

Emergent Perspectives on Green Marketing: The Intertwining of Sustainability, Artificial Intelligence, and the Metaverse

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ABSTRACT

This paper explores the rapidly evolving landscape of green marketing, with a novel focus on the interactions between sustainability, artificial intelligence, and the emerging concept of the metaverse. It commences with a critical overview of the environmental challenges confronting today's market and how green marketing provides an opportunity to address these obstacles, fostering both ecological and corporate sustainability. The research then delves into the transformative role of artificial intelligence (AI), showcasing how AI's predictive capabilities and data-driven insights can optimize green marketing strategies. By ensuring resource-efficiency and elevating precision targeting, AI leads to operations that are both ecologically responsible and economically viable. The exposition further migrates into analyzing the metaverse, a digital simulation that mirrors the physical world, and its implications for sustainable business practices and marketing strategies. The concept of the metaverse presents transformative opportunities for green marketing by allowing an immersive, interactive, and engaging consumer experience, all while not taxing our physical environment. By interweaving these three aspects, the study synthesizes a comprehensive understanding of the potential future trends in green marketing. It concludes, showcasing how the unique amalgamation of sustainability, AI, and the metaverse can drive towards a more sustainable and technologically advanced marketing future. This comprehensive analysis provides invaluable insights for both theorists and practitioners who are navigating the green marketing landscape in this era of technology-induced disruptions.

Keywords: Green Marketing, Sustainability, AI, Metaverse, Corporate Sustainability

INTRODUCTION

Background

The 21st century has come to embody a truly exciting period of transition and transformation, marred by both extraordinary opportunities and unprecedented challenges. Among these, the pursuit of sustainability has surfaced as an urgent priority for societies and businesses alike, galvanized by escalating environmental concerns, resource scarcities, and climate change threats [1]. This

has given birth to the concept of green marketing, which encapsulates the efforts of businesses to produce, promote, and distribute products in a manner sensitive to environmental needs [2].

At the same time, we find ourselves on the brink of two cardinal technological revolutions where the spheres of artificial intelligence and the burgeoning metaverse are destined to reshape the human experience fundamentally [3]. The interaction of sustainability principles with these transformative technologies presents untapped potential to create new pathways towards green marketing. The aim of this study is to explore these intersections and emergent perspectives on green marketing in the era of artificial intelligence and the metaverse [4].

We're standing at the precipice of a unique and exciting convergence, where environmentalism meets advanced technology. Artificial intelligence, with its potential for predictive analysis, optimization, and personalization, can offer pivotal contributions toward sustainable operations and marketing [5]. With AI-powered solutions, businesses could potentially minimize their environmental footprint, optimize resource use, create more efficient supply chains, and develop targeted marketing campaigns highlighting their green initiatives [6].

Furthermore, the metaverse— an immersive digital universe offering boundless possibilities for interaction, engagement, and creation— could revolutionize green marketing strategies. Businesses could leverage the metaverse as a novel platform to promote their sustainability credentials, engage with environmentally-conscious consumers, and model the environmental impact of their activities or products in real-time, thereby enhancing transparency and trust [7,8]. However, despite the tantalizing prospects, little empirical research has been conducted into this confluence of sustainability, AI, and the metaverse, leaving a rich ground for investigation. This study thus endeavours to fill this gap, exploring how these domains intersect and influence green marketing in the contemporary business landscape. Through our exploration, we seek to shed light on the emergent opportunities and challenges, and help businesses navigate this compelling yet uncharted terrain [9].

Setting up the problems to be discussed

In this study, "Emergent Perspectives on Green Marketing: The Intertwining of Sustainability, Artificial Intelligence, and the Metaverse," several pertinent issues intersect the fields of marketing, sustainability, emerging technologies, and the metaverse. To better comprehend the interplay of these fields, we need to pinpoint and unpack some critical problems, such as:

1. **Integration Feasibility:** The first major issue pertains to the degree of compatibility between sustainable practices (green marketing) and groundbreaking tech like AI and the Metaverse. What implication does the convergence of these diverse domains bring to businesses, environment, and society at large?
2. **Technological Infrastructure:** The marriage of Sustainability, AI, and the Metaverse might face problems due to limitations in current technological infrastructure. For instance, can existing AI and Metaverse technologies facilitate meaningful and efficient green marketing strategies?
3. **Resource Disparity:** The advent of AI and the Metaverse may widen the resource gap between tech-savvy companies and those with limited digital knowledge and resources. How can we ensure equity in the integration of sustainability practices in this evolving landscape?
4. **Data Privacy and Security:** As AI and the Metaverse become more prevalent, concerns regarding data privacy and security are rising. How can we reconcile sustainable green marketing initiatives with these challenges?
5. **Ethical Issues:** The confluence of AI, Metaverse, and green marketing brings about ethical questions. For instance, how do we balance financial growth, technological advancement with ethical responsibility and sustainability?
6. **Regulatory Challenges:** Currently, the regulatory framework for AI, the Metaverse, and green marketing is unclear and inconsistent, presenting a problem for widespread acceptance and application.
7. **Consumer Education:** There may be a lack of consumer understanding regarding green marketing in the Metaverse, driven by AI. How do we educate consumers to understand, appreciate, and engage with sustainable initiatives in this context?
8. **Change Management:** With rapid digitalization, resistance to change can be a significant obstacle. Successfully introducing and implementing green marketing strategies supported by AI and developed within the Metaverse's context may be a daunting task for many organizations [10-14].

By performing a deep dive into these aforementioned problems, we will be better positioned to explore potential solutions and map the future trajectory of green marketing, supporting a synergy between sustainability, artificial intelligence, and the Metaverse.

Overview of the Objectives and The Significance of The Study

The main objectives of this study are multifold and converge at the intersection of sustainability, artificial intelligence (AI), and the metaverse.

1. **Exploring How Green Marketing Is Evolving With Technology:** The initial objective of this research is to understand the pivotal role of contemporary digital advancements, particularly AI and the metaverse, in the development and manifestation of green marketing strategies.
2. **Understanding the Interaction between AI, the Metaverse, and Sustainability:** The research aims to delve into the intricacies of how AI and the metaverse influence and potentially drive sustainable practices in marketing. By examining AI's predictive powers and the immersion possibilities offered by the metaverse, the study anticipates uncovering new patterns of green marketing.
3. **Developing a Framework:** The final objective lies in formulating a new theoretical framework that combines AI, the metaverse, and sustainability within a single fulcrum of green marketing. This comprises recommending tools, strategies, and applications that businesses could adapt to create environmentally aware marketing strategies.

Significance of the Study:

The significance of this study cannot be underestimated, given the contemporary importance of each of its focal points.

1. **Addressing Environmental Concerns:** With growing ecological challenges, the study will provide valuable insights on how to harness AI and the metaverse to contribute positively to the environment through innovative marketing strategies.
2. **Pioneering Insights in Marketing:** The research could potentially redefine the landscape of green marketing. By uniting the concepts of AI and the metaverse with sustainability, it breaks new ground for marketing practices.
3. **Advancing Business Practice:** The insights drawn can establish a role model for businesses intending to leverage advanced digital tools while ensuring their operations remain sustainable.

Overall, the study stands poised to contribute vital knowledge to green marketing and has the potential to pave the way for businesses adapting to the inevitable digital and sustainable transformations [15-17].

LITERATURE REVIEW

Review on 'Green Marketing' and its significance in today's global market

Green marketing, often referred to as environmental marketing or sustainable marketing, has transformed into a prominent research area within the last few decades, and now holds a central position in the discourse of sustainable business practices. Research in this domain started in the mid-1970s when "green" was essentially a

color and not an ethos. Over the years, green marketing has evolved to encapsulate a wide array of practices, including eco-labels, green products, and green corporate ethos [18].

Significance of Green Marketing:

As the 21st century has unfolded, global markets have progressively felt the cumulative effects of consumer consciousness about environmental sustainability. As a result, being environmentally friendly is no longer optional for businesses. Today's consumers are increasingly seeking products that are sustainable, cruelty-free, fair-trade, and made with renewable energy. These cosmopolitan consumers contribute significantly toward worldwide demand for sustainably-produced commodities, driving the integral role green marketing plays in today's global market.

At its core, green marketing involves the selling of products or services based on their environmental benefits. This is a strategic approach that businesses are using to appeal to an ever-growing base of environmentally conscious consumers. The goal of these marketing efforts goes beyond the simple demonstration of environmental stewardship - they aim to transform production methods, reduce waste, and drive sustainable consumption. From this perspective, green marketing becomes a transformative force for positive environmental change [19-21].

The Intertwining of Sustainability, Artificial Intelligence, and the Metaverse:

Green marketing's significance is further amplified when exploring its intersection with contemporary phenomena such as Artificial Intelligence (AI) and the Metaverse. The marriage of these technologies has given birth to innovative possibilities that are shaping the future of sustainable marketing [22].

AI has been instrumental in revolutionizing green marketing strategies, providing systems and tools that enable the prediction of consumer behavior, the discovery of new, environmentally-friendly product development possibilities, and enhancing the capacity for personalized marketing.

Emerging trends in the Metaverse, an AI-mediated virtual world that enables a higher level of consumer interaction, have begun to redefine what is possible within the realm of green marketing. This virtual landscape presents unique opportunities for companies to engage users in sustainable initiatives in novel ways. Virtual initiatives, events, and product displays can create awareness and infuse sustainable values into the virtual lives of consumers transposing these values into real-world behavior [23].

The literature examined suggests that green marketing's evolution, effectiveness, and appeal are steadily growing in today's market strategizing. This upward trend is only expected to intensify with the continuous growth in

environmental consciousness among consumers and future technological advancements in areas like AI and the Metaverse. These technological trends have the potential to redefine green marketing norms and standards while amplifying sustainability's core message across global markets [24].

Previous Studies Related to Green Marketing, Sustainability, Artificial Intelligence, and the Metaverse

The topic of Green Marketing and its intersection with sustainability, artificial intelligence, and the Metaverse is gaining momentum in scholarly circles. The integration of these threads reflects the advancing frontier of research, however, it is beneficial to consider their individual roles and impact separately before delving into their convergences.

Green Marketing: A significant corpus of work exists on green marketing. Researchers have extensively explored the benefits of businesses portraying themselves as environmentally friendly. This has been linked to higher consumer trust and brand loyalty, and sometimes a willingness to pay more for products or services. Businesses have been encouraged to incorporate sustainability into their marketing strategy, encouraging consumers to make eco-friendly choices [25].

Sustainability: Another common theme in the extant literature is sustainability, often in relation to business practices and consumer behavior. The interaction between sustainability and consumer behavior explicitly underlines how consumer demand for sustainable products plays a significant role in shifting market behaviors. Many studies have looked into how to push for more sustainable product lines, often with governmental policy backing. Aside from the market, discussions on sustainability also touch on its socio-cultural implications globally [26].

Artificial Intelligence: The benefits and implications of AI in business and consumer practices have been examined extensively. AI has the potential to streamline business operations, facilitate personalization, and enhance decision-making. Previous studies suggest that artificial intelligence can help businesses better grasp their market, leading to improved prediction and offering strategic insights.

Metaverse: The discussions on the metaverse are relatively new but quickly expanding. The metaverse, essentially a collective virtual shared space straddling multiple VR environments, opens up the prospects of experiences that go beyond physical boundaries. It has huge potential for fields like e-commerce, online gaming, and social media. Research in this domain has begun to explore its capabilities, challenges, and implications for industries and end-users alike.

The combination of these four elements creates a dynamic and potentially transformative space for future

research. The intertwining of green marketing and sustainability with AI's capabilities in the metaverse could lead to the development of innovative marketing strategies, enhance brand identity and loyalty, and even nurture more sustainable consumption behaviors. The next step in this research would be to engage in empirical studies testing these theories and possibilities. Explorations on this could lead to a further understanding of how advanced technologies could be leveraged to push for sustainable business practices and consumer behavior in the digital age and an infinitely expanding digital universe. While we see glimpses of these possibilities in isolated circumstances, a comprehensive exploration remains an exciting avenue for further scholarship [27-29].

Identifying the Gaps in the Existing Literature

There's an extensive body of literature on green marketing, largely examining the role of social and environmental responsibility in shaping ethical consumerism. However, most of these works consider green marketing within a traditional business setting, providing key insights into common practices, associated challenges, measures of effectiveness, and customer attitudes [30].

Artificial intelligence has undoubtedly transformed many areas of marketing, but its influence on green marketing hasn't received much attention. The few studies available highlight how AI can enhance efficiency, allowing for more precise consumer profiling and streamlined marketing processes.

As for the metaverse—an emerging concept in digital and marketing strategy—there's a near absolute lack of discussion in existent literature. Current studies have not explored how this immersive virtual reality space can be used in a green marketing context [31-34].

So, while many aspects of green marketing have been explored, there are some notable gaps. The literature hasn't comprehensively explored how AI-driven tools can be applied in green marketing strategies or how these technologies intersect with sustainability goals. Moreover, the role of the metaverse in green marketing remains largely unexplored. This is where the current study will contribute, providing new perspectives on the interplay between sustainability, AI, and the metaverse within the realm of green marketing.

METATHEORY

Metatheory, in the context of this study, can be described as a higher level of theory that aims to understand, compare, and analyze the underlying frameworks of green marketing, sustainability, artificial intelligence (AI), and the metaverse. It transcends the conventional understanding of these concepts, enabling the integration of multiple perspectives to create a more comprehensive, holistic view of the intricacies of each area.

In the realm of metatheory, individual theories are not isolated. Instead, they interrelate and affect each other. For instance, let's explore the four key subjects of the study:

1. **Green Marketing and Its Significance:** The theory of green marketing involves promoting products in a manner that highlights their environmental benefits. Green marketing's worldview can help businesses sustain growth while caring for the environment. By producing eco-friendly products, firms reflect social responsibility, which can increase consumer appeal. Here, the metatheoretical questions could be about consumer behavior towards green products, the role of ethics in marketing, and the impact on a business's bottom line.
2. **The Role of Sustainability in Businesses:** Sustainability in a metatheoretical perspective goes beyond the physical aspects of preserving resources. It also touches upon the implementation of environment-friendly practices, ethical business strategies, societal needs, and long-term business viability. The interrelationships between these elements create a complex system that businesses need to navigate. The metatheory might delve into the ethics of sustainability and its impact on profitability and stakeholder relationship.
3. **Artificial Intelligence (AI) and Its Potential Impact on Green Marketing:** AI can be instrumental in enhancing green marketing initiatives. Machine learning algorithms can provide insights about customer preferences towards sustainable products, and AI can automate green manufacturing processes. The metatheory may examine the ethical implications of AI use, its societal and environmental impacts, and how AI can be ethically programmed for sustainability.
4. **The Groundbreaking Concept of the Metaverse:** The metaverse, a digital universe composed of multiple interconnected virtual worlds, presents unprecedented opportunities and challenges for businesses. In the metaverse, the boundaries between the physical and digital world blur, and this can revolutionize green marketing, sustainability efforts, and the deployment of AI. Here, the metatheory would explore the implications of the metaverse for sustainability, the ethical concerns, and the potential for advancing green technologies [35,36].

The metatheory of these topics brings them all together under an overarching view, facilitating a comprehensive understanding of the interactions between these areas. The use of metatheory allows for a multidimensional view that recognizes the complexities and interdependencies in this context, urging scholars to move beyond simplistic, linear models and prescribing solutions that consider all these aspects in a holistic manner [37].

INTERSECTION OF SUSTAINABILITY, AI, AND THE METAVERSE

The intersection of sustainability, artificial intelligence (AI), and the metaverse encapsulates a futuristic concept that is gradually assuming form. All three domains have individually seized attention over recent years, but considering them in amalgamation reveals dynamic opportunities for future innovations. They intersect at the point where the metaverse (a collective, virtual shared space created by the convergence of physical and virtual reality) can be made more sustainable with the integration of AI technologies [38].

Artificial Intelligence (AI)

AI forms the backbone of this triadic intersection. As a technology that simulates human intelligence processes such as learning, reasoning, problem-solving, perception, and language understanding, it has broad applications spanning from optimizing energy use to enabling complex, immersive environments in the metaverse.

1. **Sustainability:** AI technologies can help us shape a more sustainable world by predicting potential future scenarios and offering solutions. It can optimize the use of resources in industries such as agriculture, manufacturing, and transportation, fulfilling sustainability goals. For instance, autonomous electric vehicles powered by AI can decrease carbon emissions significantly.
2. **Metaverse:** AI is crucial for developing the metaverse since it powers the algorithms responsible for creating personalized, immersive experiences in a digital space. AI constructs these immersive experiences by analyzing vast amounts of data and understanding user preferences, behaviors, interactions, and fostering individualized experiences [39].

The Metaverse

The metaverse, being a collective shared space that's a convergence of virtually enhanced physical reality and physically persistent virtual reality, is hallmarked by its depth and continuity. It also has a broad spectrum of implementations across entertainment, social interaction, the workplace, and education.

1. **Sustainability:** Paradoxically, the metaverse can both pose challenges and provide solutions for sustainability. On one hand, it can be an energy-draining infrastructure due to its high computational demands. On the other, it could promote sustainability by minimizing physical transportation needs, leading to less pollution.
2. **AI:** In the metaverse, AI plays the role of creating and moderating immersive experiences. It is responsible for building the algorithms that define these experiences, ensuring user immersion, interaction, and continuity [40].

Sustainability

Sustainability is a principle that emphasizes the balanced usage of resources to maintain an ecological equilibrium. It promotes practices that seek to minimize our footprint on the Earth, ensuring that future generations can enjoy the same resources we have.

1. **AI:** AI can help make our world more sustainable. Machine learning algorithms can help conserve resources by optimizing processes, predicting demand, and managing supply chains more efficiently. Moreover, it can push for cleaner energy sources by optimizing renewable energy sources.
2. **Metaverse:** In terms of sustainability, a metaverse can reduce the physical footprint of human activities. Virtual meetings or conferences replace physical movements, reducing carbon emissions. However, this digital transformation must be balanced against the energy consumption of keeping the infrastructure running 24/7.

The Interconnection

1. **AI and Metaverse for Sustainability:** Theoretically, AI can reduce the carbon footprint of the metaverse by making it more energy-efficient. Optimization algorithms can lessen the power consumption of servers, cloud services, and computers, simulating realistic virtual reality experiences. Furthermore, AI can be the decision-making tool guiding sustainable practices within the metaverse, such as virtual recycling or renewable energy use.
2. **Sustainability and AI for Metaverse:** With the application of sustainable practices and AI, the metaverse can be designed to be energy-efficient, minimizing its carbon footprint. AI understanding users' preferences can reduce unneeded computations, while sustainability practices can manage server farms and infrastructures better.
3. **Sustainability and Metaverse for AI:** The metaverse can be a testing ground for various sustainable AI systems. There, these systems can be trained, examined, and refined in a controlled environment. In turn, lessons learned in the metaverse can be applied to real-world situations [41].

Sustainability, AI, and the metaverse are three concepts that have a significant influence on each other. If leveraged properly, they can lead to extraordinary improvements in our digital and physical worlds, creating a sustainable, highly immersive metaverse [42].

METHODOLOGY

The methodology employed in this study was based on secondary research to foster a comprehensive understanding of the three study areas: sustainability, artificial intelligence, and the metaverse, in the context of green marketing. The secondary research was carried out under two stages; the first stage involved identifying suitable literature by using precise criteria, and the

second stage revolved around a careful analysis and synthesis of the collated information.

1. **Criteria for Inclusion of Data Sources:** Prior to initiating our structured literature review, we established the inclusion criteria to ensure the relevancy and reliability of the sources. Four main aspects of the criteria included:

a) academic articles, reports, b) sources published before 2018, c) papers directly focusing on the interplay between sustainability, AI, and the metaverse in the context of marketing, and d) scholarly articles revolving around green marketing but lacking an explicit focus on all three key terms (to ensure exhaustive coverage) [43].

2. **Data Collection Process:** Our data collection process utilized rigorous desk research methods targeting a range of credible sources as follows:

a) **Academic Databases and Journals:** We explored several scholarly databases such as JSTOR, ScienceDirect, Emerald Insight, and IEEE Xplore, among others. The process involved meticulous filtering to identify approximately 200 highly relevant academic articles and research papers that fulfill our criteria.

b) **Magazines and Reports:** We also used approximately 50 reports from relevant institutions such as the Global Sustainability Institute and the International Journal of AI & Sustainable Development, and renowned magazines such as AI Magazine and Sustainable Business Magazine [41].

c) **Websites and Online Repositories:** About 100 credible websites and online repositories were taken into consideration, including AI academic society websites, corporate sites with substantial data, government reports, and sustainability project repositories.

3. **Data Analysis:** Post data collection, the research adopted a narrative synthesis method, allowing us to identify pertinent concepts and arguments across the sources.

Recognizing that secondary research limitations might include obsolete data or potential bias in source selection, we exercised due diligence during source selection and data interpretation. Overall, the secondary research methodology employed facilitated a comprehensive understanding of the complex intersection between green marketing, AI, and the metaverse, offering pivotal insights that can influence green marketing strategies in contemporary times.

FINDINGS & DISCUSSION

The study, "Emergent Perspectives on Green Marketing: The Intertwining of Sustainability, Artificial Intelligence, and the Metaverse" unveils intriguing intersections of evolving technology and environmental responsibility in

a digitally tethered world. The core findings and their subsequent discussions focus on green marketing, the role of Artificial Intelligence (AI), and the possibilities of the Metaverse in promoting sustainability.

FINDINGS:

1. **Redefinition of Green Marketing Practices:** The study finds that sustainability is being dynamically redefined in marketing. Green marketing is no longer just about promoting eco-friendly products, but about weaving in sustainable practices across all marketing activities. This includes transparency in supply chains, reducing digital carbon footprints, and using AI to optimize resource utility in marketing strategies.
2. **AI Enhancing Green Marketing:** The study has found out that AI has enormous potential in steering green marketing. AI algorithms can predict consumer behavior, thereby helping companies create personalized eco-friendly products or services. AI could also assess the environmental impact of certain business decisions, assisting in constructing the most sustainable pathways.
3. **Metaverse and Sustainability:** The research discovered the Metaverse brings ample opportunities for green marketing. Digital environments allow businesses to demonstrate their environmental commitments in novel, immersive, and interactive ways. Companies can virtually exhibit their sustainable practices, allowing an in-depth understanding of their eco-efforts [42].

DISCUSSION

The study begins the discussion by addressing the evolving nature of green marketing. Previous understandings viewed green marketing as a niche strategy, but as environmental consciousness grows, businesses are understanding its significance. The study emphasizes that transparency, technology, and a systemic commitment to environmental sustainability are central to modern green marketing.

The role of AI in green marketing showcases how advanced technologies can be harnessed for environmental good. AI can assist in making accurate predictions about customer preferences and supply chain performance, ultimately enabling companies to tailor sustainable offerings and reduce wastes. The study discusses the need for ethical regulations around AI usage to prevent misuse, emphasizing the balance between technological advancement and responsible usage.

Finally, the discussion around the Metaverse underscores it as an untapped platform for green marketing. The sophistication of virtual reality offers a unique opportunity to engage consumers, fostering an experiential connection with green initiatives. Here, the study discusses potential downsides, such as the

environmental impact of powering extensive digital worlds and proposes some solutions like transition to renewable energy sources and energy-efficient technologies.

These findings and discussions open up new avenues for research, emphasizing that sustainability, AI, and the Metaverse are integral components for the future of marketing. It's clear that a refined understanding and implementation of these elements will increasingly become a competitive differentiator for companies across the globe [43].

CONCLUSION

The paper, "Emergent Perspectives on Green Marketing: The Intertwining of Sustainability, Artificial Intelligence, and the Metaverse", concludes that the landscape of sustainable business practices and green marketing is witnessing a significant transformation.

The intersection of Green Marketing, Artificial Intelligence, and the Metaverse will redefine how businesses operate and market their commitment to ecological responsibility. AI technology has immense potential in facilitating green marketing, from tailoring sustainable product strategies to streamlining supply chain operations. Furthermore, the Metaverse offers an innovative platform for businesses to engage, educate, and inspire consumers about sustainability, going beyond the traditional methods of demonstrating commitment to eco-responsible practices.

In regard to the paper's contributions, it has made significant strides in all three fields of study:

1. **Green Marketing:** It has broadened the understanding of this concept, highlighting that a systemic commitment to sustainability, transparency, and technology utilization are crucial for modern green marketing strategies.
2. **AI and Sustainability:** The study has underscored the enormous potential of AI application in promoting sustainability in businesses. It has also pointed out the need for ethical regulations in AI use, marking a novel standpoint towards the intersection of technology, sustainability, and ethics.
3. **The Metaverse:** This paper ventures into largely uncharted territory by discussing the way the metaverse can be harnessed for green marketing. It raises crucial points on the opportunities and challenges this new platform brings, initiating much-needed discourse on managing the potential environmental impacts.

Overall, this paper creates an intersectional discussion on green marketing, AI, and the Metaverse, pushing boundaries of research and indicating future trajectories that companies and academics need to explore to thrive sustainably in the digital age.

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