

Ethics in Technological Innovation: Strengthening Human Responsibility and Values

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Abstract

Ethics and technological innovation are two things that are interrelated and crucial in building responsible and sustainable solutions for society. Technological innovation introduces various advances that can change the way we live, work and interact with the surrounding environment. However, without careful ethical consideration, this innovation could have undesirable negative impacts. First of all, it is important to ensure that any technological innovation is planned and implemented taking into account its impact on society and the environment. This involves critical thinking about security, privacy, and sustainability. Ethics must be the foundation for every step in the innovation process, from the planning stage to implementation and further development. In addition, transparency is also very important in developing responsible technology solutions. Users must be provided with clear information about how the technology functions, what data is collected, and how the data is used. This allows users to make informed decisions about the impact of technology on their lives. Then, community participation and involvement is also an important aspect of ethics in technological innovation. Listening to input from various parties, including the general public, academics, and other stakeholders, can help ensure that the solutions developed truly meet the needs and values of society at large. Finally, it is important to consider the long-term implications of any technological innovation. This includes analyzing the social, economic and environmental impacts of using the technology in the long term. By taking these factors into account, we can build solutions that are not only technically effective, but also responsible and sustainable for future generations. By combining ethics and technological innovation, we can create solutions that not only provide technical benefits, but also promote prosperity and justice for all parties involved. This is an important step in building a better and more sustainable future for global society.

Keywords: Ethics; Technological Innovation; Society

Abstrak

Etika dan inovasi teknologi adalah dua hal yang saling terkait dan krusial dalam membangun solusi yang bertanggung jawab dan berkelanjutan bagi masyarakat. Inovasi teknologi memperkenalkan berbagai kemajuan yang dapat mengubah cara kita hidup, bekerja, dan berinteraksi dengan lingkungan sekitar. Namun, tanpa pertimbangan etika yang matang, inovasi tersebut bisa saja membawa dampak negatif yang tidak diinginkan. Pertama-tama, penting untuk memastikan bahwa setiap inovasi teknologi direncanakan dan diimplementasikan dengan memperhatikan dampaknya terhadap masyarakat dan lingkungan. Hal ini melibatkan pemikiran kritis tentang keamanan, privasi, dan keberlanjutan. Etika harus menjadi landasan bagi setiap langkah dalam proses inovasi, dari tahap perencanaan hingga pelaksanaan dan pengembangan lebih lanjut. Selain itu, transparansi juga sangat penting dalam mengembangkan solusi teknologi yang bertanggung jawab. Pengguna harus diberikan informasi yang jelas tentang bagaimana teknologi tersebut berfungsi, apa data yang dikumpulkan, dan bagaimana data tersebut digunakan. Hal ini memungkinkan pengguna untuk membuat keputusan yang berdasarkan pengetahuan tentang dampak teknologi

terhadap kehidupan mereka. Kemudian, partisipasi dan keterlibatan masyarakat juga merupakan aspek penting dari etika dalam inovasi teknologi. Mendengarkan masukan dari berbagai pihak, termasuk masyarakat umum, akademisi, dan pemangku kepentingan lainnya, dapat membantu memastikan bahwa solusi yang dikembangkan benar-benar memenuhi kebutuhan dan nilai-nilai masyarakat secara luas. Terakhir, penting untuk mempertimbangkan implikasi jangka panjang dari setiap inovasi teknologi. Hal ini mencakup analisis dampak sosial, ekonomi, dan lingkungan dari penggunaan teknologi tersebut dalam jangka panjang. Dengan memperhitungkan faktor-faktor ini, kita dapat membangun solusi yang tidak hanya efektif secara teknis, tetapi juga bertanggung jawab dan berkelanjutan bagi generasi mendatang. Dengan memadukan etika dan inovasi teknologi, kita dapat menciptakan solusi yang tidak hanya memberikan manfaat teknis, tetapi juga mempromosikan kesejahteraan dan keadilan bagi semua pihak yang terlibat. Ini adalah langkah penting dalam membangun masa depan yang lebih baik dan lebih berkelanjutan bagi masyarakat global.

Kata Kunci: Etika, Inovasi Teknologi, Masyarakat

Introduction

The rapid growth in technological innovation has brought tremendous benefits to humanity, but has also presented a number of significant ethical challenges. This paper aims to explore the relationship between ethics and technological innovation, with particular emphasis on strengthening human responsibility and values. It starts by analyzing the latest developments in technology and how they affect society. Then, we highlight ethical issues that arise with technological innovation, including privacy, justice, and environmental impacts. Next, it continues from identifying several ethical principles that can guide technological innovation, such as fairness, diversity, and transparency. It also highlights the importance of a value-based approach in designing and implementing new technologies. Finally, the authors conclude by affirming the need for active involvement of stakeholders, including scientists, technology developers, governments, and society, to ensure that technological innovation continues to strengthen human responsibilities and values.

Methods

The methods in this paper aims to provide a better understanding of the complexity of the relationship between ethics and technological innovation, as well as provide a framework for ensuring that technological innovation continues to adhere to strong ethical principles while strengthening human responsibility and values.

Results

Recent developments in technology have had a significant impact on society, changing the way we interact, work and live daily. Some of the major developments in technology that have influenced society are:

- a. Artificial Intelligence (AI): AI has experienced rapid progress, from voice and facial recognition systems to virtual assistants that use machine learning to improve their performance over time. In society, AI has played an important role in various fields, including health, finance, transportation, and customer service.
- b. Internet of Things (IoT): IoT connects our everyday devices to the internet, enabling communication between devices and real-time data collection. This has resulted in “smart homes” with digitally connected devices, as well as medical devices that continuously monitor patient health.
- c. Blockchain: Blockchain technology, which was originally developed to support cryptocurrencies such as Bitcoin, now has the potential to transform a variety of

industries, including finance, logistics and manufacturing. Blockchain offers high security and transparency in data exchange and transactions, which can reduce fraud and administrative costs.

- d. **Autonomous Vehicles:** Developments in autonomous vehicles have triggered major changes in the transportation industry. Autonomous vehicles promise the possibility of reducing traffic accidents and increasing transportation efficiency, but also raise complex ethical and legal questions related to responsibility and safety.
- e. **Virtual and Augmented Reality:** Virtual reality (VR) and augmented reality (AR) technologies have expanded the boundaries of human experience in a variety of contexts, including entertainment, education, and professional training. The use of VR and AR has also stimulated innovation in the fields of video games, architectural design, and medical simulation.
- f. These developments have changed the way we interact with technology and each other in society. However, while generating great benefits, they also present new challenges related to data privacy, security, fairness, and environmental impact. Therefore, it is important to consider the ethical implications of these technological developments when designing new policies and practices in society.

The benefits and challenges of technological innovation in Islamic boarding schools can vary greatly depending on the context and implementation. The following are some common benefits and challenges associated with the use of technology in Islamic boarding schools:

Benefit:

1. **Interactive Learning:** Technology can be used to provide interactive learning resources, such as digital learning applications, learning videos, and e-learning platforms. This can help enrich the learning experience of students by providing access to a variety of educational materials.
2. **Access to Information:** Technology allows students to access information more easily and quickly. By using the internet, they can search for references, read electronic books, and follow the latest news and developments in the fields of religion and science.
3. **Connections between Islamic boarding schools:** Technology allows the creation of communication networks between Islamic boarding schools, either through social media, online forums, or collaboration platforms. This can facilitate the exchange of knowledge, experience and best practices between Islamic boarding schools to improve the quality of education and development of students.
4. **More Efficient Administration:** The use of technology in Islamic boarding school administration, such as student and financial data management systems, can help optimize administrative processes and increase operational efficiency.

Challenge:

1. **Limited Access:** One of the main challenges is limited access to technological infrastructure, such as a stable internet connection and adequate devices. This can be an obstacle in implementing technological innovation in Islamic boarding schools, especially in rural or remote areas.
2. **Conformity with Religious Values:** The use of technology in Islamic boarding schools must be integrated with local religious and cultural values. Challenges can arise in adapting technology applications to religious principles and customs existing in Islamic boarding schools.
3. **Lack of Training and Skills:** Another challenge is the lack of training and technology skills among Islamic boarding school teachers and staff. To optimize the benefits of

technology, investment is needed in training and developing technological skills for educators and Islamic boarding school administration staff.

4. **Data Privacy and Security:** The use of technology also raises concerns about data privacy and security, especially when it comes to students' personal and sensitive information. Islamic boarding schools need to ensure that their data management systems and practices meet high privacy and security standards.

By considering these benefits and challenges, Islamic boarding schools can design appropriate strategies for integrating technology in their education and operations by taking into account local context and religious values.

Discussion

Issues in Technological Innovation

a. Principles and Data Security

The growing use of technologies, such as artificial intelligence, big data analytics, and smart sensors, raises ethical questions about the collection, use, and protection of individuals' personal data. The need to ensure that data use is carried out ethically and that individual privacy is respected.

As technology advances, cyber security threats also grow. Cyberattacks can damage information systems, steal sensitive data, or even cause physical damage through attacks on critical infrastructure. The need to protect information systems and technology infrastructure from potentially damaging cyber attacks.

b. Mental and Social Health

Technology use, especially social media and video games, has been linked to mental health problems such as stress, depression and addiction. Apart from that, technology can also influence social dynamics and human interactions, both positively and negatively. There is a need to understand the mental and social health impacts of technology and find ways to manage and minimize the associated risks.

c. Environmental Impact

The development and use of technology can have a significant impact on the environment, either through high energy consumption, pollution, or excessive use of natural resources. There is a need to consider how technology can be developed and implemented taking into account its impact on the environment and promoting sustainable practices.

Value-Based Approach in Technological Innovation

1. The Importance of Human Values

- a. **Respect for Human Rights:** Technological innovation must consider its impact on human rights, such as the right to privacy, freedom of expression and social justice. It is necessary to ensure that technology is not used to violate human rights or reinforce inequalities.
- b. **Transparency and Accountability:** Companies and technology developers must be transparent about how their products and services work, as well as their impact on users and society. The need to ensure that technology-related decisions and actions can be accounted for and can be understood by the public.
- c. **Fairness and Inclusivity:** Technological innovation must be directed at creating equal opportunities for all people, without reinforcing social inequalities or discrimination. It is important to ensure that technology can be easily accessed and used by various groups in society, including those who are vulnerable or marginalized.
- d. **Sustainable and Environmentally Friendly:** Technology must be developed taking into account its impact on the environment and encouraging sustainable

practices. This includes reducing energy consumption, reducing e-waste, and integrating technology solutions to support sustainable development goals.

- e. **Prioritizing Human Welfare:** Technological innovation must aim to improve overall human welfare, both physically, mentally and socially. It is necessary to ensure that technology not only provides economic benefits, but also improves the quality of life and happiness of individuals and society in general.

2. Influence of Culture and Environment

It is important to pay attention to local culture and values in the technology development environment. This includes understanding the needs and preferences of local communities and ensuring that technology does not conflict with cultural or religious values held by the community.

A value-based approach to technological innovation emphasizes the importance of prioritizing human interests and societal welfare in the development and implementation of new technologies. This requires active engagement from a wide range of stakeholders, including technology companies, governments, academia, and civil society, to ensure that technology continues to provide positive benefits for humans while strengthening the values that society at large deems important.

3. Stakeholder Involvement

Stakeholder involvement in technological innovation is very important to ensure that the technology developed and implemented meets the needs and expectations of the various parties involved. Following are some of the key stakeholders typically involved in technological innovation:

4. The Role of Scientists and Technology Developers

Educational and Research Institutions: Educational and research institutions have a role in producing the knowledge and skills needed to support technological innovation. They can also be partners for technology companies in the development of new products and innovative solutions.

Technology Companies and Developers: Technology companies are key stakeholders in technological innovation. They are responsible for developing new products and services and ensuring that the technology they develop meets high standards of quality and safety.

5. The Role of Government

Government: The government plays an important role in regulating and supervising technological innovation to ensure that the technology developed complies with applicable regulations and does not violate the law. They can also provide financial and policy support to encourage sustainable and inclusive technological innovation.

6. The Role of Society

Civil Society and Advocacy Groups: Civil society and advocacy groups are often the voice for the general public's interests in technological innovation. They can raise concerns about the social, environmental or ethical impacts of new technologies, and encourage companies and governments to act responsibly.

Consumers and End Users: Consumers and end users are the stakeholders most directly affected by technological innovation. Their opinions and experiences in using new technologies can provide valuable insights for developers to refine and improve their products and services.

Investors and Financiers: Investors and financiers play an important role in supporting technological innovation by providing funding for research, development, and scale-up of new products and services. They can also influence the direction of technological innovation by prioritizing investment in certain sectors.



This mind map displays the relationships between key topics related to ethics in technological innovation, as well as the stakeholders involved and relevant value-based approaches. Mind maps can help in visualizing the structure and key concepts related to the topic.

Conclusion

Addressing these issues requires a holistic approach involving multiple stakeholders, including technology companies, government, academia, and civil society. The need for cooperation to develop regulatory frameworks, ethical standards and best practices that promote responsible and sustainable technological innovation. With collaboration between the various parties involved, technological innovation can become more inclusive, sustainable, and in line with society's needs and values.

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