International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Interoperability in Healthcare Information Technology: An Ethics Perspective

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Abstract

The rapid evolution of Information and Communications Technology (ICT) has significantly improved healthcare systems, yet interoperability challenges persist. Effective communication between healthcare information systems is critical for patient care, data security, and operational efficiency. However, corporate interests, lack of standardized communication, and inadequate regulatory enforcement hinder seamless data exchange. This paper examines the ethical implications of interoperability in healthcare, emphasizing the role of Corporate Social Responsibility (CSR) and legal frameworks in addressing these issues. It discusses challenges such as data privacy, vendor monopolies, and the prioritization of profits over patient well-being. Recommendations include fostering an ethical corporate culture, enforcing legal mandates like the 21st Century Cures Act, adopting standardized clinical terminologies, and implementing industry-wide interoperability standards such as HL7-FHIR. By aligning business goals with societal welfare, the healthcare IT industry can enhance patient outcomes, reduce medical errors, and improve overall healthcare efficiency.

Keywords: Healthcare Interoperability, Health Information Technology, HIT, FHIR, HL7, Clinical Information Systems.

Interoperability in Healthcare Information Technology: An Ethics Perspective

The revolutionary advancement in the Information and Communications Technology (ICT) industry has transformed our healthcare system dramatically. The way information is collected, processed, stored, retrieved, and communicated is significantly different and efficient than what it used to be. ICT tools are used in every stage of patient's care. From embedded devices in their body to remote monitoring solutions in their residences and workplaces. All this information are processed and stored in different information systems within the hospital's IT infrastructure (Ganiat & Olusola, 2015). However, are these systems communicating efficiently with each other? Also, are they capable of communicating with different systems of similar purposes at different hospitals? Are the companies prioritizing the patient's life over short-term profits?

According to the Institution of Electrical and Electronics Engineers (IEEE) Computer Society (1990), interoperability may be defined as the ability of systems to exchange information bi-directionally. This means, each component or individual system must be able to provide information to other systems, and every system must be able to process such thus received information. When added the healthcare backdrop to interoperability, it must go an extra mile with a few additional qualifiers. The information exchange between systems must be seamless, meaningful and respect the security and privacy of Patient Health Information (PHI). Ethically, the interoperability initiatives must prioritize the improvement of patient's

life and health over financial, organizational, or political interests and boundaries (Blobel et al., 2010). This project focuses on the ethical challenges within the healthcare industry in adopting and supporting interoperability. The scope of this project is limited to critical analysis, recommendations and current initiatives to pacify the ethics problem within the healthcare interoperability space.

Problem Description and Statement

Patients' health information is typically managed and processed by multiple healthcare providers, across different hospitals or even spread across national borders. It can be because of treatments from speciality providers, or because of a lab facility that the patient's primary care lacks, or simply because the patient has relocated. These different healthcare systems are very heterogeneous and utilize a variety of diverse technology solutions to collect, process, store and manage the patient's health information. The dependability factors such as the availability and scalability of some of these critical systems and communication channels are not even governed by any standard quality benchmarks. Though there are various initiatives to promote interoperability within electronic healthcare systems, the manufactures of these systems are not providing enough gravity to the situation. Often, they find workarounds to cut costs any barely satisfy governmental mandates in this matter. Their focus is still on short-term profits, cost reduction, and maintaining the business monopoly in a certain area. A study performed by the West Health Institute (2017) revealed that our economy could say more than thirty billion dollars per year of taxpayer's money if our interoperability problem is fixed in the healthcare sector. According to KLAS (2021), an independent rating company for healthcare companies, more than 75% of the hospitals in the United States employ one of the top three Electronic Medical Record (EMR) systems. So, if these handfuls of the top-tier companies focus on interoperability, our healthcare system would have been a much better place for healthcare providers, patients, and our economy. However, opening up their platforms freely and completely, and allowing smaller startup companies to freely integrate with them is damaging to their commercial interests. So the real problem that we face today is the deficiency of social ethics and Corporate Social Responsibility (CSR) among the Healthcare Information Technology (HIT) companies.

A Critical Analysis of Ethics in Healthcare Information Technology

There is no question to the fact that ethics is a very ambiguous and subjective concept. Hartman et al. (2020), emphasizes the need for moral, social, and business ethics at all levels of any organization. Healthcare Information Technology (HIT) sector is never an exception to this. Being an essential service that directly affects people's health and life, one would expect this industry to be held accountable for higher standards and quality of care. Unfortunately, this is not the case.

Ethical Culture in Organizations

The healthcare and HIT industry is not an exception to the need for an ethical culture. Though most HIT companies are driven by policies and regulated by legal mandates, they are still a long way to transform their culture to be ethically driven by keeping the greater good of society as the primary interest.

A policy-driven approach to defining ethics is not sufficient in today's world. Corporate policies cannot be written to fully define what is considered ethical and what is not (Silverthorne, 2005). These policies are helpful to set the guardrails and convey the message to the employees. However, real ethics should come from the heart of everyone involved. I.e. the ethics that is integrated into the organizational culture (d'Iribarne, 2012). Ethical habits with an organization can be developed by the sense of belonging – the

culture. The influence of one's work culture on their decision making cannot be overemphasized (Hartman et al., 2020).

Corporate Social Responsibility

Hartman et al. (2020), defines Corporate Social Responsibility (CSR) as the extent to which a corporation or the organization showcase ethical responsibilities beyond profit or other commercial interests or legal mandates. Such opportunities are in plenty in today's world. Be it environmental, educational or even financial contributions, the businesses are improvising their contributions back to society day by day. Often, these contributions are motivated and driven by reputation gains, including an uplift in their Public Relations (PR) interests. Though not the ideal case, it still checks a few boxes on ethics. Society is gaining when corporate leaders realize the fact that the legacy economic leadership principles are not enough to establish genuine public acceptance (Bowen, 2013).

Clearly, the CSR factor within the major HIT companies is not enough to make a change. We can find some minor changes such as standards-based communications and big companies opening up their platforms for a larger developer community. However, most of them are require hefty fees as a deterrent from active development. These big HIT companies such as Epic, Cerner, Meditech, etc. have the most commercial viability to consume the cost as a part of the CSR commitment to the healthcare systems and the society they thrive in.

While working at Elsevier Clinical Solutions, my team and I were tasked with an integration initiative with an Electronic Health Record (EHR) system. Since this is a communication initiative with multiple HIT vendors, including a large EMR, the cost was very high. Following the easiest, quickest, and shortest path for the connection might have been the cheapest and most commercially viable option. But soon we realized the ethics the industry face on this front is a lot larger than the immediate needs of Elsevier Clinical Solutions. Patients and clinicians have to go through a lot of documentation, and extra work if the patient is required to be transferred to a different organization that uses a different EHR system. Though there is very little that we could do by ourselves, the CSR elements within our corporate culture empowered us to go beyond mere business and legal interests. We kept our business interests aside and collaborated with multiple organizations, including our competitors and the Dept. of Veterans Affairs (VA), to demonstrate a possible solution for the interoperability problem at the world's largest HIT conference - HIMSS in 2019 (Elsevier Inc., 2019). While solving a business problem, by spending a little more time and effort, we took the HIT industry one little step closer to the ideal.

Ethical Decision Making

Another important aspect of ethics to be considered with this problem in the HIT industry is the role of ethics in decision making. Unlike other corporates or organizations, these decisions may make a significant impact on the daily life of patients and sometimes, can even cost lives if not the quality of their care. Making bad, unethical, or ineffective decisions may pave way for a newer crisis or amplify an existing crisis in the HIT industry as well as the entire healthcare system (Ho et al., 2009). So, how is ethical decision making different from normal decision making progress? And, how can we make ethical decisions in the HIT industry?

The process to make ethical decisions is very similar to a standard data-driven decision-making process, but with a few cautious checkpoints. Just like the standard decision-making process, ethical decisions also start with collecting and determining the facts of the situation. The second step, however, should be the

identification of ethical issues. In this case, the HIT corporations have to evaluate the impact of their decisions on the patients quality of life. Subsequently, all people impacted by the decision, such as healthcare providers, insurance companies, other hospital workers etc. must be considered before the implementation of such decisions. Considering all available alternatives using a moral imagination and weighing them based on duties, rights, and principles of all stakeholders ensures ethics in such decisions. It is also important to learn the outcomes of each decision and incorporate the learnings into future decisions (Hartman et al., 2020).

Summary and Conclusion

Interoperability in the HIT industry is very essential for the quality of care of patient life. It is also an essential component for the financial efficiency of the healthcare sector (West Health Institute, 2017). Currently, as interoperability is missing between systems and other HIT/ICT tools, there is a concern and risk factor to patients safety and well being. Interoperability maximizes the quality of care a patient receives by effectively and efficiently sharing information within a team of diverse healthcare providers, facilities and other entities in the longitudinal plan of care for the patient. Additionally, it reduces medical errors and standardizes clinical terminology. The ethical challenge in the healthcare sector is delaying the adoption of interoperability. The concerns include the commercial interests of major players as well as security, privacy, confidentiality, ownership, and sale of identifiable or de-identified patient information (Ganiat & Olusola, 2015).

Recommendations

Cultural Transformation to include CSR

To achieve greater success and more and more adoption of interoperability, the HIT industry must transform the prevailing corporate culture and incorporate the elements of Corporate Social Responsibility. CSR empowers the decision-makers within the company to go for that extra mile beyond commercial interest to give back to the society that they thrive in. (Hartman et al., 2020). Considering the concentration of HIT market share within a few companies, it only takes those big players to transform and the whole industry will follow (KLAS, 2021).

Legal Regulations

Many legal regulations have proven to be effectively driving the industry in the right direction. There is no doubt that ethics from within the culture is the ideal source for these improvements. For those who don't get the message, a legal regulation can expedite the process.

The 21st Century Cures Act

Recent noteworthy regulation in the field of healthcare interoperability is the 21st Century Cures Act. Signed into law by President Barak Obama in 2016, the act is slightly different and more effective. It reduced the regulatory burden on HIT companies regarding the use of Electonic Health Records (EHR) and promotes interoperability by standards-based information sharing. It imposes new regulations to prevent information blocking and designate the patients as the ultimate owner of this data. The HIT companies must share patient information directly with the patients as well as with whoever is authorized by the patient. The access of such data must be via a standard based Application Protocol Interface (API) (US Congress, 2016).

More such regulations should be put in place to ensure acceleration of the standards-based interoperability in the healthcare industry.

Utilize Clinical Terminology

The use of standardized clinical terminologies such as SNOMED, RXNORM, ICD, CPT, etc. helps to promote interoperability by making it easy for any system to understand the concept behind it. As pointed out by Blobel et al. (2010), interoperability is only complete when the information sent is meaningfully processed by the receiver. Using standard terminology is a practice with which we can boost the ability of the receiving system to effectively and meaningfully resolve and process the message. The technique is already being used and proven in the industry by the EMRs. Sadly, it is only being used for billing, finance, and insurance-related communications. It is high time that similar standards are mandated in all communications that support care coordination for a patient.

Adherence to a clinical communications standard

Conforming all digital communications to an industry-recognized standard can essentially revolutionalize the effectiveness of interoperability. In the human world, imagine 10 people speaking 10 different languages. Each time one person learns another language there is a new communication channel. And by the time all 10 can talk to each other, there must be 45 new languages learned by the 10 people altogether. But imagine if all 10 people learn one additional, but the same language. They all can talk to each other in 10 new learning, one new language by each person. This is exactly the principle of clinical communications standardization. There are many standards including IEEE, IHE, HL7, etc. in this space. The most popularly adopted communications standard is the HL7-Fast Healthcare Interoperability Resources (FHIR) (Strasberg et al.,). Standardizing the language of every healthcare system is the key to achieving successful care coordination and a better patient life (2021).

Clearly, interoperability in the HIT industry is inevitable. An ethical transformation of corporate culture, along with legal regulations to accelerate them can improve peoples life, health, safety and economy.

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