

Reframing Innovation through Ethics: A Conceptual Analysis of Responsibility in Technological Advancement

¹Radhika Rani Chittarusu

²Dr. M. M. Bagali

¹Dayananda Sagar University, India

¹chittarasuradhika.rani-rs-scms@dsu.edu.in

²Dayananda Sagar University, India

DOI: <https://doi.org/10.63084/cognexus.v2i2.244>

Abstract

This paper presents a conceptual analysis of ethics and responsible innovation in the context of rapid technological and societal transformation. It critically examines the foundational principles that underpin responsible innovation, emphasizing the need to integrate ethical reasoning into the core of innovation processes rather than treating it as a reactive or regulatory concern. The study synthesizes insights from ethical theory, innovation studies and governance frameworks to develop a coherent understanding of how responsibility can be operationalized in contemporary innovation systems. The analysis identifies key dimensions of responsible innovation, including anticipation, inclusivity, reflexivity and responsiveness and explores their interrelationships. It argues that ethical innovation requires a shift from profit-centric and efficiency-driven models toward value-sensitive approaches that prioritize social justice, sustainability and human dignity. The paper also interrogates the challenges posed by emerging technologies such as artificial intelligence and data-driven systems, particularly in relation to bias, accountability and transparency. Through a conceptual framework, the study highlights the role of multiple stakeholders like researchers, institutions, policymakers and communities in co-creating ethically aligned innovation pathways. It further examines how ethical foresight and participatory engagement can address uncertainties and unintended consequences associated with innovation. The paper contributes to the theoretical discourse by clarifying key concepts, identifying gaps in existing literature and proposing an integrative perspective that bridges ethics and innovation studies. It concludes that responsible innovation is not merely a normative ideal but a necessary paradigm for ensuring that technological advancement aligns with broader societal values and long-term sustainability.

Keywords: Ethics, Technological Advancement, Responsible Innovation, Innovation Ethics, Ethical Governance, Conceptual Framework, Sustainability, Responsibility

1. Introduction

Technological advancement has emerged as one of the defining characteristics of contemporary society, transforming economies, governance systems, industries and human interactions. Innovation has traditionally been associated with economic growth, productivity enhancement and competitive advantage; however, rapid technological progress has simultaneously generated complex ethical concerns relating to responsibility, transparency, sustainability, privacy, fairness and societal well-being (Leone & Belingheri, 2017).

In recent years, scholars have increasingly argued that innovation cannot be evaluated solely through technological efficiency or market outcomes but must also be examined through ethical and social lenses. The growing influence of artificial intelligence, data analytics, automation and digital ecosystems has intensified concerns regarding accountability, human autonomy and the broader societal consequences of technological decisions (Stahl, 2021). Ethical reflection has therefore become essential in understanding not merely what technology can achieve but also what it ought to achieve.

The concept of responsible innovation has emerged as a significant framework for integrating ethical reflection into research and technological development. Responsible innovation advocates anticipatory governance, stakeholder engagement, reflexivity and responsiveness to societal values throughout the innovation process (Bourban & Rochel, 2021). Rather than viewing ethics as a corrective mechanism applied after innovation occurs, responsible innovation positions ethics as an integral component embedded within design, implementation and governance structures.

Moreover, contemporary research highlights that technological innovation increasingly operates within socio-technical systems where ethical consequences extend beyond organizational boundaries into communities and future generations (Brusoni & Vaccaro, 2016). Ethical governance therefore requires moving beyond compliance-based approaches toward value-sensitive and human-centered innovation models.

Innovation ethics further emphasizes that innovation should not merely pursue economic outputs but also promote inclusiveness, justice, sustainability and human flourishing. Bryden and Gezelius (2017) argue that innovation systems should be designed around ethical principles that recognize human rights and broader societal needs rather than focusing exclusively on technological competitiveness. Similarly, ethical frameworks in innovation planning have demonstrated the importance of integrating values such as autonomy, fairness and social responsibility into technological design and decision-making processes (Bednar & Spiekermann, 2024).

At the same time, concerns have emerged regarding the possibility that ethics itself may become symbolic rather than transformative. Some scholars caution that ethical discourse surrounding technology can risk becoming “ethics washing” if ethical principles are discussed without meaningful

institutional or operational change (Steinhoff, 2024). Consequently, responsibility in technological advancement requires not only ethical principles but also governance mechanisms capable of translating those principles into practice.

Against this background, the present conceptual study seeks to reframe innovation through an ethical perspective by examining the notion of responsibility in technological advancement. It explores how ethical considerations can reshape innovation processes and governance structures to ensure that technological development contributes to human welfare, social justice and sustainable progress. By synthesizing perspectives from innovation ethics, responsible innovation and ethical governance literature, this paper contributes to a deeper understanding of how responsibility can serve as a foundational principle for future technological advancement.

2. Literature Review

Brusoni and Vaccaro (2016) explained that ethics should not remain a post-innovation corrective mechanism but must become an integral part of product, service and organizational innovation. They emphasized that ethical variables such as transparency, reliability, security and privacy shape both innovation outcomes and organizational legitimacy.

Bryden and Gezelius (2017) explained that innovation policies are often driven by implicit normative assumptions focused on economic growth and competitiveness. They proposed that innovation systems should incorporate human rights, inclusiveness, sustainability and ethical responsibility through a human-rights-based Triple Bottom Line approach.

Leone and Belingheri (2017) explained that innovation must be examined through the perspectives of ethics, responsibility and sustainability. They argued that organizations should integrate social objectives, environmental concerns and inclusive business models into innovation strategies to reduce inequalities and achieve sustainable development.

Bourban and Rochel (2021) explained that Responsible Innovation (RI) frameworks require stronger ethical foundations. They introduced Innovation Ethics (IE) as a complementary approach to responsible innovation and emphasized issues such as artificialization, ethical responsibility and changing human–technology boundaries.

Stahl (2021) explained that ethical concerns in digital technologies have evolved from traditional computer ethics toward broader digital ecosystem ethics. He argued that ethical evaluation should move beyond individual technologies and focus on interconnected socio-technical environments.

De Cremer and Kasparov (2021) explained that technological innovation acts as a double-edged sword because while it accelerates growth and productivity, it may also generate inequalities and ethical

risks. They recommended stronger moral responsibility and governance mechanisms alongside continued technological advancement.

Astola et al. (2022) explained that creativity should not only be treated as an individual virtue but also as a collective virtue emerging from collaborative innovation processes. They emphasized that ethical innovation contributes to human flourishing through collective creativity and inclusive work cultures.

Horton et al. (2022) explained that embedding ethics into technological education improves awareness and the ability to identify and respond to ethical issues associated with emerging technologies.

Ray and Sikdar (2023) explained that technological innovation in education through artificial intelligence creates opportunities for personalized learning and accessibility but simultaneously raises ethical concerns regarding transparency, privacy, bias and accountability.

Pakhnenko and Kuan (2023) explained that digital innovation in public administration improves governance and public services but generates ethical challenges related to data privacy, accountability, transparency, accessibility and non-discrimination.

Nwaimo et al. (2023) explained that ethics and governance in data analytics should become foundational elements of innovation systems to ensure privacy, fairness, transparency, accountability and trust in data-driven decision-making.

Grimm et al. (2023) explained that innovation should remain aligned with ethical responsibility and societal expectations, emphasizing that scientific advancement requires moral reflection and responsible implementation practices.

Bednar and Spiekermann (2024) explained that integrating ethical theories such as utilitarianism, virtue ethics and deontology into innovation planning improves creativity and enables organizations to identify ethical risks and human values before technology implementation.

Steinhoff (2024) explained that AI ethics may sometimes function as “ethics washing,” where ethical language is used to legitimize technological expansion without creating meaningful institutional change. He argued for deeper structural transformation in AI governance.

Kashefi et al. (2024) explained that global AI governance requires balancing innovation with ethical regulation. Their study highlighted transparency, accountability, fairness and international cooperation as essential dimensions of responsible AI development.

Weldon et al. (2024) explained that future AI regulation should establish ethical governance structures capable of balancing transparency, innovation and public trust while minimizing social and legal risks emerging from advanced AI systems.

González-Esteban (2025) explained that Responsible Research and Innovation (RRI) require institutional reflexivity and ethical governance systems that embed ethical standards across all stages of research and innovation processes.

Robertson et al. (2025) explained that responsible innovation in neurotechnology depends on governance strategies that integrate accountability, interdisciplinary collaboration, public engagement, autonomy, privacy and justice.

De Simone et al. (2025) explained that AI integration in healthcare and emergency surgery offers significant clinical benefits but raises ethical concerns regarding informed consent, accountability, transparency, patient autonomy and algorithmic bias.

Ullrich and Teuber (2026) explained that ethical values increasingly influence public acceptance of technological innovation and that future innovation models should integrate sustainability, transparency and stakeholder well-being into development processes.

Although concepts such as innovation ethics, responsible innovation and ethical governance have gained scholarly attention, the literature remains fragmented regarding how responsibility should be understood and embedded throughout technological advancement processes. Furthermore, there remains insufficient conceptual integration between ethical principles and innovation practices, creating challenges in ensuring that technological progress aligns with societal values and long-term human welfare.

Therefore, there is a need to conceptually reframe innovation through ethics and examine responsibility as a guiding principle for developing more accountable, inclusive and sustainable technological advancement.

3. Objectives of the Study

1. To examine the relationship between ethics and technological innovation.
2. To analyze the role of responsibility in guiding technological advancement and innovation processes.
3. To explore how ethical principles can contribute to sustainable and socially responsible innovation.

4. Research Methodology

The present study adopts a conceptual research design using a qualitative approach to examine the ethical dimensions of technological advancement and innovation. Since the study focuses on understanding and interpreting theoretical concepts rather than collecting numerical evidence, conceptual research was considered appropriate. This approach helps in exploring how ethical

principles and responsibility can reshape existing perspectives on innovation and contribute toward more socially responsible technological development.

The study is descriptive and exploratory in nature. It aims to describe existing scholarly views on innovation ethics and explore how responsibility can be integrated into technological advancement. Through conceptual examination, the study seeks to provide a broader understanding of ethical concerns emerging from contemporary innovation practices and identify their implications for sustainable development.

The research is based entirely on secondary sources of data. Relevant information was collected from peer-reviewed journal articles, academic publications, conceptual papers, research studies and scholarly literature related to innovation ethics, responsible innovation, technological governance, sustainability and ethical frameworks. The selected literature provided the theoretical foundation for understanding the relationship between ethics and innovation.

Data collection was carried out through a systematic review of literature and document analysis. Published studies were identified and selected based on their relevance to the themes of ethics, responsibility, technological advancement, governance and sustainability. Priority was given to recent and conceptually significant studies that contributed to understanding ethical responsibility within innovation processes.

For data analysis, the study employed thematic and conceptual analysis techniques. The collected literature was reviewed, categorized, compared and interpreted to identify recurring themes and theoretical patterns. These themes were synthesized to develop a conceptual understanding of ethics-driven innovation.

The scope of the study is limited to examining the ethical and conceptual dimensions of technological advancement and does not involve empirical investigation or statistical analysis. Since the study relies on secondary data and theoretical interpretation, its findings are conceptual in nature and may be expanded through future empirical research.

5. Findings and Discussion

Based on the analysis of the uploaded literature, six major themes emerged regarding ethics and responsibility in technological advancement.

5.1. Theme 1: Anticipation as Ethical Foresight in Responsible Innovation

The analysis indicates that anticipation is a central dimension of responsible innovation because it enables innovators to consider ethical, social and long-term consequences before technologies are implemented (González-Esteban, 2025). Responsible innovation emphasizes anticipatory governance through which research and innovation become socially acceptable, sustainable and ethically desirable

by integrating ethical reflection into early stages of innovation (González-Esteban, 2025). Studies on AI governance show that anticipation has become increasingly necessary because rapidly evolving technologies generate uncertainty related to transparency, accountability and unintended social consequences (Kashefi et al., 2024; Weldon et al., 2024). Ethical foresight therefore functions as a mechanism for aligning technological advancement with broader societal values and sustainability objectives (Bryden & Gezelius, 2017).

Finding: Responsible innovation requires anticipatory ethical assessment to ensure technological development remains socially desirable.

5.2. Theme 2: Inclusivity and Multi-Stakeholder Participation in Ethical Innovation

The findings demonstrate that inclusivity is a defining feature of responsible innovation because ethical innovation emerges through engagement among researchers, institutions, policymakers, industries and society (González-Esteban, 2025). Responsible innovation frameworks indicate that governance becomes more effective when diverse values, concerns and social expectations are incorporated into innovation processes (González-Esteban, 2025). Research on ethical governance further demonstrates that public participation and interdisciplinary collaboration strengthen accountability and improve legitimacy in innovation systems (Robertson et al., 2025). Studies of collective creativity indicate that innovation outcomes improve when innovation environments encourage diverse contributions and collaborative problem-solving (Astola et al., 2022). Inclusive innovation supports more equitable and socially responsive innovation pathways (Bryden & Gezelius, 2017).

Finding: Multi-stakeholder participation strengthens ethical legitimacy and social acceptance of innovation.

5.3. Theme 3: Reflexivity and Institutional Ethical Self-Assessment

The findings identify reflexivity as an essential mechanism through which institutions critically examine the values, assumptions, objectives and outcomes embedded in innovation processes (González-Esteban, 2025). Responsible innovation requires institutional structures that embed ethical reflection throughout the research and innovation cycle rather than treating ethics as an external review process (González-Esteban, 2025). Research on ethics in innovation planning demonstrates that structured ethical analysis helps organizations recognize value conflicts and identify broader human values during technological development (Bednar & Spiekermann, 2024). Ethics-based innovation planning increases awareness of individual and social values and supports more responsible decision-making (Bednar & Spiekermann, 2024). Ethical reflexivity therefore strengthens institutional responsibility and supports ethically informed innovation practices (González-Esteban, 2025).

Finding: Reflexivity institutionalizes ethical reasoning within innovation governance.

5.4. Theme 4: Responsiveness and Adaptive Governance

The analysis reveals that responsiveness enables innovation systems to react to emerging ethical challenges and changing social expectations during technological development (González-Esteban, 2025). Responsible governance requires mechanisms that allow continuous adjustment of innovation practices in response to stakeholder concerns and evolving societal needs (Robertson et al., 2025). Research on AI governance demonstrates that adaptive regulatory frameworks are increasingly necessary to manage ethical risks while sustaining innovation capacity (Kashefi et al., 2024; Weldon et al., 2024). Transparency, accountability and explainability emerge as central governance requirements for sustaining public trust in technological innovation (Nwaimo et al., 2023; De Simone et al., 2025). Responsive governance supports ethically resilient innovation systems capable of managing uncertainty and maintaining societal legitimacy (Robertson et al., 2025).

Finding: Adaptive governance enables ethical alignment throughout the innovation lifecycle.

5.5. Theme 5: From Profit-Centric Innovation to Value-Sensitive and Sustainable Innovation

The findings reveal a growing shift from traditional efficiency-oriented innovation models toward value-sensitive approaches that prioritize social outcomes and ethical responsibility (Bryden & Gezelius, 2017). Innovation policies should move beyond competitiveness and consider human rights, sustainability and the needs of affected communities (Bryden & Gezelius, 2017). Innovation should generate broader social value alongside technological and economic advancement (Leone & Belingheri, 2017). Ethical approaches to innovation emphasize integrating social justice, sustainability and human dignity into innovation design and implementation (Bryden & Gezelius, 2017; Bednar & Spiekermann, 2024). Responsible innovation therefore functions as a framework for long-term sustainable societal development (Leone & Belingheri, 2017).

Finding: Ethical innovation expands the definition of success beyond economic performance.

The findings collectively demonstrate that anticipation, inclusivity, reflexivity and responsiveness operate as interconnected dimensions of responsible innovation and together support the integration of ethics into innovation systems (González-Esteban, 2025). Responsible innovation emerges not as an external regulatory ideal but as a practical framework that aligns technological advancement with sustainability, social justice, accountability and human values (Bryden & Gezelius, 2017; Leone & Belingheri, 2017).

5.6. Challenges of Ethical Governance in Emerging Technologies

5.6.1. Bias in Emerging Technologies

Artificial intelligence and data-driven systems may reproduce or amplify existing social inequalities due to biased, incomplete or unrepresentative datasets. Such bias can lead to unfair decisions,

discrimination and unequal access to technological benefits, creating ethical concerns within responsible innovation (Kashefi et al., 2024; Ray & Sikdar, 2023).

5.6.2. Accountability in Technological Decision-Making

The increasing use of automated and AI-driven systems creates challenges in determining responsibility for decisions and outcomes. When multiple actors such as developers' organizations and users are involved, assigning accountability becomes complex and may weaken ethical governance (De Simone et al., 2025; Nwaimo et al., 2023).

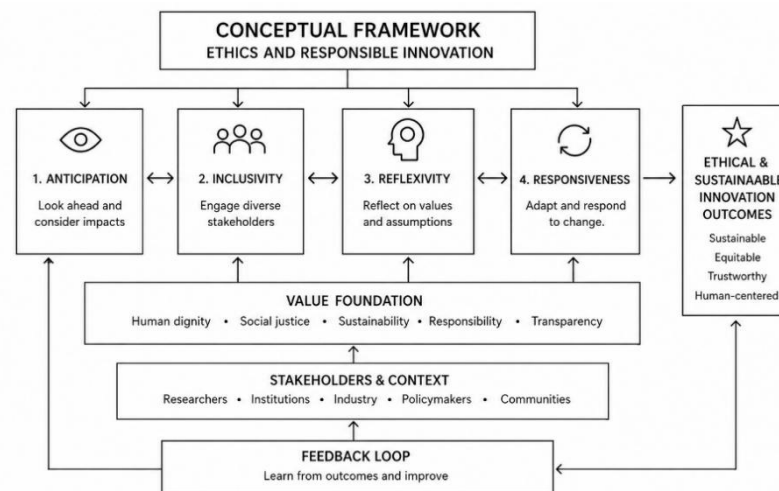
5.6.3. Transparency and Explainability Challenges

Many emerging technologies operate through complex and opaque mechanisms, limiting users' ability to understand how decisions are generated. Lack of transparency reduces trust, limits informed participation and creates barriers to ethical oversight and responsible innovation (Pakhnenko & Kuan, 2023; Kashefi et al., 2024).

5.6.4. Ethical Governance of AI and Data-Driven Systems

The rapid advancement of emerging technologies often outpaces existing governance mechanisms, creating difficulties in maintaining ethical standards. Effective governance requires integrating ethical principles, regulatory oversight and continuous evaluation throughout the innovation process (Weldon et al., 2024; Nwaimo et al., 2023).

Fig 1: Conceptual Framework of Ethics and Responsible Innovation



Source: Conceptualized by the authors based on reviewed literature with the assistance of AI tools

This conceptual framework explains how ethics can be integrated into responsible innovation to ensure that technological and social advancements benefit society. The framework is built around four key dimensions: anticipation, inclusivity, reflexivity and responsiveness. Anticipation focuses on identifying possible impacts and risks of innovation in advance. Inclusivity emphasizes involving diverse stakeholders such as researchers, industries, policymakers and communities in the innovation process. Reflexivity encourages critical reflection on values, assumptions and ethical responsibilities, while responsiveness highlights the ability to adapt innovation practices according to societal needs and feedback. These dimensions are supported by a strong value foundation consisting of human dignity, social justice, sustainability, responsibility and transparency, which guide ethical decision-making throughout the innovation process. The framework also recognizes the role of stakeholders and context, acknowledging that innovation operates within social, institutional, industrial and policy environments. The feedback loop at the bottom signifies continuous learning, evaluation and improvement, ensuring that innovation remains accountable and socially beneficial over time. Ultimately, the interaction of these components leads to ethical and sustainable innovation outcomes that are equitable, trustworthy, human-centered and aligned with long-term societal well-being.

6. Limitations of the Study

1. The study is based entirely on secondary data sources and does not include primary data collection.
2. The research follows a conceptual approach, limiting empirical validation of the findings.
3. The study focuses mainly on ethics and innovation in technological advancement and does not examine specific industries or technologies in detail.
4. Rapid changes in technology may affect the long-term applicability of the conceptual framework and interpretations.

7. Future Implications of the Study

1. Future research may conduct empirical studies to validate the proposed conceptual framework.
2. Comparative studies can examine ethical innovation practices across different industries and technological sectors.
3. Researchers may explore the relationship between ethical governance and innovation outcomes using quantitative methods.
4. The framework can support the development of industry-specific ethical guidelines and policy frameworks.
5. Additional research may focus on emerging technologies such as artificial intelligence, automation and digital ecosystems to strengthen ethical implementation.

8. Conclusion

The study concludes that ethics and responsibility have become essential components of contemporary technological advancement and innovation. Rapid developments in emerging technologies have created significant ethical concerns relating to accountability, transparency, sustainability, bias and social justice, making it necessary to integrate ethical principles into innovation processes rather than treating ethics as a secondary consideration. The conceptual analysis demonstrates that responsible innovation can be achieved through the interconnected dimensions of anticipation, inclusivity, reflexivity and responsiveness, supported by strong ethical values and stakeholder participation. It further explains how ethical foresight and collaborative stakeholder engagement help minimize uncertainties and manage the unintended consequences of innovation. The study also strengthens the theoretical understanding of responsible innovation by integrating perspectives from ethics and innovation studies while identifying important conceptual gaps in existing literature. Overall, the paper emphasizes that responsible innovation is essential for ensuring that technological progress remains socially accountable, sustainable, human-centered and aligned with long-term societal well-being.

9. References

- Astola, M., Bombaerts, G., Spahn, A., & Royakkers, L. (2022). Can creativity be a collective virtue? Insights for the ethics of innovation. *Journal of Business Ethics*, 179, 907–918. <https://doi.org/10.1007/s10551-021-04833-0>
- Bednar, K., & Spiekermann, S. (2024). The power of ethics: Uncovering technology risks and positive value potentials in IT innovation planning. *Business & Information Systems Engineering*, 66(2), 181–201. <https://doi.org/10.1007/s12599-023-00837-4>
- Bourban, M., & Rochel, J. (2021). Synergies in innovation: Lessons learnt from innovation ethics for responsible innovation. *Philosophy & Technology*, 34, 373–394. <https://doi.org/10.1007/s13347-020-00392-w>
- Brusoni, S., & Vaccaro, A. (2016). Ethics, technology and organizational innovation. *Journal of Business Ethics*, 143(2), 223–226. <https://doi.org/10.1007/s10551-016-3061-6>

Bryden, J., & Gezelius, S. S. (2017). Innovation as if people mattered: The ethics of innovation for sustainable development. *Innovation and Development*, 7(1), 101–118. <https://doi.org/10.1080/2157930X.2017.1281208>

De Cremer, D., & Kasparov, G. (2022). The ethics of technology innovation: A double-edged sword? *AI and Ethics*, 2, 533–537. <https://doi.org/10.1007/s43681-021-00103-x>

De Simone, B., Deeken, G., & Catena, F. (2025). Balancing ethics and innovation: Can artificial intelligence safely transform emergency surgery? A narrative perspective. *Journal of Clinical Medicine*, 14(9), 3111. <https://doi.org/10.3390/jcm14093111>

González-Esteban, E. (2025). Ethics in business research and innovation: An institutionalisation framework. *Philosophy of Management*, 24, 139–154. <https://doi.org/10.1007/s40926-024-00332-0>

Grimm, H., Biller-Andorno, N., Buch, T., Dahlhoff, M., Davies, G., Cederroth, C. R., Maissen, O., Lukas, W., Passini, E., Törnqvist, E., Olsson, I. A. S., & Sandström, J. (2023). Advancing the 3Rs: Innovation, implementation, ethics and society. *Frontiers in Veterinary Science*, 10, 1185706. <https://doi.org/10.3389/fvets.2023.1185706>

Horton, D., McIlraith, S. A., Wang, N., Majedi, M., McClure, E., & Wald, B. (2021). Embedding ethics in computer science courses: Does it work? In *Proceedings of the ACM Conference*.

Kashefi, P., Kashefi, Y., & Mirsarai, A. G. (2024). Shaping the future of AI: Balancing innovation and ethics in global regulation. *Uniform Law Review*, 29(3), 524–548. <https://doi.org/10.1093/ulr/unae040>

Leone, M. I., & Belingheri, P. (2017). The relevance of innovation for ethics, responsibility and sustainability. *Industry and Innovation*, 24(5), 437–445. <https://doi.org/10.1080/13662716.2017.1310036>

Nwaimo, C. S., Oluoha, O. M., & Oyedokun, O. (2023). Ethics and governance in data analytics: Balancing innovation with responsibility. *International Journal of Scientific Research in*

Pakhnenko, O., & Kuan, Z. (2023). Ethics of digital innovation in public administration. *Business Ethics and Leadership*, 7(1), 113–121.

Ray, S., & Sikdar, D. P. (2023). Artificial intelligence in education: Navigating the nexus of innovation and ethics for future learning landscapes. *International Journal of Research – GRANTHAALAYAH*, 11(12), 163–174.
<https://doi.org/10.29121/granthaalayah.v11.i12.2023.5464>

Robertson, L. J., Higgins, N. L., Maier, M. J., Carter, A., & Gardner, J. G. (2025). Ethical governance strategies for the responsible innovation of neurotechnologies: A scoping review. *Bioethical Inquiry*, 22, 931–948. <https://doi.org/10.1007/s11673-025-10440-9>

Stahl, B. C. (2022). From computer ethics and the ethics of AI towards an ethics of digital ecosystems. *AI and Ethics*, 2, 65–77. <https://doi.org/10.1007/s43681-021-00080-1>

Steinhoff, J. (2024). AI ethics as subordinated innovation network. *AI & Society*, 39, 1995–2007. <https://doi.org/10.1007/s00146-023-01658-5>

Ullrich, C., & Teuber, R. (2026). Ethics and innovation in organic dairy farming: Exploring German consumers' perceptions and expectations—A focus group study. *Food Ethics*, 11, Article 7. <https://doi.org/10.1007/s41055-025-00185-x>

Weldon, M. N., Thomas, G., & Skidmore, L. (2024). Establishing a future-proof framework for AI regulation: Balancing ethics, transparency and innovation. *Transactions: The Tennessee Journal of Business Law*, 25, 253–416.