can again become possible" (Erlen, 2003, p. 311). Because an individual who once had lost the ability to move and function normally can now once again make use of these normal bodily functions, there is an increase in the quality of life. Regaining these once normal functions, reestablishes an individual's self-worth and sense of well-being. Increasing the quality of life is important for all individuals because it is "...a subjective assessment of one's existence that encompasses the physical, emotional, spiritual, financial, and social well-being of the individual" (Erlen, 2003, p. 311).

Another small example of technological dependence can be seen in education. Students who attend colleges not located in their home country must adapt to the college and learn the basics in order to be successful students. It is important that visiting Hispanic college students attending college in the states must know the basics of the English language in order to understand instructors and complete assignments. Second language educational experts argue that, “The best way to learn a language is in interactive, authentic environments. Computer technologies and the internet are powerful tools for assisting these approaches to language teaching” (Wang, 2005, p. 39). At a certain U.S. college, a study was conducted in which an e-mail system was designed between U.S. students in an intro Spanish class and Hispanic students in an intro English class in order to allow for weekly correspondence and student development in the class. The study concluded that this techno system allowed for not only increased motivation and interest in second language studies, but also improved cultural awareness and competency (Wang, 2005).

In certain areas within society, technological dependence is such of an excess that organizations operate around a specific technological system such as a computer or software system. Healthcare agencies are currently in the transition phase from hard copy/paper maintenance of patient records to electronic health record maintenance referred to as Electronic Health Records (EHR) Systems. Even large U.S. banks operate around a certain technological system. One of the largest banks in the nation (remaining anonymous) operates around a design of “24 x 7” software programs and applications. These programs are in operation at all times and cannot be halted. (McCune, 1999). According to a computer industry watcher, this specific bank does not have a disaster

plan that addresses the possibility of this system failing. (McCune, 1999). How will this bank as well as other large corporations that operate according to a certain technological system survive in the likelihood of an outage or system failure?

The excessive dependence upon technology must be cautioned. History has foreshadowed the catastrophe that can occur if there is a technological breakdown. When pagers were a big thing in the ninety's and in the early two-thousands, a breakdown occurred. In the late 1990's, the Hughes Galaxy IV, a satellite for pagers, suddenly ceased operation. At that moment, 90% of pagers in the nation could not receive messages (Erlen, 2003). As you can imagine, this was a major setback for many individuals. Pagers were in excessive use in hospitals to get in contact with physicians who were not on the clock but were on call. The outage lasted throughout the night, so picture numerous physicians consistently waiting beside their house phones listening for a ring. There were no other alternative forms of communication with companies that relied heavily on paging systems to get in contact with employees.

On September 11, 2001, the World Trade Centers in New York City were attacked by terrorists. This was one of the most tragic events ever occurring in the history of the United States. Computer operations for the Mount Sinai NYU Health Center, Hospital for Joint Diseases, and NYU Downtown Hospital, were located two blocks down from the World Trade Center. The attack on the twin towers led to the destruction of the data operations center located at the edge of ground zero. After the attack occurred, three critical computerized systems were lost; hospital information system, payroll system, and the billing system. The hospitals were flooded with individuals who were injured from the attack. These systems remained down until October 25, 2001. The

hospital was completely shaken by the system failure, “Feeling extremely vulnerable to an increased risk of clinical mishap created by the loss of the checks and balances provided by capabilities such as computerized physician order entry, quick turn-around of lab results, and prompting for complete documentation...” (Conocenti & Azima, 2003, p. 70). The IT staff at the hospital dedicated themselves to correcting the data systems failure from the destruction of the downtown data center by using the uptown data center. In the time being, the three hospitals regressed to manual operation in order to care for the patients. The hospitals had disaster plans in place and within two minutes of the twin tower attacks, the plan was implemented. The IT staff prioritized what systems needed to be repaired first concerning patient care and safety and were carried out in three phases. If these hospitals had not prepared for a systems failure such as this, hundreds of patients who were injured and sought care from each hospital would have not been cared for. The hospital would have ceased operation in a critical time of need (Conocenti & Azima, 2003).

A more current technological failure can be identified in the breakdown of the Affordable Care Act (ACA) health insurance application website for non-insured individuals to apply for the new healthcare law insurance coverage. The Obama administration launched the healthcare.gov website on October 1st so uninsured Americans could enroll in the new health insurance coverage offered through the ACA. The launch of the website was an immediate failure (Preimesberger, 2013). “Heavier-than expected Internet traffic, mostly involving people, confused about the new law, jammed network routers, blew out servers and generally slowed the launch of the program” (Preimesberger, 2013, p. 8). The Obama administration entrusted insuring

Americans through technology with use of the Internet. It might have seemed easier to train individuals in the new law and set up stations at public facilities to enroll the uninsured into healthcare coverage plans under the new law. These examples as well as the others listed above portray how unplanned and unforeseen sporadic events can challenge excessive technology dependence.

Discussion & Conclusion

Excessive technology dependence has been an issue ever since the beginning of technological innovation from the creation of the assembly line by Henry Ford to the release of the new iPad Air by Apple earlier this fall. There are risks associated with technology as discussed above. The most popular risk is the possibility of a breakdown within computerized systems in which individuals and entities are heavily dependent upon, but there are other risks as well. The general public is more aware of these risks in excessive technology dependence than in the past. Take the production of food using technological innovations. Food consumption is not only one of the basic necessities of life, but many associate food products on the basis of cultural as well as social significance (Fischer & Frewer, 2007). The public's knowledge of food production using technology has significantly increased over the years and they understand the health benefits that accompany the consumption of natural, organic foods as opposed to those that are genetically modified with "novel proteins" that can pose potential health hazards to human health such as severe allergic reactions. These inorganic and technologically processed foods can also contain hazardous microbial, toxicological, and carcinogenic substances (Fischer & Frewer, 2007).

The dependence upon technology continues to remain in excess due to the fact that technology improves every day. As soon as we purchase a new cell phone, a new and better version is released within months. Technology has been profound in improving the overall quality of life in many areas. But the fact of the matter is, technology can breakdown. Therefore it is crucial that those who depend upon technology for everyday tasks must have a backup plan on hand in case of a natural disaster that interrupts technology communication systems or a system glitch that disrupts the operation of the system. The field of emergency management can be a great assistance to organizations that operate according to highly technological and computerized systems. It is fine if we depend upon technology to get us through the day, but we must be prepared for these events because you've heard the famous saying that, "History repeats itself," and what we know from the history of technology breakdowns, it is a matter of when it occurs, not if and we need to be prepared.

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