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*Review*

# The Digital Marketing for Sustainable Development

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**Abstract:** A Digital marketing allows brands to disseminate information in a targeted way towards their clients and consumers, making bidirectional communication and interactions between organizations and audiences feasible. This reality not only allows companies to pass on messages about sustainability associated with processes and products with the aim of launching trends and shaping behaviour, but also allows consumers to share their experiences, needs, preferences and expectations. In this sense, the techniques used in the context of digital marketing make it possible not only to communicate products and services but also to show that brands are working to be more sustainable and to disseminate new sustainable trends that help to change consumer mindsets. This research paper employs a Systematic Literature Review with Bibliometric Analysis (SLBA) methodology to explore and synthesize data about how digital marketing can be used to promote and communicate sustainability. In this study, the results show that digital marketing strategies contribute to promoting sustainable development by encouraging sustainable consumption patterns. This scenario is possible by understanding consumer behavior, communicating key messages through the best channels and effectively evaluating green marketing campaigns on consumer attitudes and purchasing decisions.

**Keywords:** digital marketing; sustainable development

## 1. Introduction

The growth of digital marketing tools and strategies has transformed how companies communicate and interact with their customers. Unlike traditional marketing, where communication was one-way and primarily came from the company, the increased use of social media has transitioned into two-way communications. This means that customers have the power and capability to communicate with brands, allowing them to provide feedback and share complaints and opinions, which are then integrated into a company's strategies and product development processes [1]. The digital revolution has increased competition, prompting companies to integrate these digital technologies into all their operational activities. As a result, this digital transformation has significantly contributed to developing new business models based on the bi-directional communication between firms and Internet users and the increased use of digital technologies [2]. Companies now see digital strategies such as digital marketing, online advertising campaigns, and adopting new business models as significant influencers of their current and future performance.

The digital marketing concept has continued to evolve with time as technologies advance. It describes marketing activities distributed through digital channels to promote digital products and services. Digital marketing leverages the increased global use of the Internet and social networks, allowing companies to disseminate marketing communications to many people [3]. It is considered a new way of building and maintaining relationships with modern customers, promoting brands, increasing sales, and creating a deeper understanding of the target customers, their needs, and preferences [1]. These goals are achieved through various digital marketing techniques, including social media and influencer marketing, search engine optimization, and search engine marketing. Despite the benefits and opportunities associated with digital marketing, there have been growing concerns over its impact on sustainability and sustainable development.

Given the increased consumer awareness and advocacy on sustainable growth, sustainability has become unavoidable dimension in all business activities. Global consumers and governmental and non-governmental agencies call out businesses practicing unsustainable business practices disregarding their environmental, economic, and social impacts. As a result, most companies have adopted sustainable business models and marketing practices. For instance, Hidayat et al. [3] explain that the modern-day marketing discipline incorporates a more sustainable approach. Thus, sustainable marketing has become increasingly popular in the business world and marketing research as firms modify their practices to address sustainability issues. However, Jevtić and Milovanović [4] indicate that despite the knowledge connecting sustainability and marketing, a gap showcasing their relationship still prevails. Therefore, this research essay aims to fill this knowledge gap by conducting a systematic bibliometric literature review (LRSB) synthesizing data from 60 studies showcasing the connection between digital marketing and sustainable development.

2. Materials and Methods

The study employs the systematic bibliometric literature review (LRSB) to collect, analyze and synthesize data on digital marketing for sustainable development. This research method was selected since it provides the foundation for conducting a rigorous, reliable, and valid study. For instance, LRSB uses a systematic and predefined search criterion, enabling the researcher to collect a wide range of scholarly publications related to the specific research topic [5]. In addition, it helps the analysis of large data volumes, allowing the identification of trends and patterns within the literature.

The LRSB involves screening and selecting information sources to ensure the validity and accuracy of the data presented in a process consisting of 3 phases and 6 steps [6,7,8] (Table 1).

Table 1. Process of systematic LRSB.

Fase	Step	Description
Exploration	Step 1	formulating the research problem
	Step 2	searching for appropriate literature
	Step 3	critical appraisal of the selected studies
	Step 4	data synthesis from individual sources
Interpretation	Step 5	reporting findings and recommendations
Communication	Step 6	Presentation of the SLRBA report

Source: own elaboration.

The focus of this methodological approach is SCOPUS, the online peer-reviewed database for indexing scientific articles, one of the most important in the academic world. The SCOPUS database is used only in an academic context, as it is the main source of research articles for academic journals, covering approximately 19,500 titles from more than 5,000 international publishers, including 16,500 peer-reviewed journals in various scientific fields. his allows for an unbiased assessment of topics that have been researched in terms of science and/or academic relevance. However, we have as a principle that the study was restricted to the use of the Scopus database and left out other academic databases. [6,7,8].

The procedure began with a comprehensive literature search through the Scopus database using the initial keyword "digital marketing." This step aimed to identify potential sources discussing the study topic. A broad number of sources related to the search term was generated, N= 3,093. The exact keyword "sustainable development" was added to narrow the search to more relevant results, reducing the document results to 60, which were then analyzed and synthesized in the final report.

Table 2. Screening Methodology.

Database Scopus	Screening	Publications
Meta-search	keyword: digital marketing	3,093
Inclusion Criteria	keyword: digital marketing, sustainable development	60

Screening	keyword: digital marketing, sustainable development Published until May 2023
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Source: own elaboration.

3. Literature Analysis: Themes and Trends

The peer-reviewed documents were analyzed until May 2023. 2021 was the year with the highest number of peer-reviewed papers, with 16 publications. Figure 1 examines peer-reviewed journals published through May 2023. The publications were sorted out as follows: Sustainability Switzerland (7); E3s Web Of Conferences (3); Lecture Notes In Networks And Systems (3); Iop Conference Series Earth And Environmental Science (2); Proceedings Of The 30th International Business Information Management Association Conference Ibima 2017 Vision 2020 Sustainable Economic Development Innovation Management And Global Growth (2); Smart Innovation Systems And Technologies (2); the remaining publications with 1.

As of 2018, there has been a greater interest in Digital Marketing for Sustainable Development research.

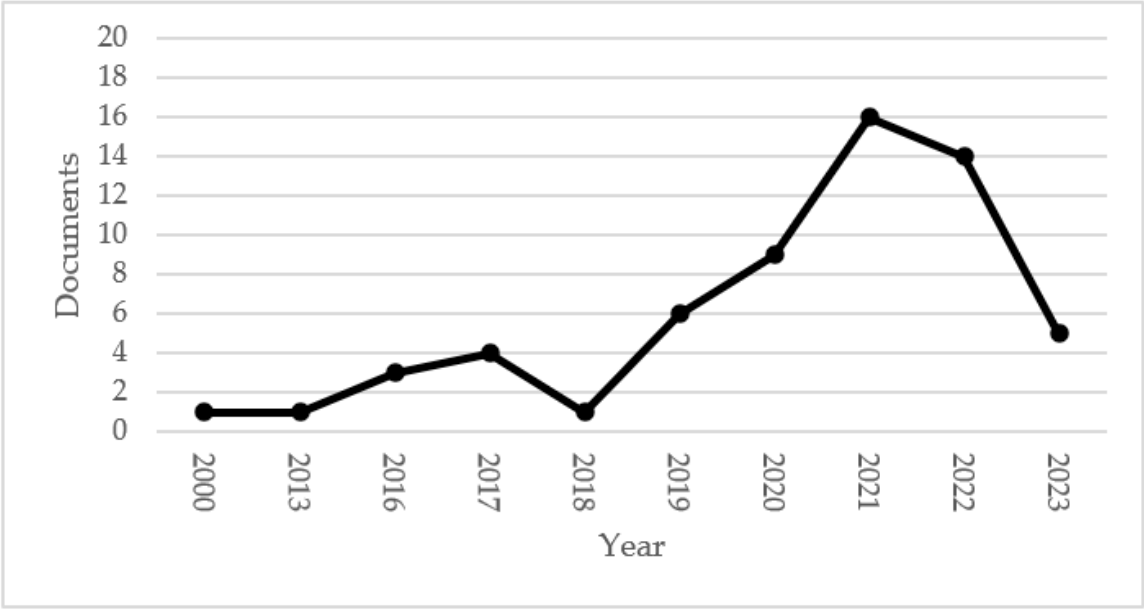


Figure 1. Documents by year. Source: own elaboration.

The Scimago Journal & Country Rank (SJR), the best quartile and the H index per publication is analyzed in Table 3.

Publications on the themes analyzed in this study are presented as follows: The most prominent academic journal is the Earth’s Future Journal with 2,510 (SJR), Q1 and H index 61. There is a total of 12 journals in Q1, 8 journals in Q2, 2 journals in Q3, and 6 journals in Q4, from the best quartile Q1, represents 22% of the 55 journals titles; the best quartile Q2 represents 15%, Q3 represents 4%, best quartile Q4 represents 3% of the 11 journal titles, and finally, 27 publications without data representing 49%.

Table 3 clearly shows that the significant majority of articles on the Sustainability of Educational Entrepreneurship rank on Q1, in the best quartile index.

Table 3. Scimago journal & country rank impact factor.

Title	SJR	Best Quartile	H Index
Journal Of Cleaner Production	1.98	Q1	268
Sustainability Switzerland	0.66	Q1	136

Journal Of Environmental And Public Health	0.60	Q2	47
Optik	0.54	Q2	92
Technology In Society	1.49	Q1	69
Foresight	0.48	Q2	36
Worldwide Hospitality And Tourism Themes	0.42	Q2	28
Environmental Impact Assessment Review	1.36	Q1	107
Planning Malaysia	0.25	Q3	13
Studies In Computational Intelligence	0.21	Q4	81
Iop Conference Series Earth And Environmental Science	0.20	_*	41
Ceur Workshop Proceedings	0.20	_*	62
Communications In Computer And Information Science	0.19	Q4	62
Emerald Emerging Markets Case Studies	0.19	Q4	7
E3s Web Of Conferences	0.18	_*	33
Smart Innovation Systems And Technologies	0.17	Q4	31
Lecture Notes In Networks And Systems	0.15	Q4	27
Abac Journal	0.15	Q1	6
Risti Revista Iberica De Sistemas E Tecnologias De Informacao	0.15	Q4	16
IEEE Transactions On Engineering Management	1.00	Q1	103
International Journal For Quality Research	0,30	Q3	24
2020 10th International Conference On Advanced Computer Information Technologies Acit 2020 Proceedings	0	_*	8
31st International Electric Vehicle Symposium And Exhibition Evs 2018 And International Electric Vehicle Technology Conference 2018 Evtec 2018	0	_*	5
Actual Problems Of Economics	0	_*	19
Advances In Intelligent Systems And Computing	0	_*	58
Engineering For Rural Development	0	_*	18
International Journal Of Advanced Science And Technology	0	_*	20
International Journal Of Management	0	_*	9
Proceedings Of The 27th International Business Information Management Association Conference Innovation Management And Education Excellence Vision 2020 From Regional Development Sustainability To Global Economic Growth Ibima 2016	0	_*	8
Proceedings Of The 3rd World Conference On Smart Trends In Systems Security And Sustainability Worlds4 2019	0	_*	5
Proceedings Of The 5th International Conference On Management Leadership And Governance Icmkg 2017	0	_*	3
Proceedings Of The European Conference On Innovation And Entrepreneurship Ecie	0	_*	7
Proceedings Of The 30th International Business Information Management Association Conference Ibima 2017 Vision 2020 Sustainable Economic Development Innovation Management And Global Growth	_*	_*	4
2019 International Conference On High Technology For Sustainable Development Hitech 2019	_*	_*	_*
2021 International Conference On Information And Communication Technology For Sustainable Development Ict4sd 2021 Proceedings	_*	_*	_*
2022 IEEE German Education Conference Gecon 2022	_*	_*	_*



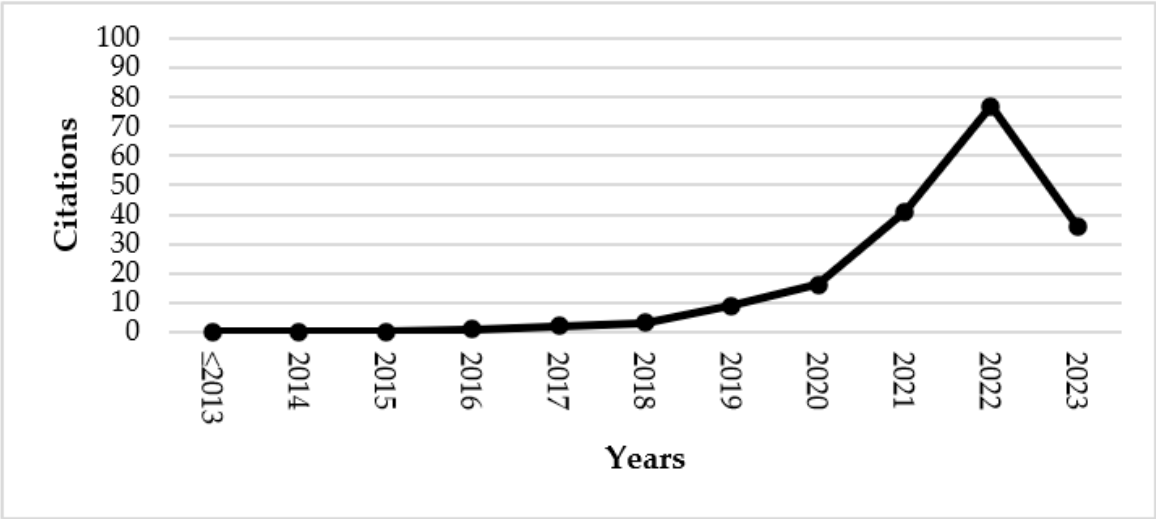
3rd International Conference On High Technology For Sustainable Development Hitech 2020 Proceedings	_*	_*	_*
Application Of Machine Learning In Agriculture	_*	_*	_*
International Workshop On Emerging Trends In Software Metrics Wetsom	_*	_*	8
Proceedings 2020 Management Science Informatization And Economic Innovation Development Conference Msieid 2020	_*	_*	_*
Proceedings 2nd International Conference On E Commerce And Internet Technology Ecit 2021	_*	_*	_*
Proceedings Of 2020 IEEE International Conference On Information Technology Big Data And Artificial Intelligence Iciba 2020	_*	_*	_*
Proceedings Of The 2022 Mohammad Ali Jinnah University International Conference On Computing Majicc 2022	_*	_*	_*
Proceedings Of The International Conference On Tourism Research	_*	_*	_*
Social And Sustainability Marketing A Casebook For Reaching Your Socially Responsible Consumers Through Marketing Science	_*	_*	_*
Sport Business Analytics Using Data To Increase Revenue And Improve Operational Efficiency	_*	_*	_*
Springer Proceedings In Business And Economics	_*	_*	_*

Note: \*data not available. Source: own elaboration.

The thematic areas covered by the 60 scientific and/or academic documents were: Computer Science (29); Engineering (22); Business, Management and Accounting (20); Energy (18); Social Sciences (18); Environmental Science (17); Decision Sciences (12); Economics, Econometrics and Finance (10); Earth and Planetary Sciences (5); Mathematics (5); Arts and Humanities (2); Chemical Engineering (2); Materials Science (2); Medicine (2); Agricultural and Biological Sciences (1); and Physics and Astronomy (1).

The most cited article was Post-industrial tourism as a driver of sustainable development by Kuzior et al. (2021), with 33 citations published in Sustainability with 0,660 (SJR), the best quartile (Q1), and with an H index (109). This paper aims to analyze" (1) the impact of economic and environmental dimensions, and of digital marketing on supporting post-industrial tourism development and (2) the difference between attitude to post-industrial tourism on the gender, age, and education dimensions and digital channels on post-industrial tourism development".

In Figure 2, we can analyze the evolution of documents' citations until May 2023. The number of citations shows positive net growth with R2 of 62% for 2022, with 77 citations with a total of 185 citations.



Source: own elaboration

**Figure 2.** Evolution of citations between ≤2013 and May 2023. Source: own elaboration.

The h-index was used to verify the productivity and impact of published works based on the largest number of articles included that had at least the same number of citations. Of the documents considered for the h-index, 7 were cited at least 7 times.

In Appendix A, Table A1, citations of all scientific and/or academic documents until May 2023 are analyzed; 25 documents were not cited in this period, making a total of 185 citations.

The study of bibliometric results, using the scientific software VOSviewer, aims to identify the main research keywords in studies that are part of the research area of Digital Marketing for Sustainable Development. Most of the network nodes are easier to see here. In this context, the node dimension indicates the occurrence of the keyword, that is, the appearance frequency of the keyword. The connection between the nodes visually demonstrates the co-occurrence of the keywords. And the keyword co-occurrences are indicated by their thickness, i.e., how often two or more keywords occur simultaneously. Keyword frequency increases with node size, node thickness, and frequency of co-occurrences between keywords. Each color represents a color hematic cluster, where the nodes and links within the cluster can be used to explain the scope of the theme's topic (represented by the nodes within the cluster) and the connections between the nodes that make up the theme (represented by the links within the cluster) of the cluster). [6,7,8].

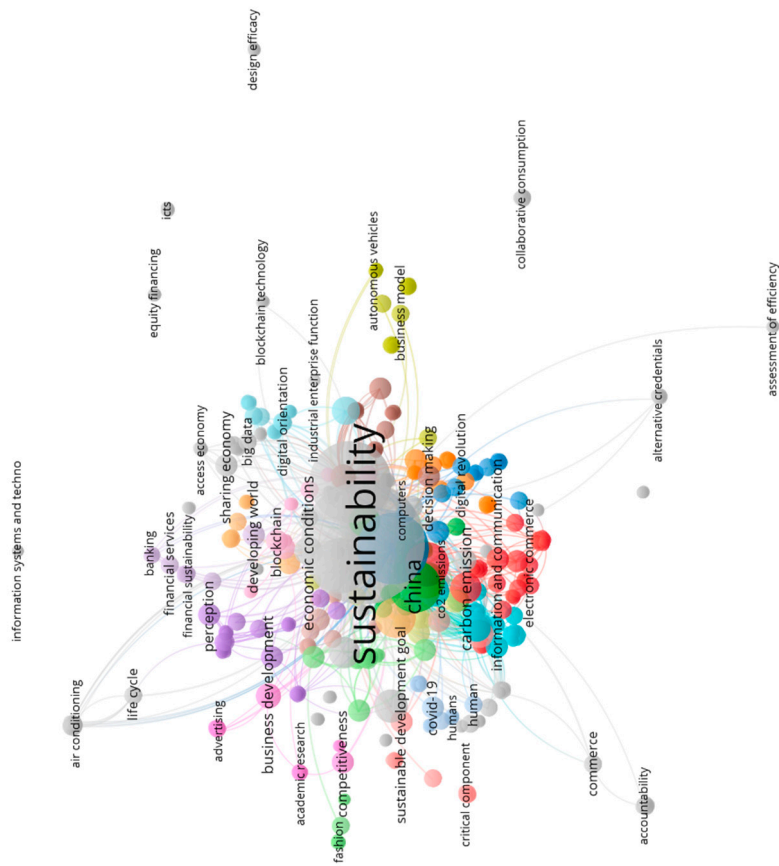
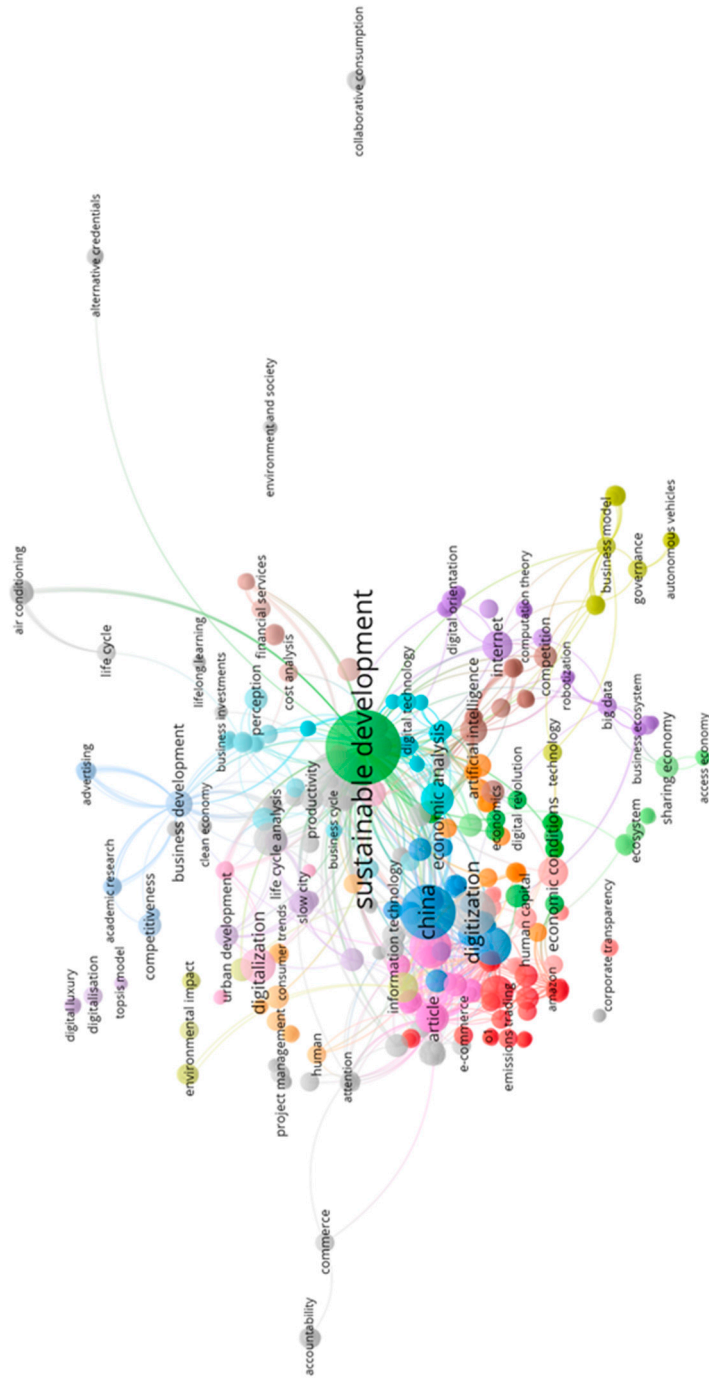


Figure 3. Network of all keywords.





**Figure 4. Network of Linked Keywords.**

Articles on Digital Marketing for Sustainable Development were the basis of this research. Following this analysis, the associated keywords are presented in Figures 3 and 4, making clear the network of keywords that appear together/linked in each scientific article, which makes it possible to know the topics studied by the researchers and, consequently, to identify future research trends. Figure 4 Vosviewer keyword development map results are divided into three groups. Cluster 1 is blue and refers to commerce, cluster 2 is red and refers to electronic commerce, and finally cluster 3 is green and refers to Big Data.

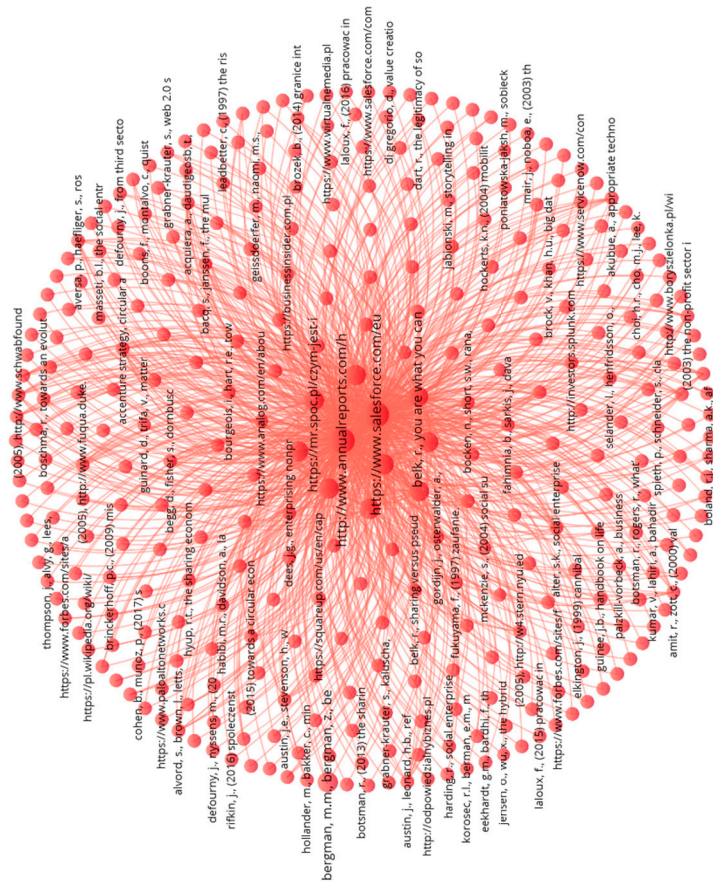


Figure 5. The profusion of co-citation.

## 4. Theoretical Perspectives

With the growing urgency to address climate change and create a more sustainable future, digital marketing has emerged as a powerful strategy for raising awareness, driving behavioral change, and engaging the global audience. Thus, digital marketing promotes sustainable development by strategically utilizing online channels and tools to promote sustainable business practices, products, and initiatives Hwangbo [9]. Various techniques such as content marketing, social media campaigns, influencer collaborations, and targeted advertising educate and inspire people and communities to embrace sustainable lifestyles, support eco-friendly brands, and participate in collective efforts to mitigate environmental impacts. Digital marketing as a strategy for achieving sustainable growth leverages the vast reach and accessibility of the digital landscape, which enables businesses, organizations, and individuals to harness the transformative potential of digital technologies.

### 4.1. An Overview of Digital Marketing

Marketing is a dynamic discipline that has continuously changed over the years. In today's world, rapid technological advancements have required marketing agencies and professionals to employ adaptable marketing initiatives that can handle the ongoing disruptions resulting from emerging technologies [10]. For instance, marketing executives aiming to achieve competitive advantage in the current business environment must leverage communication and information technologies to collect timely and accurate data about the customers, products, and marketplace. This data is analyzed and interpreted to aid decision-making practices, thus ensuring that all actions and activities implemented are data-driven [11]. Similarly, these executives recognize the importance of leveraging digital technologies for marketing since they help reach a broader audience and facilitate relationship building. This increased use of digital technologies in marketing has given rise to digital marketing.

Digital marketing refers to the use of digital technologies to achieve marketing objectives. Desai and Vidyapeeth [12] define it as using digital media such as the Internet, mobile phones, and display advertisements to promote products and services. Bala and Verma [13] describe it as using digital technologies to create marketing activities based on customer knowledge, thus matching products or services offered with their needs. The Digital Marketing Institute further defines it as "the use of digital technologies to create an integrated, targeted and measurable communication which helps to acquire and retain customers while building deeper relationships with them" [4] (p.17) similarly, Ali and Xia [14] define it as using digital technologies to communicate with stakeholders, such as customers and investors, about the brand, products, and organizational performance. Despite the variations in definitions, it is evident that digital marketing involves leveraging the Internet or electronic devices to connect with customers, increase brand awareness, and lure them into buying promoted products or services.

Digital marketing can either be direct or interactive. In direct marketing, marketers prioritize understanding the target customers by paying attention to their personalities and behaviors [15]. On the other hand, interactive marketing focus on connecting and engaging customers by speaking to them and collecting their feedback. An effective digital marketing strategy should combine both approaches to develop a deep understanding of the customers and deliver highly-targeted marketing campaigns [16]. For instance, direct marketing can provide insights into customers' online behaviors and actions, while interactive marketing provides insights into their needs, preferences, and expectations.

These insights can be integrated to create a comprehensive, customer-centered marketing campaign that matches customer needs and is delivered through their preferred channels [17]. This approach can help build customer trust and loyalty. Modern-day customers are more socially engaged and mobile, so businesses must establish practical digital marketing strategies.

#### 4.1.1. Digital Marketing Techniques

Companies employ various techniques to achieve digital marketing goals and leverage online opportunities. For instance, they create and distribute valuable and engaging content in multiple formats, such as blogs, podcasts, and infographics [16]. This approach helps establish themselves as thought leaders in their respective industries and ranks high on the search engines prioritizing websites providing valuable and relevant content to users. This section explores the various digital marketing techniques identified in the research.

#### 4.1.1.1. Search Engine Optimization

Search Engine Optimization (SEO) is a digital marketing technique used to improve a website's visibility and organic (non-paid) traffic through search engine results pages (SERPs). Digital marketers leverage SEO to optimize various aspects of a website, making it more attractive to search engines and relevant to user queries [18]. These aspects include creating content, building links, optimizing user experience, analytics and tracking, on-page optimization, technical SEO, and keyword research. The primary objective of using SEO is to increase the website's rankings in search engine results, making it more visible to target audiences and increasing website traffic and conversion rates [19].

These goals are achieved in two significant ways, on-page and off-page optimization strategies. On-page optimization involves optimizing elements within the website, such as meta descriptions, title tags, page loading speed, internal linking, content quality and relevance, and image optimization [18]. On the other hand, off-page optimization focuses on external factors such as backlinks and social signals. Implementing effective SEO strategies helps businesses achieve the desired digital marketing goals.

#### 4.1.1.2. Search Engine Marketing

Search Engine Marketing (SEM) is a digital marketing technique used to promote websites and increase visibility through paid advertising on SERPs. It uses paid search advertising, called Pay-Per-Click (PPC) advertising, to drive targeted traffic to a website [20]. SEM revolves around platforms like Google Ads, Bing Ads, Twitter Ads, Facebook Ads, and Amazon Advertising. It comprises various components, including creating the Ad copy, paid search advertising, structuring the Ad campaign, Ad testing and experimenting, conversions tracking and analytics, and conducting keyword research [21]. Digital marketers leverage SEM for various reasons, including increasing visibility on SERPs, reaching a targeted audience, and leveraging tracking and analytics tools to evaluate performance and outrank competitors [22]. In addition, SEM grants businesses over their ad campaigns by allowing them to define their bidding strategies, set budgets, and adjust targeting parameters based on their marketing goals. For instance, they can target their ad campaigns to online users in a specific region and demographics or based on a particular keyword.

#### 4.1.1.3. Social Media Marketing

Social Media Marketing (SMM) is a digital marketing technique that allows digital marketers to utilize social media platforms to promote products, services, or brands. In addition, these platforms enable them to engage with the target audience, drive website traffic, and increase conversion rates [23]. SMM involves creating and sharing content, running targeted ads, and fostering interactions on social media platforms like Facebook, Twitter, and Instagram to achieve marketing goals [23]. It has multiple benefits, including increased brand awareness, audience engagement, and reputation building. In addition, social platforms enhance digital marketers' access to customer, such as behaviors, demographics, and preferences [24]. Organizations looking to build competitive advantage through SMM use analytics and insights generated through social media to target the audience's interests, needs, and pain points. This information is then used in product development, content creation, and overall marketing strategies, thus enhancing the effectiveness of the launched campaigns.

#### 4.1.1.4. Programmatic Advertising

Programmatic advertising is a digital advertising technique that uses automated technology and algorithms to buy and sell ad space in real time. It involves using software and data-driven processes to streamline the ad buying and placement process [25]. Programmatic advertising relies on a complex ecosystem that includes advertisers, publishers, ad exchanges, and demand-side platforms (DSPs) to facilitate the automated buying and selling of digital ad inventory [26]. At the initial stage of this technique, an advertiser sets the ad parameters, including the target audience, budget, and advertising goals. Data analytics and audience segmentation enable advertisers to target specific demographics, behaviors, interests, and locations, thus ensuring relevant ads to target audiences [27]. Ad exchanges act as marketplaces throughout this process, allowing publishers to avail their ad inventory for purchase. Consequently, advertisers and their DSPs access these ad exchanges to bid on available impressions in real-time auctions based on algorithms, with the highest bidder winning.

The automation and use of data-driven insights in programmatic advertising result in multiple benefits for marketers and their organizations. For instance, data-driven targeting enables advertisers to deliver personalized and relevant ads to the right audience at the right time and using the proper channels [26, 25]. This increases campaign performance, improves the ROI, and results in a more effective digital advertising strategy. Other benefits include increased efficiency, scalability, and real-time optimization.

#### 4.1.1.5. Influencer Marketing

Influencer marketing is a digital marketing strategy that involves collaborating with influential individuals, known as influencers, to promote products, services, or brands to their engaged audience. Influencers specialize in creating content that helps them establish credibility and build a loyal following in specific niches or industries. This makes them influential voices that can sway consumer behavior and purchasing decisions. Campbell and Farrell [28] estimate that the influencer marketing industry was valued at US\$101 billion in 2020, with more than 75% of advertisers using influencers and 43% planning to increase their influencer marketing spending. Another research by Taylor [29] found that 48% of millennials and 58% of Gen Z have bought something following a celebrity recommendation. In addition, a 2018 Association of National Advertisers (ANA) study found that 75% of consumers participated in influencer marketing. These statistics show that leveraging these trusted and influential voices in influencer marketing makes it a powerful strategy to reach and engage a target audience. This marketing approach takes advantage of influencers' reach and authenticity, allowing brands to tap into new audiences, build brand awareness, drive engagement, and generate conversions.

#### 4.1.1.6. User-Generated Content (UGC)

The Internet and social media have provided online users with platforms to record and share experiences, reviews, and recommendations through user-generated content (UGC). Thus, UGC in digital marketing refers to content created by consumers or users of a brand's products or services [30]. It is produced in various formats, such as reviews, testimonials, photos, videos, social media posts, and blog posts. Unlike traditional marketing, where Firm Generated Content (FGC) is created and managed by a team of marketing professionals, UGC provides an authentic perspective on a company's offers [31]. This helps build credibility and trust, thus increasing the chances of the potential of converting prospects into customers. For example, a customer can share an experience where a specific product helped them overcome a challenge [21]. Due to their relatability, viewers or readers experiencing a similar challenge are more likely to purchase the same product. Digital marketers leverage UGC by integrating the content into marketing campaigns and product development to ensure that the offerings match consumer needs and expectations.

### 4.2. Sustainable Development



Sustainable development has become widespread due to increased awareness and concerns about business impacts on the environment. The concept combines development and sustainability concepts [32]. Development refers to a social situation within a nation in which natural resources and systems are rationally and sustainably used to satisfy the needs of its population. It is also a multi-dimensional process involving economic growth and changes in major social structures, attitudes, and institutions [33]. Developed countries also use resources and systems to eradicate absolute poverty and minimize inequality. Conversely, sustainability supports human development by improving and maintaining healthy economic, environmental, and social systems. It encompasses a fair and efficient distribution of resources within and between generations while participating in socioeconomic activities within the boundaries of a finite ecosystem [34, 35]. Sustainability is concerned with maintaining a dynamic equilibrium where the population's activities do not exceed the environment's capacity. In this case, people express their full potential without generating reverse effects on the environment on which they depend. From these perspectives, sustainable development can be defined as the harmonious integration of economic growth, social progress, and environmental protection.

Sustainable development encompasses an approach that enables utilizing resources to ensure they continue to exist for other generations. As a result, Mensah [36] defines it as "development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs." This concept is concerned with ensuring that people's economic activities do not severely impact the environment in ways that would compromise the future. Thus, sustainable development encourages exploring opportunities that improve people's living standards without jeopardizing the earth's ecosystem [37, 38]. This means that the activities should not lead to environmental issues such as deforestation, water and air pollution that can result in climate change and species extinction. Thus, sustainable development promotes ecological equilibrium, social progress, and economic growth [20]. However, achieving this balance is challenging, given that the global population continues to grow while natural resources meant to satisfy their needs do not. Thus, advocates for sustainable development have emphasized the need to move away from harmful socioeconomic activities that lead to resource scarcity.

#### *4.3. Pillars of Sustainable Development*

The pillars of sustainability for balancing economic growth with environmental protection and social progress in ways that meet the needs of the current populations without jeopardizing those of future generations. Thus, these pillars are economic, social, and environmental.

##### *4.3.1. Economic Sustainability*

Economic sustainability refers to the ability of an economic system to support long-term growth and development while minimizing negative impacts on society and the environment. It is characterized by multiple aspects, including responsible resource management, efficient capital allocation, and the promotion of equitable economic opportunities [39]. Economic sustainability encourages businesses to pursue environmentally friendly, socially inclusive, and financially viable growth in the long run [16]. It involves diversifying the economy, encouraging innovation and technological advancements, and creating employment opportunities. In addition, economic sustainability promotes the efficient use of resources [40,41]. In this case, business leaders must employ strategies that minimize waste, optimize resource utilization, and promote circular economy principles. The various activities they can embrace include reducing energy consumption, adopting sustainable production practices, and promoting recycling and reuse of materials.

Additionally, economic sustainability promotes responsible business practices. These include promoting corporate social responsibility (CSR) and ethical behaviors. Companies that care about economic sustainability prioritize business practices that produce positive social and environmental impacts [42]. Moreover, they recognize the importance of promoting equitable economic opportunities, thus prioritizing reducing income inequality, improving access to education and healthcare, and providing equal opportunities for all [43]. Consequently, this approach helps address

social barriers, promotes fair trade practices, and ensures that economic benefits are equitably distributed.

#### 4.3.2. Social Sustainability

Social sustainability is the dimension of sustainable development that focuses on human development. It is concerned with maintaining the social wellbeing of society, equity, and justice over the long term. According to Ajmal et al. [44], social sustainability is concerned with achieving social justice, improving lives, and enhancing the status of susceptible or marginalized people. Thus, it promotes social cohesion and the overall welfare of individuals and communities [45]. Social sustainability prioritizes creating inclusive societies where everyone has equal opportunities, rights, and access to essential services. This assertion matches Mensah's [36] argument that social sustainability should foster the development of people, cultures, and communities to help them live meaningful lives. It should draw on other aspects such as global stability, peace, gender equality, education, and healthcare [45]. As a result, social sustainability emphasizes the fair distribution of resources, the reduction of social inequalities, and the protection of human rights. In this regard, businesses and leaders who embrace social sustainability implement strategies that help address issues such as poverty, discrimination, gender inequality, and social exclusion [46]. In addition, they initiate programs that foster strong and resilient communities by encouraging active community engagement and collaboration in addressing local challenges and improving quality of life.

#### 4.3.3. Environmental Sustainability

Environmental sustainability advocates for protecting the natural environment and ensuring it remains resilient and productive to support current and future generations. This dimension of sustainability promotes activities and policies that minimize the negative impact of human practices on the environment, promote conservation, and protect biodiversity. Mensah [36] explains that environmental sustainability supports the sustainable use of natural capital in a way that resources are not harvested faster than regenerated. In addition, the scholar also notes that protecting the environment means that waste should be emitted more quickly than it is assimilated into the environment [35]. These arguments acknowledge that the earth's ecosystem has limits within which an equilibrium must be maintained to avoid severe consequences. Therefore, individuals, communities, and businesses must collaborate to protect forests, oceans, water sources, and land from degradation and overexploitation [47]. In addition, they must uphold strategies that promote sustainable land use practices, responsible water management, and the preservation of biodiversity.

However, recent years have seen unprecedented global economic growth imposing greater demands on the earth's ecosystem. For instance, industrialization and urbanization have increased the use and exploitation of natural resources through deforestation, unsustainable water harvesting, and mining activities [48]. While these practices have significantly contributed to global economic development and improved people's living standards, Mensah [36] notes that they have placed even greater strain on the limits of the planet's ecosystem. For example, industrialization is hugely related to increased gas emissions, energy consumption, and over-exploitation of natural resources. Such issues are related to the increased climate change and global warming concerns that threaten the wellbeing of human and animal life [34]. As a result, there has been increased advocacy for environmental sustainability to mitigate climate change problems, reduce greenhouse gas emissions, transition to renewable energy sources, and promote energy efficiency [49]. As a result, businesses, communities, and governmental and non-governmental agencies are developing strategies such as recycling programs and embracing circular economy principles. The primary goal of environmental sustainability is to ensure that economic and social development is not happening at the expense of the environment.

#### 4.4. Role of Digital Marketing in Sustainable Development

In today's digital era, the role of digital marketing in sustainable development has become increasingly crucial. Digital marketing techniques can promote sustainable development by contributing to economic growth while fostering social responsibility and environmentally-friendly practices [50]. Moreover, the Internet and social networking platforms enable digital marketers to reach and engage a global audience. Thus, they can utilize this opportunity to increase global awareness of environmental issues, promote sustainable consumption behaviors, and support brands that engage in sustainable business practices [51]. Therefore, this section explores how digital marketing contributes to sustainable development, as identified in the research.

#### 4.4.1. Utilizing Digital Platforms for Awareness and Education

Digital marketing provides multiple tools and channels, such as social media, websites, blogs, and online advertisements, which raise awareness about environmental issues, social causes, and sustainable practices. Organizations leverage these platforms to create compelling and engaging content to educate and inform the public about the importance and impact of sustainability [52]. This can be achieved by sharing information through articles, videos, infographics, and interactive campaigns highlighting environmental challenges and potential solutions. These assertions are evidenced in Almansour's [10] research, which indicates that entrepreneurs can leverage digital platforms and technologies to distribute information on climate change, renewable energy, waste management, conservation, and responsible consumption to a broad global audience. Moreover, the availability of audience targeting, and segmentation tools provides practical means of distributing sustainability messages [53,54]. For instance, some regions are more affected by environmental problems than others. In this case, targeting tools used in digital marketing can be used to disseminate personalized and targeted messages specifically for populations in these regions. This approach of tailoring content and campaigns to specific audiences enables digital marketers to effectively convey the relevance and benefits of sustainable practices to individuals, communities, and businesses.

#### 4.4.2. Promoting Green Economy and Eco-Friendly Products and Services

A green economy promotes sustainable development while minimizing the environmental impacts of economic activities. It encompasses various aspects, including ecological preservation, efficient use of resources, sustainable economic growth and job creation, social inclusivity and equity, and climate change resilience [55]. Digital marketing promotes a green economy by raising awareness and encouraging environmentally responsible behaviors and sustainable consumption. In addition, it provides a powerful platform for business organizations to showcase their environmentally friendly products and services and raise awareness of the importance of supporting sustainable products and services [56]. For instance, companies can use their website to publish accurate information about their product's sustainable features, such as energy efficiency, recyclability, use of renewable materials, or reduced carbon footprint [57]. Given the Internet's global reach, such an approach enables them to connect with environmentally conscious consumers looking for alternative sustainable products worldwide. As a result, this approach can contribute to the growth of the green economy.

#### 4.4.3. Encouraging Behavior Change Through Digital Campaigns

Digital campaigns include targeted messaging and compelling content to raise awareness about certain behaviors' environmental, economic, and social impacts. This helps inspire people to make more sustainable choices and consumption decisions [58]. Organizations and digital marketers can leverage these campaigns to address various critical issues such as energy conservation, waste reduction, water conservation, sustainable transportation, and responsible consumption. Moreover, digital marketing provides tools and systems that enable a deep understanding of audience preferences, interests, and motivations [59, 60]. This information can be integrated into marketing campaigns to ensure they are designed to resonate with specific groups and encourage behavior change. Zakić et al. [50] explain that social media platforms provide opportunities for implementing

digital campaigns showcasing positive role models, sharing success stories of individuals or communities embracing sustainable behaviors, and fostering online communities that support and encourage sustainable lifestyles. This strategy helps create a sense of social responsibility and community around sustainable actions, thus amplifying the impact of behavior change efforts.

#### 4.4.4. Implementation of Sustainable Business Models

With sustainability and sustainable development becoming buzzwords in the contemporary business world, it has become crucial for businesses to develop and embrace sustainable business models. Zhang et al. [49] describe these business models as strategies and practices integrating environmental, social, and economic considerations into a company's core operations and decision-making processes. The ecological aspect encourages businesses to reduce their environmental footprint by sourcing and using environmentally friendly materials and investing in eco-friendly technologies. On the other hand, the social sustainability dimension addresses issues such as fair trade, labor rights, diversity and inclusion, and community engagement. Finally, the economic sustainability dimension encourages firms to ensure they are financially viable while also considering the long-term impacts of their activities [61, 62]. As a result, integrating these sustainability dimensions helps companies adopt business models that engage and accommodate all stakeholder needs [63]. For example, the economic aspect ensures that the business generates revenues for its shareholders, while the social part protects employees and customers, and the environment provides efficient resource use. Thus, adopting sustainable business models ensures organizations create long-term value and competitive advantage.

#### 4.5. Challenges in Adopting Digital Marketing for Sustainable Development

Although digital marketing provides opportunities for businesses to promote sustainable development, it also poses several challenges that hinder success. For instance, digital marketing is hugely dependent on data technologies that require massive consumer data gathering. As a result, these technologies are often prone to cyber-attacks, which increase consumer data security concerns. In addition, inaccurate reporting remains a significant challenge where companies provide misleading data on their sustainable practices to sway consumer brand perceptions and attitudes. These prevalent issues indicate the need to identify and explore challenges in adopting digital marketing for sustainable development.

##### 4.5.1. Greenwashing

Greenwashing is a significant challenge in adopting digital marketing for sustainable development. De Freitas Netto et al. [47] describes greenwashing as misleading consumers about a company's environmental practices or performance using positive communication. Companies are currently experiencing massive pressure from consumers and environmental agencies to engage in environmentally friendly practices. As a result, most companies are investing in green marketing communications to promote their products and services as socially and environmentally sustainable [64, 65]. However, most companies provide misleading information to influencer customers' brand attitudes and intentions since they know more customers are more likely to purchase from sustainable brands. For instance, De Freitas Netto et al. [47] (p.2) report that "95% of products claiming to be green in Canada and the USA committed at least one of the 'sins of greenwashing,' from the sin of the hidden trade-off to the sin of worshipping false labels." Digital marketing platforms are often used for greenwashing, allowing companies to share falsified information about their sustainability initiatives, products, or services [66]. Conversely, consumers struggle to distinguish genuine sustainability initiatives from mere marketing, causing major credibility and trust issues. This indicates the need for more robust regulatory frameworks, customer education, and awareness to curb this problem.

##### 4.5.2. Digital Divide and Inclusivity

The digital divide and inclusivity are significant challenges hindering the effective adoption of digital marketing for sustainable development. The digital divide refers to the gap between those with access to digital technologies and the Internet and those without [54]. Inclusivity relates to efforts to ensure digital marketing reach and benefits diverse populations, including marginalized communities and disadvantaged groups [42]. Despite the ongoing economic and technological developments, many parts of the world, particularly in rural or remote areas, have limited access to reliable internet connectivity and digital technologies [67]. In addition, limited digital skills and literacy hinder individuals' engagement with digital marketing initiatives. These issues result in restricted access, further creating barriers to accessing and engaging with digital marketing campaigns and communications on sustainability.

#### 4.5.3. Privacy and Data Protection

Increased cases of cyberattacks and consumer data theft have led to greater concerns regarding privacy and data protection. Digital marketing relies heavily on collecting, analyzing, and utilizing personal consumer data [48]. Therefore, ensuring the privacy and protection of individuals' information is crucial for maintaining trust and promoting sustainable practices [50]. However, various issues, such as failure to obtain consent before data collection, inadequate data security and protection measures, failure to comply with data protection regulations, and unethical data usage, are major hindrances affecting the efficient use of digital marketing to support sustainable development [68, 23]. Data insecurity affects customers' trust in an organization's ability to protect their personal information, causing them to withdraw some information or refuse to share data that would have otherwise improved a brand's audience targeting and segmentation practices. Thus, government agencies, consumers, and organizations must collaborate to establish more robust guidelines and regulations for enhancing data protection and privacy.

### 5. Conclusions

The increased adoption of the Internet and the use of social media worldwide has disrupted the marketing discipline, triggering a transition from traditional to digital marketing. Unlike traditional marketing, where communication is one-way, digital marketing leverages information and communication technologies to facilitate two-way communication and consumer interactions. As a result, this approach has allowed customers to be involved in value creation since they can share their experiences, needs, preferences, and expectations. Besides, digital marketers leverage digital platforms to track and monitor consumer behaviors and actions to deliver personalized and targeted marketing communications. On the other hand, sustainable development aims to ensure that businesses remain financially viable while promoting social wellbeing and environmental protection. Sustainable companies ensure their business activities and processes do not negatively impact society or the environment. For instance, these businesses embrace sustainable practices such as recycling, use energy-efficient technologies and systems, and have adequate waste management practices.

Digital marketing features and tools can be used to support sustainable development. For instance, companies can use their websites to provide educational materials and programs that increase consumers' awareness of climate change and global warming. They develop and deliver eco-friendly products and services, thus promoting the green economy. In addition, they can leverage SEO and content creation to produce and publish materials on sustainability and interact with environmentally conscious consumers. Digital marketers can endorse sustainable products and encourage consumers to embrace sustainable products and services. Given the Internet's broad reach, these digital platforms can be used to encourage companies, consumers, and environmental agencies to collaborate to establish and implement effective solutions.

However, achieving these goals requires addressing some challenges related to digital marketing and sustainable development. For instance, the increased pressure on businesses to reduce their environmental footprint has triggered significant cases of greenwashing. These occur when companies provide misleading information about their sustainability initiatives and performance. Greenwashing is often done to improve consumers' positive attitudes and perceptions of a specific



brand. The second challenge is data privacy and protection. While significant efforts have been made to limit data or systems access to unauthorized persons, cybersecurity remains a major challenge. More investments and strategies to reduce the digital divide and improve inclusivity are needed to ensure equal resource distribution and access. Addressing these challenges is crucial since they touch on every aspect of sustainable development, including environmental protection, social equity, and economic growth.

Digital marketing has significant theoretical and practical implications for sustainable development. Here are some of the main implications: (i) digital marketing provides a platform for sustainable businesses and organizations to reach a wider audience. It allows them to communicate their sustainability initiatives, products, and services to a global audience, breaking down geographical barriers and increasing accessibility; (ii) it can be utilized to raise awareness about sustainable practices and encourage behavior change. By leveraging social media, content marketing, and targeted advertising, digital campaigns can educate and inspire individuals to adopt sustainable habits and make environmentally conscious choices; (iii) digital marketing generates a vast amount of data that can be used to analyze and understand consumer behavior. This data can help businesses and organizations identify trends, preferences, and consumer demands related to sustainability. Such insights enable them to refine their strategies, develop more sustainable products, and tailor marketing efforts to engage their target audience effectively; and (iv) enable sustainable businesses to become advocates for broader environmental and social causes. Through online campaigns and digital platforms, they can engage with policymakers, raise awareness about pressing sustainability issues, and mobilize communities to take action. This advocacy amplifies the impact of sustainable development efforts and contributes to the global sustainability agenda.

In summary, digital marketing offers theoretical and practical implications for sustainable development by increasing reach and accessibility, promoting behavior change, enabling data-driven decision-making, fostering collaboration, facilitating measurement and accountability, being cost-effective, enhancing transparency and storytelling, and empowering global advocacy and influence.

In the field of digital marketing sustainable development, several potential lines of research can contribute to sustainable development. Researchers could focus on a few areas in the future: (i) Investigate and develop effective digital marketing strategies that promote sustainable products and services. This could involve understanding consumer behavior, identifying key messages and channels, and evaluating the impact of green marketing campaigns on consumer attitudes and purchase decisions; (ii) explore how digital marketing can be used to encourage sustainable consumption patterns. This could involve studying the effectiveness of persuasive techniques, such as social norms and gamification, in promoting sustainable choices. Researchers could also investigate the role of digital platforms in facilitating sharing economies and collaborative consumption; (iii) utilize data analytics and machine learning techniques to analyze consumer behavior and identify patterns related to sustainable consumption. Researchers can study how digital marketing campaigns and interventions influence consumer decision-making processes and develop predictive models to optimize sustainable behavior change; (iv) examine the potential of personalized marketing approaches to promote sustainable choices. This could involve leveraging user data to deliver tailored messages, recommendations, and incentives that align with individual's values and preferences for sustainability; and (v) develop methodologies to measure digital marketing initiatives' environmental and social impact. This could involve creating frameworks and metrics to assess the sustainability performance of marketing campaigns, digital platforms, and e-commerce practices.

These are just a few potential research directions within the field of digital marketing for sustainable development. As technology and consumer attitudes evolve, there will likely be many more exciting avenues to explore.

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A.R., P.L. and F.R.; project administration, A.R., P.L. and F.R.; funding acquisition, A.R., P.L. and F.R.. All authors have read and agreed to the published version of the manuscript.

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## Appendix A

**Table A1.** Overview of document citations period 2013 to 2023.

[illegible]

How Business Intelligence Enables E-commerce: Breaking the T ...	2021	-	-	-	-	-	-	-	-	-	3	1	4
Web communication: A content analysis of green hosting campa ...	2021	-	-	-	-	-	-	-	-	2	1	3	6
Sustainable Economy on Community Enterprise and Digital Marketing...	2021	-	-	-	-	-	-	-	-	2	3	1	6
Design of full-link digital marketing in business intelligen	2020	-	-	-	-	-	-	-	-	1	-	-	1
E-commerce, as a Modulating Possibility for Application of t...	2020	-	-	-	-	-	-	-	-	1	-	-	1
Communication Model of Energy Service Market Participants in ...	2020	-	-	-	-	-	-	-	-	3	7	1	11
A significance of digital marketing for promoting bio-econom ...	2020	-	-	-	-	-	-	-	1	2	1	-	4
Toais for marketing management of industrial enterprises in ...	2020	-	-	-	-	-	-	-	-	1	-	-	1
How to Effectively Build Marketing in the Digital Era Econom ...	2020	-	-	-	-	-	-	-	-	-	1	-	1
Environmental impact assessment of sustainable food practice ...	2020	-	-	-	-	-	-	-	-	-	1		1
Transformation of Consumer's Digital Shadow in a Smart City	2019	-	-	-	-	-	-	-	-	-	1		1
An integrated index towards sustainable digital transformati	2019	-	-	-	-	-	-	-	-	-	3		3
Sustainable Development of Skills for the Tourism Sector and ...	2019	-	-	-	-	-	-	-	1	1	-	1	3
Solo mo marketing in the eco-innovations of business entities	2019	-	-	-	-	-	-	-	1	-	-	-	1
Session-Based Recommender system for sustainable digital mar ...	2019	-	-	-	-	-	-	-	4	--	3	1	8
The main directions of digital modernization of the agro-ind	2019	-	-	-	-	-	-	-	2	1	1	1	5
What Concerns Game Developers? A Study on Game Development P ...	2017	-	-	-	-	2	2	6	6	5	-	-	21
Sustainable management in the new economy: Are Romanian comp ...	2017	-	-	-	-	-	-	-	-	1	-	-	1

Examining the impact of digital media on promoting process...	2017	-	-	-	-	-	-	-	-	-	1	-	1
Sport business analytics: Using data to increase revenue and...	2016	-	-	-	-	-	-	-	-	-	2	-	2
Balancing targeted delivery of content and personal freedom	2016	-	-	-	-	-	-	-	-	1	-	-	1
Information and communication technologies in tourism: Chall ...	2016	-	-	-	1	-	1	3	1	-	-	-	6
Total		-	-	-	1	2	3	9	16	41	77	36	185

## References

1. Saura, J. R., Palos-Sanchez, P., & Rodríguez Herráez, B. Digital marketing for sustainable growth: Business models and online campaigns using sustainable strategies. *Sustainability*, **2020**, 12(3), 1003. doi:10.3390/su12031003.
2. Arantes, L. Digital marketing and sustainability: a study on consumer perceptions. *ICIEMC Proceedings*, **2022**, 3, 40-49. DOI 10.34624/iciemc.v0i3.29641.
3. Hidayat, M., Salam, R., Hidayat, Y. S., Sutira, A., & Nugrahanti, T. P. Sustainable Digital Marketing Strategy in the Perspective of Sustainable Development Goals. *Komitmen: Jurnal Ilmiah Manajemen*, **2022**, 3(2), 100-106. DOI:10.15575/jim.v3i2.22687.
4. Jevtić, A., & Milovanović, G. Impact of digital marketing on sustainable business: Case of the Unilever company. *Economics of Sustainable Development*, **2023**, 7(1), 15-28. DOI: 10.5937/ESD2301015J.
5. Linnenluecke, M. K., Marrone, M., & Singh, A. K. Conducting systematic literature reviews and bibliometric analyses. *Australian Journal of Management*, **2020**, 45(2), 175-194. DOI: 10.1177/0312896219877678.
6. Rosário, A.T.; Dias, J.C. Sustainability and the Digital Transition: A Literature Review. *Sustainability*, **2022**, 14, 4072. doi: 10.3390/su14074072.
7. Rosário, A.T.; Raimundo, R.J.; Cruz, S.P. Sustainable Entrepreneurship: A Literature Review. *Sustainability*, **2022**, 14, 5556. doi: 10.3390/su14095556.
8. Rosário, A. T., & Dias, J. C. Industry 4.0 and marketing: towards an integrated future research Agenda. *Journal of Sensor and Actuator Networks*, **2022**, 11(3), 30. doi: 10.3390/jsan11030030.
9. Hwangbo, H., & Kim, Y. Session-based recommender system for sustainable digital marketing. *Sustainability*, **2019**, 11(12) doi:10.3390/SU11123336.
10. Almansour, M. Business incubators and entrepreneurial training: Leveraging technological innovations and digital marketing. *IEEE Transactions on Engineering Management*, **2022**, 1-12. doi:10.1109/TEM.2022.3180212.
11. Kasurinen, J., Palacin-Silva, M., & Vanhala, E. What concerns game developers? A study on game development processes, sustainability and metrics. Paper presented at the International Workshop on Emerging Trends in Software Metrics, WETSoM, **2017**, 15-21. doi:10.1109/WETSoM.2017.3.
12. Desai, V., & Vidyapeeth, B. Digital marketing: A review. *International Journal of Trend in Scientific Research and Development*, **2019**, 5(5), 196-200. DOI:10.31142/ijtsrd23100.
13. Bala, M., & Verma, D. A Critical Review of Digital Marketing. *International Journal of Management, IT & Engineering*, **2018**, 8(10), 321-339. [https://www.ijmra.us/project%20doc/2018/IJMIE\\_OCTOBER2018/IJMRA-14610.pdf](https://www.ijmra.us/project%20doc/2018/IJMIE_OCTOBER2018/IJMRA-14610.pdf).
14. Ali, A., & Xia, C. Current and prospective impacts of digital marketing on the small agricultural stakeholders in the developing countries. *Application of machine learning in agriculture*, **2022**, (pp. 91-112) doi:10.1016/B978-0-323-90550-3.00012-6.
15. Luo, X. Design of full-link digital marketing in business intelligence era with computer software edraw max. Paper presented at the Proceedings - 2020 Management Science Informatization and Economic Innovation Development Conference, MSIEID, **2020**, 364-367. doi:10.1109/MSIEID52046.2020.00077.
16. Romprasert, S., Trivedi, A., & Trivedi, A. Sustainable economy on community enterprise and digital marketing. *ABAC Journal*, **2021**, 41(1), 62-80.
17. Shali, D., & Yuande, X. Research on member digital marketing strategy. Paper presented at the Proceedings of 2020 IEEE International Conference on Information Technology, Big Data and Artificial Intelligence, ICIBA, **2020**, 716-721. doi:10.1109/ICIBA50161.2020.9277117.
18. Berman, R., & Katona, Z. The role of search engine optimization in search marketing. *Marketing Science*, **2013**, 32(4), 644-651. <https://doi.org/10.1287/mksc.2013.0783>.
19. Almukhtar, F., Mahmood, N., & Kareem, S. Search engine optimization: a review. *Applied Computer Science*, **2021**, 17(1), 70-80. DOI:10.23743/acs-2021-07.

20. Malchyk, M. V., Popko, O. V., Oplachko, I. O., Martyniuk, O. V., & Hontarenko, N. A. Tools for marketing management of industrial enterprises in Ukraine based on the principles of sustainable development. *International Journal of Management*, **2020**, 11(4), 385-394. doi:10.34218/IJM.11.4.2020.038.
21. Vasiliev, D. Usage of digital communications tools within organic farming industry in Latvia. Paper presented at the Engineering for Rural Development, **2021**, 20 1449-1454. doi:10.22616/ERDev.2021.20.TF311.
22. Nicoleta, D., & Maria, S. B. Promotion techniques for a new Romanian brand of wine. Paper presented at the Proceedings of the 30th International Business Information Management Association Conference, IBIMA 2017 - Vision 2020: Sustainable Economic Development, Innovation Management, and Global Growth, **2017**, 2017-January 3076-3087.
23. Pan, C., Bai, X., Li, F., Zhang, D., Chen, H., & Lai, Q. How business intelligence enables E-commerce: Breaking the traditional E-commerce mode and driving the transformation of digital economy. Paper presented at the Proceedings - 2nd International Conference on E-Commerce and Internet Technology, ECIT, **2021**, 26-30. doi:10.1109/ECIT52743.2021.00013.
24. Marín, M. A. F., & Marcos, I. F. Management of shocking global crises: The use of public marketing 4.0 within a social responsibility and sustainability approach. *Social and sustainability marketing: A casebook for reaching your socially responsible consumers through marketing science*, **2021**, (pp. 435-473).
25. Shiqun, Y., Chengjun, Z., & Yu, Z. The role and path of digital marketing in tourist souvenir brands. Paper presented at the E3S Web of Conferences, **2021**, 251 doi:10.1051/e3sconf/202125103044.
26. Busch, O. The Programmatic Advertising Principle. In: Busch, O. (eds) *Programmatic Advertising. Management for Professionals*. Springer, Cham., **2016**, [https://doi.org/10.1007/978-3-319-25023-6\\_1](https://doi.org/10.1007/978-3-319-25023-6_1).
27. Rakic, B., & Rakic, M. Marketing challenges at the beginning of XXI century. *Actual Problems of Economics*, **2013**, 148(10), 446-455.
28. Campbell, C., & Farrell, J. R.. More than meets the eye: The functional components underlying influencer marketing. *Business Horizons*, **2020**, 63(4), 469-479. <https://doi.org/10.1016/j.bushor.2020.03.003>.
29. Taylor, C. R. The urgent need for more research on influencer marketing. *International Journal of Advertising*, **2020**, 39(7), 889-891. <https://doi.org/10.1080/02650487.2020.1822104>.
30. Colicev, A., Kumar, A., & O'Connor, P. Modeling the relationship between firm and user generated content and the stages of the marketing funnel. *International Journal of Research in Marketing*, **2019**, 36(1), 100-116. <https://doi.org/10.1016/j.ijresmar.2018.09.005>.
31. Krasnov, S. V., Krasnov, A. S., & Bozhuk, S. S. Transformation of consumer's digital shadow in a smart city. Paper presented at the 2019 International Conference on High Technology for Sustainable Development, HiTech, **2019**, doi:10.1109/HiTech48507.2019.9128271.
32. Asonitou, S., & Kottara, C. Sustainable development of skills for the tourism sector and its financial impact. Paper presented at the Springer Proceedings in Business and Economics, 2019, 1121-1129. doi:10.1007/978-3-030-12453-3\_129.
33. Dimitrov, I., & Koprinkova-Noncheva, N. E-commerce, as a modulating possibility for application of the drop-shipping model. Paper presented at the 3rd International Conference on High Technology for Sustainable Development, HiTech, **2020**, - Proceedings, doi:10.1109/HiTech51434.2020.9363980.
34. Haryati, N. Business model analysis of mushroom agroindustry and its sustainable development strategy in covid-19 pandemic. Paper presented at the IOP Conference Series: Earth and Environmental Science, **2021**, 733(1) doi:10.1088/1755-1315/733/1/012125.
35. Kamenidou, I. C., Mamalis, S. A., Mylona, I., & Bara, E. Z. Environmental impact assessment of sustainable food practices: Insights from the generation Z cohort. Paper presented at the CEUR Workshop Proceedings, **2020**, 294-299.
36. Mensah, J. Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review. *Cogent social sciences*, **2019**, 5(1), 1653531. <https://doi.org/10.1080/23311886.2019.1653531>.
37. Kuzior, A., Lyulyov, O., Pimonenko, T., Kwilinski, A., & Krawczyk, D. Post-industrial tourism as a driver of sustainable development. *Sustainability (Switzerland)*, **2021**, 13(15) doi:10.3390/su13158145.
38. Nagano, A. An integrated index towards sustainable digital transformation. Paper presented at the Proceedings of the 3rd World Conference on Smart Trends in Systems, Security and Sustainability, WorldS4, **2019**, 228-234. doi:10.1109/WorldS4.2019.8904031.
39. Pînzaru, F., Anghel, L., & Mihalcea, A. Sustainable management in the new economy: Are Romanian companies ready for the digital challenge? Paper presented at the Proceedings of the 5th International Conference on Management Leadership and Governance, ICMLG, **2017**, 346-352.
40. Simion, C. P., Militaru, G., Popescu, M., & Niculescu, A. Examining the impact of digital media on promoting process in small businesses. evidence from Romania. Paper presented at the Proceedings of the 30th International Business Information Management Association Conference, IBIMA 2017 - Vision 2020: Sustainable Economic Development, Innovation Management, and Global Growth, **2017**, 3607-3614.

41. Tamanna, T. Roles of brand image and effectiveness on smartphone usage over digital marketing. Paper presented at the 2021 International Conference on Information and Communication Technology for Sustainable Development, ICICT4SD 2021 - Proceedings, 87-90. **2021**, doi:10.1109/ICICT4SD50815.2021.9396897.
42. Tunji-Olayeni, P., Osabuohien, E., Yabkwa, I., & Ademola, A. Youth employment creation as an inclusive solution for sustainable development: Lessons from the 'double you digital skills initiative' in Nigeria. Paper presented at the IOP Conference Series: Earth and Environmental Science, **2021**, 665(1), doi:10.1088/1755-1315/665/1/012019.
43. Vodă, A. S., Tudor, A. I. M., Chițu, I. B., Dovleac, L., & Brătucu, G. IoT technologies as instruments for SMEs' innovation and sustainable growth. Sustainability (Switzerland), **2021**, 13(11) doi:10.3390/su13116357.
44. Ajmal, M. M., Khan, M., Hussain, M., & Helo, P. Conceptualizing and incorporating social sustainability in the business world. International Journal of Sustainable Development & World Ecology, **2018**, 25(4), 327-339. <https://doi.org/10.1080/13504509.2017.1408714>.
45. Heredia, J., Quispe, L., Sotelo, F., Raymundo, C., & Dominguez, F. Results-based process management model applied to NGOs to promote sustainability and reliability in social projects, **2020**, doi:10.1007/978-3-030-27928-8\_145.
46. Orazymbetova, A., Bekmurzayev, B., Kazykeshvova, A., Faizullina, S., & Kogabayeva, A. How to effectively build marketing in the digital era economies. Paper presented at the E3S Web of Conferences, **2020**, 159. doi:10.1051/e3sconf/202015904026.
47. de Freitas Netto, S. V., Sobral, M. F. F., Ribeiro, A. R. B., & Soares, G. R. D. L. Concepts and forms of greenwashing: A systematic review. Environmental Sciences Europe, **2020**, 32(1), 1-12. <https://doi.org/10.1186/s12302-020-0300-3>.
48. Harrison, C. K., & Bukstein, S. Sport business analytics: Using data to increase revenue and improve operational efficiency. CRC PRESS, **2016**, (pp. 1-235) doi:10.1201/9781315367613.
49. Zhang, Y., Xia, Z., Li, Y., Dai, A., & Wang, J. Sustainable digital marketing model of geoenergy resources under carbon neutrality target. Sustainability (Switzerland), **2023**, 15(3) doi:10.3390/su15032015.
50. Zakić, N., Ćurčić, N., & Leković, K. Hospitality digital marketing and technology transformation challenges. International Journal for Quality Research, **2022**, 16(4), 1133-1148. doi:10.24874/IJQR16.04-12.
51. Wut, T., Chan, W., & Lee, S. W. Unconventional entrepreneurship: Women handicraft entrepreneurs in a market-driven economy. Sustainability (Switzerland), **2021**, 13(13) doi:10.3390/su13137261.
52. Eisenschink, M., Gluck, C., Maier, M., Scheuchenpflug, E., Timinger, H., & Martens, M. A new trend in further education? micro degrees as a contribution to deal with new paradigms in small and medium-sized enterprises. Paper presented at the 2022 IEEE German Education Conference, GeCon **2022**, doi:10.1109/GeCon55699.2022.9942738.
53. Morais, E. P., Cunha, C. R., Sousa, J. P., & Dos Santos, A. C. Information and communication technologies in tourism: Challenges and trends. Paper presented at the Proceedings of the 27th International Business Information Management Association Conference - Innovation Management and Education Excellence Vision 2020: From Regional Development Sustainability to Global Economic Growth, IBIMA **2016**, 1381-1388.
54. Henkin, Z., & Ramzy, A. Consumer EV education lessons learned - A pacific northwest approach to E-mobility -. Paper presented at the 31st International Electric Vehicle Symposium and Exhibition, EVS 2018 and International Electric Vehicle Technology Conference, **2018**, EVTeC 2018.
55. Zhou, Y. The application trend of digital finance and technological innovation in the development of green economy. Journal of Environmental and Public Health, **2022**, doi:10.1155/2022/1064558.
56. Ghalwash, S., Ismail, A., & Maurya, M. Scarabaeus sacer: An iconic green brand advocating sustainability in the era of digital economy and connectivity. Emerald Emerging Markets Case Studies, **2022**, 12(4), 1-34. doi:10.1108/EEMCS-10-2021-0334.
57. Imran, M., Khan, I., Nassani, A. A., Binsaeed, R. H., Khan, H. U. R., Abro, M. M. Q., . . . Haffar, M. A green perspective: Investigating the optical effects of e-commerce, renewable energy demand, and services trade on carbon emissions. Optik, **2023**, 283. doi:10.1016/j.jileo.2023.170918.
58. Azman, N. A. N. M. N., Abd Rahman, N. H., Md Sawari, S. S., Abas, S. A., & Latif, S. A. A. The tourists' spatial behavior and tourist movement pattern in Muar Johor. Planning Malaysia, **2021**, 19(16), 275-286. doi:10.21837/PM.V19I16.970.
59. Carneiro, R., Conceiç, P., & Fernandes, A. V. Macau - the new digital bridgehead. Foresight, **2000**, 2(6), 607-617. doi:10.1108/14636680010802933.
60. Rezníčková, M., & Zaušková, A. Solomo marketing in the eco-innovations of business entities. Paper presented at the Proceedings of the European Conference on Innovation and Entrepreneurship, ECIE, **2019**, 2, 878-886. doi:10.34190/ECIE.19.169.

61. Cano, J. A., Londoño-Pineda, A., Castro, M. F., Paz, H. B., Rodas, C., & Arias, T. A bibliometric analysis and systematic review on E-marketplaces, open innovation, and sustainability. *Sustainability (Switzerland)*, **2022**, *14*(9) doi:10.3390/su14095456.
62. Martins, O. M. D., Fernandes, P. O., Nunes, A., Rachão, S., Correia, A. I., Vieira, E., . . . Carrança, P. Supply-side perspectives on outdoor tourism in the north of Portugal. Paper presented at the Proceedings of the International Conference on Tourism Research, **2021**, 339-348. doi:10.34190/IRT.21.07.
63. Karbekova, A. B., Osmonalieva, D. A., Sadyraliev, Z., & Urmatayim, A. K. The main directions of digital modernization of the agro-industrial complex of a modern region, **2019**, doi:10.1007/978-3-030-13397-9\_98.
64. Gustavo, J. U., Trento, L. R., de Souza, M., Pereira, G. M., Lopes de Sousa Jabbour, A. B., Ndubisi, N. O., . . . Zvirtes, L. Green marketing in supermarkets: Conventional and digitized marketing alternatives to reduce waste. *Journal of Cleaner Production*, **2021**, *29*, doi:10.1016/j.jclepro.2021.126531.
65. Tkachuk, V. I., Zinovchuk, V. V., Tarasovych, L. V., & Yaremova, M. I. A significance of digital marketing for promoting bio-economy in Ukrainian economy. *International Journal of Advanced Science and Technology*, **2020**, *29*(6 Special Issue), 1043-1049.
66. Karyotakis, M., & Antonopoulos, N. Web communication: A content analysis of green hosting companies. *Sustainability (Switzerland)*, **2021**, *13*(2), 1-15. doi:10.3390/su13020495.
67. Muangasame, K., & Tan, E. Phygital rural cultural heritage: A digitalization approach for destination recovery and resilience. *Worldwide Hospitality and Tourism Themes*, **2023**, *15*(1), 8-17. doi:10.1108/WHATT-08-2022-0096.
68. Revett, K., de Magalhães, S. T., Magalhães, M. J., & Jahankhani, H. Balancing targeted delivery of content and personal freedom in the digital on-line video marketing landscape, **2016**, doi:10.1007/978-3-319-51064-4\_8.

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