Information Technology Ethics, a Key Ingredient to Human Survival.

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ABSTRACT

Information Technology (IT) as a field of computing has been in existence since the 1990s. Though it has been with us for a short time, the field has changed how society handles different tasks be it in communication, interactions, and knowledge sharing among others. IT ethics has also been gaining popularity and attracting a lot of attention from researchers to ensure IT has been used for the betterment of our societies. The field of IT is continuously evolving, and new technologies are being developed each day to respond to current and future societal needs. It is therefore important to ensure ethical IT aligns with these as new technologies will introduce a new way of interacting with society, hence needs to ensure it conforms to society's ethics.

This paper reviews how ethical IT has shaped the field of IT, where and how it has been applied to ensure IT products and resources are well used for the well-being of mankind. Since IT is evolving, the paper will also review and project the future of IT, some of its common trends and how ethical IT should evolve to respond to these new developments.

Keywords: Ethical IT, Information Technology IT, Society, Ethics, Personal Data, Artificial Intelligence

INTRODUCTION

For society to co-exist, it is important to have a guiding principle that defines what is morally right and wrong, giving humans a standard to guide them and what they ought to do. Such principles promote fairness, virtues, and co-existence among people of diverse cultures and beliefs. Ethics advocates for objectivity when looking at and handling different issues, setting standards that allow each person to look at their conduct and that of others in a specific manner. Without ethics, it will be difficult to govern and guide society as everyone will do what they think is good for them.

Computer ethics came to birth in the 1970s as one of the earliest fields of computing that incorporated ethics. The term computer ethics was first created by Walter Maner to refer to a branch of ethics that was purely concerned with ethical issues that were created out of using computers (Maner, 1978). Other researchers like Donald Gotterbarn felt the field of computer ethics was more concerned with the development of codes and hence more concerned with computer professionals but there was a need for a field that could better interface computing with society (Gotterbarn, 2001). It is out of this that the field of Information Technology was created and popularized.

Information Technology has revolutionized how people live, work, interact and socialize. It has been incorporated and become part of our day-to-day life. It is therefore important for us to evaluate the ethical principles that govern the use and adoption of information technology in society. Different aspects of

Information technology impact society differently and have contextualized ethical considerations. The Internet is one phenomenon that revolutionized the field of Information Technology. It increased connections among people, allowing them to exchange and share information. Through it, several ethical issues came to be including data privacy, plagiarism, fake news, and piracy (Sharma & Kishore, 2015).

Other advancements that came after the Internet continued revolutionizing how society interacts and at the same time brought in new ethical considerations. Some of the advancements in technology being witnessed that have led to further developments in information ethics include the use of artificial intelligence in autonomous systems, workplaces, healthcare and many other fields, adoption of the Internet of Things, drones, and Robots among others in the society always raises a lot of ethical concerns.

The essence of this paper is to review and evaluate the importance of Information Technology ethics and how it is shaping our behavior and conduct in the wake of technological advancements and what as humans we need to do to make the world a safer place.

METHODOLOGY

This paper employs a systematic review of the literature to evaluate research that has previously been done in line with information technology ethics and its effects on society. A search of journals was done to sample some of the research articles that have been published in the recent past. This included research that was done from 2010 to 2023. The importance of ethical IT was extracted from the articles to come up with a summary as discussed in sections below. Journal articles not published in English were eliminated as well those published before 2010 were excluded from the research. Further, any review article was also excluded from the list as only articles that collected primary data were considered.

Importance of Information Technology Ethics

In the current era of digital advancements, information technology ethics comes in handy as an important field that should guide how best technology should be used. This is necessitated as technology is being adopted in every aspect of our lives across all age and gender divides. Below is how ethical IT has been used to advance society.

- **Promotion of Fairness and Equity**

Information Technology has revolutionized how different sectors operate right from finance, operations, and agriculture among others. Though IT has created so many opportunities, it has to some extent created unfairness like the digital divide as those who do not have the necessary resources are unable to access and use technology (Bak, 2020). At the same time, the underprivileged in society mostly live in rural areas where access to the Internet is a problem. This bars them from making use of technology, hence unable to reap the benefits just like others. Ethical IT comes in handy to address this unfairness as it voices the plight of those on the other side of the digital divide advocating for their rights and inclusion.

Ethical IT will advocate for fairness and equal opportunities in terms of the use of technology even for the underprivileged. It advocates for the design of IT systems that can easily be used by everybody including the disabled, and people from different racial backgrounds with different gender, and socioeconomic statuses (Essien, 2018). This ensures that there is inclusivity and eliminates exclusivity in the use of IT resources.

Artificial Intelligence is being included in every aspect of human life. Hiring processes are currently incorporating AI systems to help in filtering and carrying out hiring processes. AI systems are used as recommender systems to show ads or recommendations for different products on social and e-commerce

websites (Guersenzvaig, 2023). AI and machine learning uses already collected data to make systems learn and make predictions. This ideally means if data used to train these systems is biased, it will result in a biased system with biased outcomes. IT ethics comes in handy to ensure the whole process of building an AI system has an element of fairness and no biases are included in its data and decisions. IT ethics, therefore, plays an essential role in ensuring that there is fairness in all processes that use information technology. With the opaqueness of AI systems, IT ethics are pushing for the explainability of AI systems to ensure that every person using AI systems understands how they work and how different AI decisions were arrived at (Kulikowski, 2022). This is crucial as well in ensuring the openness and accountability of AI systems.

- **Protection of Human Rights**

Ethics in Information Technology plays a central role in the protection of human rights. IT ethics ensure human rights are upheld by making sure IT gives everyone an equal opportunity to express themselves freely without fear. IT ethics advocates for digital for all policies where open platforms are encouraged to ensure there is no discrimination. It also ensures existing platforms allow individuals to express themselves freely without fear of reprisal. With IT, there is a large collection, processing, and use of digital data. IT ethics comes in handy to ensure all these processes are upheld and maintain necessary privacy and personal data protection. IT ethics and its related principles guide how such data is handled by organizations and entities that collect and process it.

Digital systems hold very sensitive personal data including health-related data, and financial data among others that should be safeguarded (Leonelli, Lovell, Wheeler, Fleming, & Williams, 2021). Any exposure to such information will breach privacy, hence interfering with an individual's human rights. IT ethical principles in this regard ensure there is proper informed consent about the intention to collect such data, its use is also spelt out in the consent and mechanisms are put in place to ensure this data is only used for the purpose it was collected. Legal policies are then crafted to ensure the consent meets all the legal obligations as guided by ethics. It is the responsibility of the entity collecting such sensitive information to ensure that it has enough security mechanisms in place to guarantee that only the intended users can get this data as well as there are no data breaches.

IT ethics ensure human rights are advocated for in the implementation of AI systems. Since such systems make decisions based on previously collected data, IT ethics addresses issues arising from the use of biased data to build such systems. Automation of many tasks through robotics and AI is likely to replace humans in the labour market. Through IT ethics such issues that could potentially harm the system are reviewed and regulated to ensure they work for the common good of mankind. As highlighted above, the adoption and use of AI systems are increasing daily even in sensitive industries like healthcare, application and screening for jobs, and recommendation systems among others hence making it important to ensure such systems uphold human rights (Zahn, Feuerriegel, & Kuehl, 2021).

- **Uphold Intellectual Property Rights, Copyrighting and Plagiarism**

IT ethics ensure intellectual property rights are respected by ensuring patented, trademarked, and copyrighted properties are well protected. Through this, organizations are guided to respect and acknowledge the legal ownership of intellectual property. Protection of such IP nurtures a culture of innovation and creativity and gives incentivized motivation where individuals are always motivated to create content without fearing it might be copyrighted (Seadle, 2004).

Distribution of protected creatives through digital platforms is controlled by the application of IT ethics to digital products. This protects the distribution and sharing of digital content in cyberspace without proper permission or acknowledgement (Montagnani, 2021). Platforms like YouTube and Instagram have built-in mechanisms to detect copyrighted content as well they have legal structures that define processes

undertaken if one is found distributing or sharing content on their platforms that he/she does not have rights and permissions to distribute. It advocates for the creation of original and useful content without infringing the rights of others. IT ethics ensure that sources are properly attributed and necessary permissions are obtained before using copyrighted content. It also ensures the source is correctly acknowledged and online content is not plagiarized. Proper citations must be done to ensure that contents are not marked are plagiarized, hence raising legal concerns. IT Ethics advocates for the adoption of tools to help in checking for plagiarism that can help learning institutions quickly detect and highlight plagiarized content.

Education on the importance of respecting intellectual properties is central to IT ethics. It raises awareness among users while advocating for understanding the importance of respecting IP rights.

- **Data Protection and Privacy**

In this digital era, millions of data are created, stored, and analyzed every day. It is important to have an ethical framework to safeguard its use and safety. Ethical IT practices play a central role in ensuring such data is protected right from its collection, storage, processing, and use. IT ethics emphasizes the importance of institutions and individuals obtaining informed consent before they collect and use any personal data. It also ensures important considerations like data is being used for only the purpose it was collected among others (Butterworth, 2018). With this, individuals have control over what kind of information is being collected from them and know where and how it will be used.

IT ethics also advocates for data minimization where the least data that allows one to complete their task is only exposed. With this, exposure of personal data to unauthorized use is minimized (Gupta, 2023). In case of data breaches, IT ethics dictate that individuals are affected, authorities are promptly informed and necessary protective measures are taken. Data collected should only be used for the general good. IT ethics advocates the use of data to advance the well-being of humanity and not harm or stigmatize.

Unauthorized third-party access to data is well addressed by IT ethics by ensuring secure and authorized exchange of data within third-party systems and proper agreements are put in place and agreed upon. Development and compliance with personal data protection acts and regulations also play a key role in ensuring that personal data is well protected by entities collecting and handling it. De-identification and randomization of personal data ensure that collected and exposed data cannot easily be linked back to individuals.

- **Mitigation of Harm**

Technology has both positive and negative impacts on society. IT ethics comes in handy to ensure the negative impact is minimized as technology is incorporated and adopted in society. Through IT ethics, ethical practices are incorporated through conducting risk assessments in the development and deployment of technology in our society. Through this, risks are identified earlier, and mitigation strategies are incorporated (Lokshina & Lanting, 2021).

IT ethics advocates for user-centered design by ensuring that end users are at the center of the design of any system. This helps developers to have a user's perspective in mind as they are designing and developing technological solutions (Manuel, et al., 2023). Ethical practices in IT identify biases in technology and ensure they are addressed before it is deployed. Through this, the potential harm is eliminated or minimized.

Ethical IT practices encourage continuous monitoring and improvement of the use and impact of technology on users. Through this, risks are quickly identified, analyzed, and addressed to reduce their effect on society. It also ensures there is compliance with already set guidelines and regulations hence realizing

the minimizednegative impact of technology on society.

- **Environmental Sustainability**

Ethical IT has played a key role in promoting green IT initiatives that incorporate all practices that promote efficient energy use by IT systems, better electronic waste management, and carbon emissions to reduce environmental impact (Bassey, 2020). It advocates deployments of optimized data centers, energy-efficient hardware systems, and recycling of electronic wastes all geared towards minimizing the negative IT impact on the environment (Rui & Lu, 2020). The use of efficient programming languages and deployment of optimized software systems all work towards sustaining the environment.

With the adoption and high penetration of IT in society, billions of devices are actively being used by people worldwide. The development and use of robust e-waste management systems play a key role in sustaining our environment (Tubella, Barsotti, Koçer, & Mendez, 2022). Some of the e-waste can contain dangerous substances with the potential to harm the environment. Ethical IT advocates for responsible handling of such waste, hence preventing the environment (Samuel, Lucivero, & Somavilla, 2022). Digitization initiatives play a role in promoting forestation and lowering carbon emissions as fewer papers are being used.

IT ethics incorporates environmental impact assessment of using any technology. With this, it is possible to detect activities with negative environmental impacts earlier and put in place mechanisms to curb them. This goes in line with public education and participation in the impact of technological systems and processes in society and particularly the environment. Individuals and organizations will make informed decisions by being aware of the impact different technologies they are using have on the environment and how that affects them.

- **Trust, Confidence and Responsibility**

Transparency of IT systems is one of the key areas ethical IT addresses. The development, deployment, and use of IT systems should employ the principle of transparency. This will boost user confidence in such systems since they know how they are developed and work. The explainability of AI systems is another aspect that ethical IT promotes. It advocates for the protection of personal data from unintended use and places the user of such data at a central role in ensuring such data is responsibly used. Fairness and inclusivity of technological products are values promoted by IT ethics.

Ethical IT encourages the responsible development of automation and AI systems. Safety for the users and society is placed centrally in their designs. It advocates for the development of accountable AI systems that have ethical considerations hence improving trust among such systems (Zahn, Feuerriegel, & Kuehl, 2021). Ethical IT holds individuals and organizations responsible for any actions they take in the IT realm and by doing so, trust is built. IT individuals are meant to uphold professionalism and integrity by upholding ethical standards and values, hence building confidence among users. Ethics upholds clear and concise communication regarding the use and impact of technology in society.

- **Ethics in Decision Support Systems**

The development and deployment of AI systems are key in modern society. AI systems are intelligent and able to make decisions by themselves. Society is increasingly relying on such systems to make key decisions hence they should closely be monitored to ensure they make unbiased decisions as their impact has far-reaching effects. Ethical IT plays a key role in ensuring such systems are monitored right from their design, deployment, and use (Benjamins, 2021). AI systems rely on large amounts of data to learn and make decisions. It is important to ensure such data is well protected and only authorized individuals or

organizations can access and use it. The use of such data is only for the purpose it was collected.

- **Global Cooperation and Digital Diplomacy**

The Internet has interconnected the world and made it possible for people from different walks of life to collaborate and share information. With this, ethical IT advocates for digital diplomacy by bridging the cultural gap, and ethical differences between countries hence promoting responsible use and governance of digital systems (Rashica, 2018). Ethical IT promotes shared principles and values in the digital workspace. Ethical IT advocates for respect for cultural differences in the digital workspace by encouraging the development of global policies that take into consideration differences in our cultural backgrounds.

Ethical IT addresses cross-border issues like cyberterrorism and cybercrime by ensuring guidelines and regulations are aligned making it easier for countries to collaborate (Konovalova, 2023). It also addresses issues with cross-border data sharing and collaboration while maintaining personal data protection and privacy.

- **Addressing Ethical Issues in Cybersecurity**

Ethical IT advocates for practices that protect digital systems, data and networks from cyber threats and attacks. This array of efforts encompasses efforts to prevent hacking, malicious online activities and cyberattacks with the potential to harm individuals and organizations (Logos, Brewer, Langos, & Westlake, 2023). Ethical IT addresses anonymity in cyberspace and advocates for upholding and respecting human rights while using the internet. Ethical implications of cyberbullying and online harassment are addressed by ethical IT as it promotes the safe use of digital systems and maintains respect among its users.

Cybercrime and cyberterrorism are also addressed by ethical IT as cooperation among nations is advocated to address such issues. Online misinformation and disinformation are also addressed by ethical IT as they address the ethical implications of fake news by encouraging the responsible sharing of information in the digital workspace. Ethical hacking improves cybersecurity as it helps identify areas of weakness in digital systems and works towards strengthening them (Loi & Christen, 2020).

Future of Information Technology Ethics

Ethical IT has played an important role in shaping the safe usage of IT resources and ensuring IT provides equal opportunities to society and its members regardless of social background. As technology evolves, ethical IT should evolve to ensure all ethical issues are addressed accordingly. In future, it is expected that the focus of ethical IT will align towards the items below.

1. **Data Protection and Privacy**

This is necessitated by the fact that as time advances, there is increased incorporation and digitization hence making more personal data available online. This calls for taking up deliberate steps to ensure such data is well protected against unintended and unauthorized use (Flechais & Chalhoub, 2023). Individuals will be educated to make them aware of their rights to ensure that always there is informed consent for any data collected from them. Organizations and government entities will be devising, refining, and making stricter personal data protection acts, rules and regulations that will ensure such key data is well protected and its use controlled to prevent its breach.

2. **Fairness and Non-discrimination**

With the increased adoption of Artificial intelligence (AI), society will increasingly be concerned about how such systems make their decisions to ensure they do not have any bias. There will be an increased need to

audit such systems to make sure they conform to society's norms and do not in any way promote bias (Custers, 2023). The explainability of AI systems will be of great concern as society will demand AI systems to be as open as possible so that even non-techie people can understand how they make their decisions. For example, if there is already gender or racial bias in data, it is more likely that an AI system built using such data may end up having bias. It is therefore important for such systems to be explained to make it possible for other users to audit and be sure that they do not propagate biases.

3. Transparency and Accountability

IT systems are prone to failure. In such cases, it is important to know who will be responsible so that they can be made accountable for technological failures. A new set of technologies should therefore be developed that is traceable and transparent in how they are designed, implemented, and used. This will call for the incorporation of more open-source systems with easier collaboration and knowledge sharing. IT professionals will be made more responsible for any piece of technology they advocate for or use (Kumar, Aijaz, Chattar, Shukla, & Mutharaju, 2023).

4. Green IT and Environmental Sustainability

A greater focus will also be made towards ensuring the design of energy-efficient data centers and proper disposal of IT waste to ensure they do not pollute the environment. There will be an increased focus on the development of energy-efficient hardware systems, and algorithms among others that reduce carbon emissions to the atmosphere (Khan & Ximei, 2022).

It will be important to take note of specific IT trends that are likely to shape the future of ethical IT. Some of the trends include the rise and rise of AI-based systems that have the potential to revolutionize the world. This makes it a key area of future ethical IT since it will be good to look at ways AI systems should be built to address the misuse of resources. With the ever-increasing creation and sharing of personal and aggregate data online, big data will be another technology that will shape the world (Morán-Reyes, 2022). This is the data that powers AI systems hence ethical IT will come in handy to ensure confidential data is well protected. Since all this data will be stored online, cybersecurity comes in handy as a field that will also be considered. Policy development to address any data breaches will be appreciated.

CONCLUSION

Information Technology as a field will keep on evolving to meet society's needs and create new frontiers of integration and use. This means there is and will be increased interfacing between society and technology and therefore it is paramount to ensure that technology is used to advance and improve society's wellbeing. Ethical IT will therefore find a central place in ensuring that the use of IT conforms to society's expectations and is generally for the common good. Since it is projected that there will be increased identifiable personal data being collected and as well increased use of AI systems, therefore it will be important to ensure IT ethics evolve with the ever-evolving IT to enable it to respond to any new ethical concerns. Therefore, it will be important for government agencies and authorities to develop dynamic policies, rules and regulations that can easily adapt to the ever-changing world of IT hence ensuring that at the bare minimum, there is a good use of technology to support the well-being of mankind.

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