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Tertiarization & sustainability new challenges for management in the digital era

Conference Proceedings

Short Papers

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Tertiarization & sustainability. New challenges for management in the digital era

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Short Papers

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To the reader,

this volume contains the short papers of the Sinergie-SIMA 2025 Management Conference, hosted by the University of Genova on June 12th and 13th 2025.

Tertiarization is one of the most salient profiles of the structural change and economic development that have characterized the recent decades (Jorgenson & Timmer, 2011). The growth of the service industry affects multiple sectors, e.g. wholesaling/retailing, tourism/hospitality, transport and logistics, health services, public administration, education, communication, banking and financial services, and B2B services (Baines *et al.*, 2017; Barrett *et al.*, 2015).

This growing relevance of services in the economy and the society has stimulated a broader interdisciplinary debate, e.g., the impact of tertiarization on the performance of the entire economic system, the innovation and digitalization of services, and the applicability of service management issues for the transformation of product-based business models.

Based on these premises, the 2025 Sinergie-SIMA Conference aims to explore the role of services as part of the evolution of society in terms of relevance, growth, competitiveness, innovation, but also sustainability and well-being. The lens of analysis used to explore this phenomenon will be digitalization, as it is shaping service innovation in more traditional sectors (e.g., social and sanitary services, tourism, retailing, etc.) and it is boosting knowledge-intensive business services (KIBS). Thus, digitalization is a key driver of the business model transformation, facilitating the transition of manufacturing firms towards digital servitization, enabling a new automation frontier (Frank *et al.*, 2019; Kastalli & Van Looy, 2013; Liu *et al.*, 2024), and paving the way for new opportunities for value creation within the global economy (Ostrom *et al.*, 2015).

The application of digital technologies to services (e.g., Artificial Intelligence, Big Data Analytics, Internet of Things, Machine Learning, Additive Manufacturing, Virtual Reality, Augmented Reality, Metaverse) also facilitates the pursuit of relevant environmental and social issues, for example contributing significantly to the achievement of greater systemic efficiency that help attain the Sustainable Development Goals (SDGs) and circular economy (Xing & Liu, 2023). Leveraging advanced technologies enables the extraction of valuable insights from vast amounts of information, facilitating informed decision-making, personalized service offerings, optimizing service delivery processes, and enhanced customer experiences (Chauhan *et al.*, 2022). Big data plays a strategic role in developing novel solutions that address evolving societal challenges, while driving sustainable growth and innovativeness in the digital era (Cappa *et al.*, 2022; Ciampi *et al.*, 2021; Mikalef *et al.*, 2019). Therefore, the real challenge today is to harness the application of digitalization to enhance the service-oriented approach and empower companies' economic, social, and environmental performances, generating and consolidating greater trust and loyalty among their employees, customers, and suppliers for a more sustainable, inclusive, and better society (Shaukat *et al.*, 2016).

AIDEA devoted a Conference to the tertiarization and new challenges for management and governance 25 years ago in Genoa, and many scholars focused on these topics from multiple perspectives and with original approaches.

The 2025 Sinergie-SIMA Genoa Conference, in continuity with the past, is an excellent opportunity to discuss our community's research efforts in the service economy and management, in order to identify new effective solutions suitable to face the current digital era. Different theories, methodological approaches, and units of analysis are required to generate scientific research impacting theories but also outlining wide-ranging strategies that can offer valuable insights to business leaders, companies, and institutions. More precisely, the Conference was a great occasion to discuss the research efforts of our research community within tracks related to the:

- Conference theme (Tertiarization & sustainability. New challenges for management in the digital era),
- SIMA thematic groups (Artificial intelligence in management, Entrepreneurship, Innovation & Technology Management, International Business, Marketing, Purpose-driven Businesses,

Retailing & Service Management, Small & Family Business, Strategic Communication, Strategy & Governance, Supply Chain Management, Logistics & Operations, Sustainability, and Tourism & Culture Management),

- Management Case Studies.

The Conference call for papers gave the opportunity to submit either short and long papers. Overall, the editorial staff received 311 submissions of which 263 short papers and 49 long papers.

For the *short and long papers*, the evaluation followed the peer review process, with a double-blind review performed by, respectively, one and two referees - university lecturers and experts about the topic - selected among SIMA and the community of Sinergie members.

In detail, the referees applied the following criteria to evaluate the submissions:

- clarity of the research aims,
- accuracy of the methodological approach,
- contribution in terms of originality/innovativeness,
- theoretical and practical contribution,
- clarity of communication,
- significance of the bibliographical basis.

The *peer review* process resulted in full acceptance or rejection of the submissions. In the case of disagreement among reviewers' evaluations, the decision was taken by the Chairs of the SIMA thematic groups or conference track. Each work was then sent back to the Authors together with the referees' reports. The suggestions received by the referees were used by the Authors during the presentation of their research works at the Conference.

The evaluation process ended with the acceptance of 293 papers (249 short papers and 44 long papers). This volume proposes the short papers whose Authors have authorized their publication.

All the short papers published in this volume were presented and discussed during the Conference and published online on the web portal of Sinergie-SIMA Management Conference (<https://www.sijmsima.it/>).

While thanking all the Authors, Chairs, and participants, we hope that this volume will contribute to advancing knowledge about tertiarization and sustainability in management.

The Conference Chairs

Lara Penco, Arabella Mocciaro Li Destri, and Marta Ugolini

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Unveiling the Dark Side of Technological Innovation: Navigating the Sustainability Challenges of Generative Artificial Intelligence - A Preliminary Exploration

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Abstract

This study explores the “dark side” of technological innovation, focusing on the sustainability challenges associated with Generative Artificial Intelligence (GAI) and its implications for business and management. While technological innovation brings significant advancements, it also entails negative environmental, social, and economic impacts, such as ecological degradation and social inequalities. Rather than directly measuring these impacts, the study investigates how Generation Z-digital natives with strong environmental and social values-perceives and reconciles the tension between the benefits of GAI and its potential negative consequences. Employing a qualitative approach through interviews with university students, the research reveals growing concerns around AI’s environmental footprint, its role in widening social gaps, and the erosion of human connection. These perceptions highlight the need for a more responsible and sustainable implementation of emerging technologies. By centering the voices of Generation Z, the study offers novel insights into how future users and professionals interpret and navigate the ethical and ecological trade-offs of innovation.

Framing of the research. *The “dark side” of innovation (Coad et al., 2022; Cheng et al., 2022), while often overshadowed by the enthusiasm surrounding technological progress, warrants critical examination due to its potential unsustainable effects. Innovation, by its very nature, serves as a powerful catalyst for social and economic advancement; however, its consequences are not always beneficial. It is imperative to acknowledge the duality of innovation-while it can bring about significant improvements in quality of life and productivity, it also presents challenges such as environmental degradation, social inequalities, and economic disruption. The notion of the “dark side” of innovation encapsulates these paradoxical outcomes, emphasizing the need for a more nuanced understanding of its impact (Gossart, 2015).*

At the core of this discussion lies the concept of sustainability, which involves the long-term balance between technological advancement and ecological, social, and economic well-being (Røpke, 2012; Moreau et al., 2021). The unsustainable aspects of technological innovation manifest through various mechanisms, particularly in the form of environmental damage, resource depletion, and the exacerbation of existing societal disparities. This phenomenon is particularly pronounced in industries driven by rapid technological advancements, where growth often occurs without sufficient consideration for the finite nature of resources and the social consequences of such progress.

One of the primary manifestations of the unsustainable nature of technological innovation is the environmental cost associated with new technologies (Ceballos et al., 2017; Lenton et al. 2019; Díaz et al., 2019; Freitag et al., 2021). As innovations proliferate, the demand for raw materials increases, leading to the depletion of non-renewable resources. Additionally, the rise in electronic waste, particularly within the digital and tech sectors, contributes to an escalating environmental crisis. The growing reliance on digital infrastructures, from cloud computing to Artificial Intelligence (AI), further compounds the issue, as these technologies necessitate vast amounts of energy and produce substantial carbon footprints (Andrae & Edler, 2015; Belkhir & Elmeligi, 2018).

Simultaneously, the social ramifications of technological innovation, particularly in terms of inequality and access, must not be overlooked (Witt, 1996). While new technologies may improve certain aspects of life, they often disproportionately benefit those already positioned within socio-economic power structures. Conversely, marginalized populations may face exclusion from the opportunities offered by technological progress, deepening existing divides.

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Among the most pressing contemporary examples of the intersection between innovation and sustainability is Generative Artificial Intelligence (GAI). GAI represents a distinct subset within the broader category of AI, characterized by its capacity to autonomously generate novel content—such as text, images, audio, and code—by identifying and replicating patterns from vast pre-existing datasets (Wessel et al., 2023; Lim et al., 2023). Unlike more traditional forms of AI, which primarily perform analytical or predictive tasks within fixed parameters, GAI is inherently creative and simulates human-like outputs, making it particularly relevant to fields where intuition, originality, and expression are central.

This unique creative potential, however, comes with significant sustainability concerns (Mikalef et al., 2022; Cheng et al., 2022; Barari et al., 2024).

The development and deployment of GAI require extensive computational power, translating into high energy consumption and a substantial carbon footprint. The environmental impact of GAI is not limited to infrastructure but extends to the training processes themselves, which often involve energy-intensive optimization over massive datasets.

Furthermore, GAI's ability to replicate tasks once performed by humans—particularly in knowledge-based and creative sectors—raises specific concerns about labor market disruption and job displacement. While these issues are not exclusive to GAI, its scale, speed, and scope amplify such effects, distinguishing it from other forms of AI and justifying a focused analysis. Understanding GAI's specific sustainability implications is therefore critical for developing informed, responsible innovation strategies.

Purpose of the paper. In light of the challenges associated with the “dark side” of innovation, it is crucial to critically examine the potential negative implications that often accompany technological advancements. It is essential to consider the sustainability of innovation, especially in the context of emerging technologies like GAI (Wach et al., 2023; Kim, 2023). The rapid pace of technological change necessitates a reevaluation of traditional paradigms of innovation, where the focus has often been on the uncritical celebration of progress. Instead, a more balanced perspective is required—one that not only acknowledges the potential benefits of innovation but also critically engages with its ecological, social, and economic costs. This necessitates the development of more robust regulatory frameworks able to ensure the responsible deployment of innovative technologies, alongside the promotion of practices that prioritize environmental conservation, social equity, and economic stability.

Ultimately, fostering sustainable innovation requires a multifaceted approach that integrates ethical considerations, environmental stewardship, and social responsibility into the design, development, and deployment of new technologies. As such, the focus should shift from mere technological advancement to a more holistic understanding of innovation—one that seeks to harmonize progress with the broader goals of sustainability and human flourishing. In the case of GAI, this holistic approach becomes even more critical, as its rapid growth demands a conscientious effort to balance technological progress with the broader goals of ecological preservation, social equity, and ethical responsibility.

This aspect will be explored as a preliminary study focusing on Generation Z, given their unique position as digital natives and their increasing reliance on technology in daily life (Turner, 2015; Dangmei & Singh, 2016; Rossi et al., 2023; Fulco & Aquilani, 2023). The growing prevalence of AI in both personal and professional spheres makes it crucial to examine how this demographic engages with AI and its potential biases. Generation Z, while deeply integrated with digital technologies, has been found to exhibit heightened awareness of social issues, including fairness and equality (MacGregor Pelikánová & MacGregor, 2020). Moreover, GAI represents a particularly relevant area of interest for this generation, as technologies, such as ChatGPT, are already embedded in their daily experiences, influencing their behaviors, decisions, and perceptions. Given the increasing energy demands of AI technologies, particularly those relying on vast computing power for model training and deployment, this study aims to explore how Generation Z reconciles their environmental values with their use and acceptance of AI-driven systems. The potential tension between embracing AI for its benefits and acknowledging its environmental cost presents an important area of investigation.

Methodology. A qualitative, inductive, and exploratory approach was chosen as it enables a deeper understanding of participants' perspectives and reduces researcher bias (Armstrong, 1979). This method encourages the emergence of unexpected insights, allowing data to unfold organically rather than imposing pre-existing hypotheses. Given the novelty of the research topic and the lack of prior studies, an interpretative approach was considered essential for gaining a comprehensive understanding of the phenomenon.

To facilitate this exploration, semi-structured in-depth interviews were employed, providing a flexible and open-ended dialogue between the interviewer and participants (Schreier, 2012). The interviews focused on exploring the (un)sustainability of GAI. This approach is particularly effective for exploring new and complex issues in depth, especially with young respondents who are familiar with the subject matter (Boyce & Neale, 2006). Thematic content analysis (Braun & Clarke, 2006) was used to analyze the interview data, allowing for a nuanced identification of recurring themes and patterns that emerged from the participants' responses. Thematic analysis was chosen for its flexibility and its capacity to provide rich, in-depth insights into complex phenomena, particularly when exploring subjective experiences and perceptions. This method allowed the researchers to identify key themes related to the sustainability of GAI, drawing attention to underlying concerns and perceptions within the data.

Purposive sampling was employed to select participants who could provide valuable insights into the topic (Carson et al., 2001). The study was conducted in Rome, Italy, and participants were selected from a local university. The final sample included 10 participants, all Italian students, equally divided between genders (5 males and 5 females). This composition ensured gender balance and prior experience with AI, focusing specifically on Italian respondents to explore their perceptions and experiences with AI in depth.

During the interview, participants initially engaged in a discussion focused on recalling and critically examining the key concepts under investigation, alongside an exploration of the research context. Subsequently, they shared their personal experiences with technology and AI, with particular attention to how they perceive the (un)sustainability of AI-driven systems. An example question was: "How do you feel about the environmental impact of AI? Do you think the benefits of AI outweigh its potential ecological costs?". To further explore the social aspects of sustainability, additional questions were included to understand participants' views on how AI adoption affects social structures, relationships, and communities. These questions aimed to provoke thought on the broader societal implications of AI and its potential to either foster or disrupt social well-being. For example, participants were asked: "Do you believe AI could enhance or undermine social cohesion? How might it affect societal values, such as empathy and trust?". Additionally, the interview addressed the economic dimension of sustainability, seeking to understand how participants view the economic implications of AI on industries and job markets. These questions encouraged reflection on both the opportunities and challenges that AI presents from an economic perspective. For example, participants were asked: "What are your thoughts on the economic implications of AI? Do you think AI can help create new economic opportunities, or do you see it as a potential threat to existing jobs?" or "How do you think AI-driven automation will affect job markets? Are there specific sectors that you think will benefit or suffer from AI adoption?".

Results. The results presented in the paper offer a comprehensive and nuanced analysis of the complex relationship between environmental sustainability and technological innovation, particularly in the context of AI. Respondents universally recognized the importance of environmental sustainability but acknowledged that its complexity-especially when coupled with the energy-intensive nature of AI-makes it difficult to fully grasp and integrate into everyday thinking. While respondents were aware of the environmental implications of AI technologies, particularly regarding energy consumption, many noted that these concerns remained abstract and were rarely considered in the routine use of AI tools. In this regard, AI has become so deeply embedded in daily life that its environmental costs often go unnoticed, operating almost invisibly without prompting reflection on its broader impact.

Nonetheless, respondents did voice concerns regarding the environmental sustainability of AI, particularly in contexts where its energy consumption might outweigh the benefits. A critical paradox emerged: while AI may provide significant efficiencies and convenience, its environmental cost-especially in energy-intensive applications-could undermine its overall value. One respondent raised a pertinent question: "If AI replaces people but still consumes a lot of energy, what's the real benefit?" This remark highlights the tension between technological advancement and the need to address environmental sustainability. The acknowledgment of AI's potential to enhance productivity is tempered by the recognition that its widespread use could contribute to unsustainable energy consumption, raising questions about its long-term viability and societal impact.

Another important theme emerging from the responses is the tension between technological advancement and the traditional values embedded in certain sectors. Respondents expressed discomfort with the over-reliance on technology in contexts where human connection and empathy are central to the experience. Many observed that certain services and industries are deeply rooted in human interaction, and the use of AI might undermine these values. As one participant remarked, "People expect a certain level of tradition and personal service. Too much technology makes the experience feel cold and impersonal." This sentiment points to the fear that excessive technological integration could dilute the human elements that are integral to positive service experiences, whether in customer service, healthcare, or other traditionally human-centered sectors.

This concern about the loss of human connection extends to broader debates about labor disruption caused by automation. Many respondents expressed unease about the displacement of human workers by AI-driven automation. While some level of AI assistance was welcomed-such as using AI for streamlining tasks like making recommendations or assisting with simple inquiries-respondents emphasized that human interaction remained indispensable, especially for roles requiring empathy, intuition, and personalized engagement. One respondent noted, "I don't mind AI helping with recommendations, but if there's no one to speak to when I need help, that's a problem." This highlights a fundamental concern about the potential over-reliance on AI in settings where human labor and interaction are essential to success. The introduction of AI could therefore disrupt not only labor markets but also societal values regarding the importance of human agency in service-based interactions.

In conclusion, while AI presents significant opportunities for efficiency and innovation, the respondents' concerns about its environmental sustainability and its potential to disrupt labor markets reveal the complex challenges surrounding its integration into various sectors. The widespread recognition of the environmental costs associated with energy-intensive AI technologies, coupled with concerns about the erosion of human interaction, suggests that the implementation of AI must be approached with careful consideration of both environmental and social consequences. As AI continues to be integrated into diverse sectors, it will be critical to strike a balance between technological progress and a commitment to sustainability, human engagement, and the preservation of the essential values that define human-centered industries. Table 1 summarizes how each aspect of sustainability plays a critical role in the ongoing discussion about AI's impact and its integration into various sectors, particularly in relation to its environmental, social, and economic implications, with these findings specifically reflecting the perspectives of Generation Z.

Table 1: Sustainability aspects in the context of AI integration: perspectives from Generation Z

Aspect of sustainability	Key insights	Challenges/Concerns
Environmental sustainability	- Respondents acknowledge the environmental importance of sustainability. - Energy consumption of AI is a major concern. - Many are unaware of the environmental costs in daily AI use.	- Energy-intensive nature of AI could undermine its environmental benefits. - AI's environmental costs often go unnoticed due to its deep integration into daily life.
Social sustainability (human interaction)	- Many view human connection and empathy as central to services. - Over-reliance on AI in industries rooted in human interaction may devalue personal service.	- Excessive AI could make services feel impersonal, undermining traditional human elements of customer service. - AI's impact on human connection and the warmth in services is a concern.
Economic sustainability (labor disruption)	- Some AI assistance (e.g., recommendations) is welcomed. - Respondents emphasize the need for human interaction in roles requiring empathy and intuition.	- Automation may displace human workers. - AI could disrupt labor markets and societal values related to human labor.

Source: Authors' elaboration

Research limitations. The study has several limitations. First, it overlooked country-specific differences, thereby neglecting the variations in AI adoption and its perceived impact across diverse national contexts. The study focused solely on an Italian sample, and while the findings provide valuable insights into the Italian perspective, they may not be universally applicable or representative of other countries. Previous research (Koo et al., 2021) suggests that attitudes toward AI can differ significantly between nations, influenced by factors such as technological infrastructure, governmental regulations, and cultural attitudes toward innovation. Therefore, future research could benefit from including participants from multiple countries to better understand how national contexts shape perceptions of AI and its environmental, social, and economic implications.

Second, the study did not consider industry-specific differences in AI adoption (Hoffmann & Mehler, 2023), which may be particularly relevant when assessing its environmental, social, and economic impacts. Different sectors, such as healthcare, finance, and manufacturing, may have distinct requirements, challenges, and opportunities related to AI implementation, which could significantly affect how sustainability issues are perceived and addressed. For example, the environmental cost of AI in energy-intensive industries like manufacturing might differ markedly from its use in service-oriented sectors. It is also important to recognize that not all industries are equally 'human-centered'. Sectors like healthcare, education, and customer service are heavily reliant on direct human interaction, while others, such as manufacturing or business automation, place less emphasis on such contact. By not exploring these industry-specific nuances, the study's findings may overlook important contextual factors that influence the integration of AI and its sustainability implications across different sectors. Future research could enrich the understanding of AI's sustainability by investigating these sector-specific variations.

Third, the study was limited to Generation Z respondents, and it would be interesting to explore how different generational cohorts-such as Millennials, Generation X, and Baby Boomers-perceive the environmental, social, and economic implications of AI. As each generation has distinct experiences, values, and levels of technological adoption, their perspectives on AI might differ significantly (Savin et al., 2024). Exploring these generational differences could provide a more comprehensive view of the impact of AI and highlight how various age groups envision its role in shaping the future. Understanding these generational dynamics could offer valuable insights into how AI is perceived and integrated across different segments of society.

Finally, the current sample consists solely of university students, which raises questions about its representativeness. While this is not a critical flaw, future research could consider expanding the sample to include both students and non-students from different educational backgrounds and regions. This would provide a broader perspective on how various groups within Generation Z perceive the environmental, social, and economic implications of GAI. Moreover, a clearer understanding of how Gen Z's concerns about the negative impacts of GAI, which remain abstract in their daily use of AI tools, may begin to influence their consumption choices could offer additional insights into their decision-making processes. Furthermore, integrating complementary quantitative analyses alongside the qualitative interviews could enhance the robustness of the study's findings. A mixed-methods approach would allow for a deeper exploration of broader patterns in perceptions of GAI, thereby offering a more comprehensive understanding of its societal implications and strengthening the validity of the conclusions drawn from the qualitative data.

Managerial implications. The findings of this study offer valuable managerial insights, especially for businesses integrating AI into their operations (Loureiro et al., 2021; Hussain, 2023). One key takeaway is the need for companies to strike a balance between leveraging the advancements offered by AI and addressing growing concerns about its environmental sustainability. While AI provides significant efficiencies and convenience, its energy-intensive nature raises valid concerns regarding its long-term environmental impact. Managers should be aware of these environmental costs, especially in energy-consuming AI applications, and take proactive measures to mitigate them. This might include adopting more energy-efficient AI technologies, exploring methods to offset the carbon footprint of AI systems, or implementing sustainable practices in their adoption. Furthermore, transparent communication about the environmental

efforts businesses are undertaking could help build consumer trust, particularly as more and more consumers, especially Generation Z, are becoming increasingly aware of the ecological consequences of AI.

Another critical consideration emerging from the findings is the tension between technological progress and core human-centered values. Respondents expressed concerns about the erosion of empathy and personal connection in services increasingly mediated by AI. Managers should therefore adopt hybrid models, where AI handles routine and data-driven tasks, while human agents continue to provide emotional intelligence, intuition, and personalized care. In healthcare, for example, AI can assist with administrative tasks and data management, but human providers should remain central to patient care, which relies on empathy and trust. Similarly, in education, while AI can support personalized learning, teachers should continue to foster student development through emotional intelligence and mentorship. In customer service, AI can handle routine inquiries, but human agents should still be available to address more complex issues that require empathy. This augmentation strategy (Raisch & Krakowski, 2021)-based on collaboration between humans and machines-helps maintain the human touch, ensuring that technology enhances rather than replaces human capabilities.

The study also highlights fears of labor market disruption, particularly in roles requiring emotional engagement. Rather than replacing jobs, businesses should invest in reskilling and upskilling employees to adapt to new roles emerging alongside AI. Encouraging the coexistence of human labor and AI not only mitigates workforce displacement but also strengthens service quality and operational efficiency.

Additionally, the study underscores the importance of understanding generational perspectives, especially in the context of Generation Z. As the generation most vocal about environmental and social issues, Generation Z's concerns about the environmental and social impacts of AI should not be overlooked. Managers must take these concerns into account when developing and marketing AI-based products and services. This generation places a high value on sustainability, so businesses that can demonstrate their commitment to eco-friendly AI solutions will likely appeal to this growing consumer base. Aligning AI strategies with the values and expectations of this cohort will help ensure that AI adoption is perceived as both a technological and socially responsible advancement.

Originality of the paper. This research holds significant relevance in the context of understanding the evolving relationship between Generation Z and AI. As this generation becomes increasingly integrated into the digital ecosystem, their interactions with AI, particularly in recognizing environmental, social, and economic impacts, could play a pivotal role in shaping their consumer behaviors, trust in AI, and broader acceptance of AI-driven services. Generation Z's heightened awareness of sustainability issues positions them as a unique demographic whose perspectives on the ethical implications of AI must be carefully considered. Their ability to identify, challenge, or overlook biases embedded within AI, alongside their understanding of the costs associated with AI technologies, will inevitably influence their perceptions of these systems' fairness, reliability, and sustainability.

Moreover, understanding how Generation Z navigates these concerns is not only crucial for adapting AI systems to align with their values, but it also provides an essential framework for the future development of AI technologies. By examining how this generation either embraces or challenges the ethical and environmental implications of AI, we can identify the key factors that influence their trust in AI and their willingness to adopt AI-driven services. This research, therefore, becomes a crucial avenue for exploring how AI systems can be designed and implemented in ways that foster ethical considerations, reduce biases, and mitigate environmental harm.

In addition, this inquiry is timely as it can offer profound insights into how innovation can be balanced with broader societal goals of equity and sustainability. By examining how Generation Z evaluates the social and ecological ramifications of AI, we can better understand the ways in which these concerns may shape future consumer behavior. This, in turn, will be pivotal for ensuring that technological advancements in AI do not perpetuate social inequalities or contribute to environmental harm.

Keywords: Technological Innovation; Generative Artificial Intelligence; Sustainability; Generation Z

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