

When Information Technology Fails: A Challenge for Nurses

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ABSTRACT

Within the dynamics of technology, it is the increasing complexity of healthcare that inhibits and makes barriers to the transformational reforms of healthcare delivery. The technology nurses encounter in the nursing practice drastically improves patient care and safety. However, nurses' dependency on technology would mean it would be indispensable, that by losing this resource would mean adversity in the workplace. Information Technology-related failures in health care often are covered up, ignored, or rationalized, so mistakes are repeated. A probable solution would buildup nurses with technological resilience would mean survival in the worst-case scenario, although the notion needs to be grounded and philosophically underpinned. Being technologically resilient does not mean deferring the use of technology but rather an idea that, in the advent of an information technology breakdown, the nurse will be able to deliver positive patient outcomes despite the challenges.

Keywords: barriers to information technology, technological resilience.

According to Locsin and Purnell (2015), nurses will continue to use technologies, for they are challenged to sustain their caring nursing practice while responding to the complex technical demands of modern healthcare. The twentieth century brought about a technological "invasion" to nursing. The healthcare industry has been one of the areas where information technology flourished and has helped many people. It is essential to learn technologies used in nursing because it significantly affects the way nurses work (Lee, 2004). Like patient care and safety have been drastically improved by these technologies where the nursing practice at present would look nothing like it did 10, 20, or even 30 years ago. The technology nurses encounter in the nursing practice falls into two broad categories - clinical and other information systems, and smart medical devices, often with integrated computer chips and screens.

There is no denying the positive benefits of the use of information technologies. However, we also think that when everything is possible these days, it is also possible that these information systems are prone to failure (Preston, 2006). The author's purpose for this paper is to elucidate the traditional perspective of health information technology and technology, how health information technologies fail, how the system adapts to the loss of information, how to prevent such an event.

Information Technology and Technology

Traditional or the positivist view of Information technology over the past decades was focused on the patient, and consumer needs have expanded the development and integration of these technologies (Eysenbach, 2000; Moore & Fisher, 2012). Whereas Information Technology has transformed the healthcare environment to realize its highest principles (Phillips & Merrill, 2015), while the advancement of information technology persuades us to take social and political

positions (Feenberg, 1999). It is vital that we acquire more knowledge and gather more skills about information technology, because information technology is increasing at unprecedented rates, and a growing number of people are required to dedicate their work to information-related activities in organizations throughout society.

Within the dynamics of technology, it is the increasing complexity of healthcare that inhibits and makes barriers to the transformational reforms to healthcare delivery (Marchand, Kettinger, & Rollins, 2000). Moreover, it is essential to note that the advancement of technologies can be anticipated to become more sophisticated, and more lives become dependent on these technologies that critically influence contemporary human experiences (Locsin & Purnell, 2007). Feenberg (1999) viewed information technology as a transformational process giving the human race the control to realize its highest ideals or destroy. Different authors have been claiming that a defining aspect of technology is the role that it plays in extending human capabilities (Lawson, 2010). However, in our modern era, "technologies are accepted as integral to contemporary life, occupying a universal technological domain that is coextensive with humans and their environment" (Locsin & Purnell, 2015). In nursing, coexistence between technology and caring are exemplified in the theory of Technological Competency as Caring in Nursing by Dr. Rozzano Locsin (Locsin, 2017). However, this does not mean efficiency in the healthcare system. The futuristic views on information technology have logical truth embedded in its context. However, most of the third world countries lag on these advancements in technologies (Akubue, 2002).

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Information Technologies Used in Nursing

This list is not exhaustive. However, the following are technologies that could be responsible for the nursing transformation:

Clinical Information Systems. These systems are the computer and information systems used by healthcare personnel to facilitate patient care. These systems have changed from financial systems to real patient care systems with flexible levels of functionality. Initial systems provided laboratory and radiology printouts, and modern systems now offer copies of the radiology imageries and decision support for therapeutic orders (Hardin, 2000).

Electronic Health Records. Patient records in this format provide instant access to a patient's medical history, improve communication between caregivers, and offer flags and alerts to prevent conflicts over prescriptions and tests (Kalra & Ingram, 2006).

Drug Retrieval-and-Delivery Systems. These utilize several technologies, including bar codes and automated dispensing machines, to ensure patients receive the correct medications and dosages (Park, 2014).

Tablet Computers, Wall-Mounted PCs, and Mobile Carts. These computer-based tools allow nurses to enter and retrieve information housed in a facility's information system without leaving the bedside. The systems can operate wirelessly and connect to databases containing care guidelines and other clinical resources.

Medical Devices. World Health Organization (2017) defines a medical device as "an instrument, apparatus, implement, machine, appliance, implant, reagent for in vitro use, software, material or other similar or related article, intended by the manufacturer to be used, alone or in combination, for human beings, for one or more of the specific medical purpose."

Personal Digital Assistants. PDAs with add-on software is very similar to what is considered today as a smartphone; these devices can help nurses research conditions and check medication doses. Furthermore, wireless tech integrates information from disparate sources and delivers data faster, so nurses do not need to be tied to a precise station to get the necessary information.

How do Health Information Technologies Fail?

It was the year 2008, working as a staff nurse in a local, provincial hospital, there was so much excitement hearing about the modernization of the clinical charts. It was an ambitious project of the local government unit to introduce the electronic health record (EHR) here in the heart of Mindanao, Bukidnon. The implementation of EHRs, nurses, only read in books, visualizing a computer-generated clinical chart. Experts were conducting seminars and workshops routinely with the staff nurses and nurse assistants, while technicians install computers in every station. It was working well the past few days, and healthcare workers find the technology useful and efficient.

That event in the hospital was groundbreaking until the regular brownouts came in. It was a real mess since there was no electricity; there was no patient information — a true-to-life experience by the proponent of this paper.

The Tech Factor: Our Dependency on Technology and Information Technology

The human experience portrayed in this example is a complex phenomenon that includes different dimensions (Lentini & Decortis, 2010). While nurses acknowledge that using information technology, technology in this context would be the resource in which it is perceived as an essential component for addressing inefficiencies in healthcare (Kadry, Sanderson, & Macario, 2010). Having technology, as viewed as a necessary component of the nursing practice would mean that there is meaningful use. However, Information Technology systems occasionally force them to rethink how the nursing practice could fit in with technology, and technological glitches can impede their work. According to Locsin and Purnell (2007), Heidegger was concerned about technology to encompass the experiences of persons whose lives depend upon techniques and the skills of those persons who care for them. Dependency on technology would mean the nurse can be so dependent on technology, that by losing this resource would spell disaster in the workplace. This is why authors such as Dr. Locsin believes that the only way is to go with the flow and train nurses to be technologically competent because technologies in nursing will continue to become more sophisticated.

Unintentional Technological Barriers on Information

Categorically, the example also portrays a common unintentional, accidental cause of technological barriers. Any technical glitches (e.g., electricity brownout, disaster, fire, environmental causes, and so forth) would mean the loss of information from the use of this information system technology because we all know, these technologies are highly dependent on electricity (Erdener, Pambour, Lavin, & Dengiz, 2014). Therefore it is common sense that if this particular resource is cut out, the information technology used in nursing will also cease to exist. How do you think the nurse experience will feel? Moreover, this dependency on the technology would mean staying away from the comfort zone, any upgrade, or update, a new version of the technology would mean going out of the comfort zone. Sometimes, the latest technology would not mean an increase in efficiency in the nursing practice.

Furthermore, human error does not constitute an intentional cause of information technology, that is why skills and knowledge of this information technology should be at par with its development because every upgrade means a new challenge for nurses. Hardware problems, machines, especially the storage for essential data and information, computer parts eventually they wear off and become not usable. In a doomsday scenario, we would be like going back to being nomads since we are so dependent on technology that, according to Prell (1996), "doomsday could arrive despite the availability of a backstop technology" that a simple subtraction of an electrical resource will affect the entirety of life. We would

not pray or hope that this would happen. Even if biblical predictions would not follow its course, we cannot deny the limited resource we have, our planet.

Intentional Technological Barriers in Information

Intentional causes are those intentionally done by people who have an interest in the data. According to Mason (1986), three issues are governing the use of Information Technology. These are (1) Information privacy (2) Problems related to inaccurate information (3) Property rights for the info. This has already been predicted that soon everyone would like that piece of the data valuable for business or political interest. Intentional factors include cyber attacks, cyber hacks, identity thefts, criminal intentions, and so forth. Technological use in nursing can be uplifting because of its potential to improve healthcare systems, improve patient care advocacies. However, in the wrong hands, this poses an endangerment to personal identities and privacy.

Other Technological Barriers to Information

Other Technological Barriers to Information would be very subjective. Barriers that consist of these are User-interface Usability, Software/Information Maintenance, Software/Information Management, and Complexity. For user-interface usability, do not consider age as a factor in selecting user interface. For example, the question of which phone do you prefer, an iPhone or an android? This may not relate how Information systems work on the field, but my intention upon this discussion is to elaborate that it does not matter what technology is there to use, it will always boil down to the preference of the end-user. For software and information maintenance, Information technologies like these need constant maintenance. Without support, the Information System would be most likely to fail. This is similar with the implementation management. If the innovation is not carefully planned, all else will be jeopardized. Information technologies do not come cheap. Therefore any problems encountered even in an early phase might put the whole project into a failure. Within the context of management, Daniels and LaMarsh (2007) claimed that complexity as one of the causes the discontinuities among project in IT project management, and nursing is a very complicated career.

What Do Healthcare Organizations Prepare Themselves for Breakdown of Technology

Based on legitimate journal sites such as Science Direct, Proquest, CINAHL, and Jstor, there are not many articles regarding Information technology failures and how they go about the failures. According to Kaplan and Harris-Salamone (2009), Information Technology-related failures in health care often are covered up, ignored, or rationalized, so mistakes are repeated. The same barriers and problems of health information technologists have been identified over the years. Moreover, despite the calls for increased research, there are still too few published research reports on healthcare IT failures, removals, sabotage of systems, or how failures became successes or were otherwise redefined. This is supported by Goldfinch (2007), claiming that the majority of information systems

developments are unsuccessful. Furthermore, Goldfinch (2007) argues that the higher the growth, the more likely it will be ineffective. Despite the perseverance of this problem for decades and the spending "of vast sums of money, computer failure has received surprisingly little attention in the public administration." Although there is a need to understand or gain knowledge on how to go about problems when Information Technology fails, within the technical side, the nurse as an end-user understand that both concepts of success factors and failure causes in IT-projects are primarily subjective and therefore difficult to quantify, depending on the point of view of the stakeholders involved (Montequin, Cousillas, Ortega, & Villanueva, 2014).

Developing Technological Resilience as Nursing Survival Skill

Resilience is a natural part of our life (Southwick, Bonanno, Masten, Panter-Brick, & Yehuda, 2014), and so does technology and nursing. We cannot deny that technology in the field of nursing is indispensable. We also cannot deny that the nursing practice radiates resilience as a process, a capacity, and an outcome for efficient delivery of positive results from day to day challenges for patient care and safety. Therefore being technologically resilient does not mean deferring the use of technology but rather a notion that, in the advent of a worst-case scenario, the nurse will be able to deliver positive patient outcomes despite the challenges. Moreover, these challenges may be caused by an unintentional or intentional technological stress. As nurses, we always say that "prevention is always better than cure." Therefore, to buildup nurses with technological resilience would mean survival in the worst-case scenario, although the notion needs to be grounded and philosophically underpinned.

CONCLUSION

In conclusion, the traditional perspective of health information technology and technology involves patient and consumer-focused applications for safety and efficient healthcare delivery. Health information technologies fail because of the complexities of the healthcare environment, our dependency, and how unintentional and intentional barriers contribute to the failure of these systems. That organizations acknowledged the increasing number of Information Technology projects but failed to mention how to go about and innovate failures. There is a promising direction for nurses, to build up technological resilience to counter technological failure and ultimately prepare nurses for any worst-case scenario.

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