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Digital Well-being in the Tourism Industry

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The **Journal of Tourism, Sustainability and Well-being (JTSW)** is an international open-access academic journal in the tourism field that publishes high-quality, refereed articles that advance science widely available so that tourism can serve the society, enhance a sustainable development of the destinations, and positively impact the well-being of stakeholders.

JTSW offers itself a multidisciplinary and all-inclusive bridge between theoretical and practical aspects of tourism and the emerging interdisciplinary aspects that can revolutionise the tourism and hospitality industries. While the JTSW maintains its traditional focus on original research, both conceptual and empirical, that clearly contributes to the theoretical development of the tourism field, it also has a far more inclusive and broadened scope to keep up with the new problems that challenge academics and practitioners working in private, public and non-profit organisations globally. JTSW encourages research based on a variety of methods, qualitative and/or quantitative, based on rigorous theoretical reasoning and supported by a strong methodology. Criteria for evaluation include significance in contributing new knowledge, conceptual quality, appropriate methodology, technical competence (of theoretical argument and/or data analysis), and clarity of exposition.

JTSW promotes research on a broad range of topics that explore major trends in the study of relationships between tourism, sustainable development of destinations and well-being of tourism-related stakeholders. Contributions can be from all disciplinary perspectives, with interdisciplinary approaches especially welcomed as far as they apply to the tourism research field. All policy, planning and management aspects of tourism are also encouraged.

The journal is published as a quarterly international review in open access, mainly composed of thematic special issues. The publishing schedule is the last working day of March, June, September and December. Any interested scholar can submit a proposal for the guest-edition of a special issue to the Editor-in-Chief. The proposal should follow the guidelines provided in the Guide for Guest Editors. Each article must follow the publication rules as in the Author Guidelines. The Guest-Editors and the Editor-in-Chief are responsible for the implementation of a double-blind review process. This method ensures that the author(s) and the reviewers remain anonymous to guarantee a fair and impartial review of the submitted manuscripts.

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EDITORIAL

In recent years, the fast development of new technologies has promoted the creation of digital habits in the society. Several representative examples of the actions that users carry out daily include easily getting access to digital information, getting connected with family and friends, as well as working from home. In these circumstances, companies have adapted their communication and information strategies to increasingly focus on digital environments. For companies, the new era of technologies it is a valuable opportunity to get users spend more and more time interacting with information in digital environments, as well as in social networks or any other type of digital ecosystem.
One of the industries generating relatively more income than other industries owing to globalization is tourism. There is also evidence demonstrating that tourism has been directly affected by the evolution and development of new technologies. At present, there is a clear growth in the number of initiatives from technology companies proposing new mobile applications to facilitate tourist excursions or digital services focused on the purchase and sale of tourist packages through the Internet.
For many people, tourism is a way of life. Through tourism, i.e. through enjoying international stays and travel, people express their interests and habits. At the same time, there is a growing body of research on digital web-being defined as people's social and healthy habits when using any digital technology. The use of digital technologies can affect online and offline users' behavior, thus causing possible alterations in relation to their behaviors or attitudes.
To address this issue, as well as to better understand the evolution and status quo of digital well-being, this special issue has collected articles focused on digital well-being in the tourism industry. As editors of this special issue entitled "Digital well-being in the tourism industry," we hope that the contributions to this volume will help both future researchers in the development of their studies and practitioners, in terms of improving their actions related to technology in the tourism ecosystem.

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Setting the Relationship between Human-Centered Approaches and Users' Digital Well-being: A Review

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ABSTRACT

With the advancement of technology and advent of the new digital era, the society is getting increasingly exposed to novel technologies, digital platforms, or smart devices. This reality opens a wide range of questions about the benefits and challenges of technology and its impact on humans. In this context, the present study investigates the relationship between human-centered approaches and their application to achieve users' digital well-being, as well as explores whether marketing and business industry are sufficiently considering human-centered approaches in their implementation of practices that care for users' digital wellbeing. To this end, we conduct a systematic literature review. The exploratory results confirm that the implementation of human-centered approaches makes it possible to achieve a greater user well-being in the marketing and management sector. Additionally, we also identify and discuss seven more relevant areas. Our review concludes with a discussion of the theoretical and practical implications of our findings for further research on the use of human-centric and digital well-being concepts.

KEYWORDS

Digital Well-Being, Human-Centered Approaches, Social Media, Digital Marketing, Online Platforms.

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1. Introduction

In recent years, the pace of technological growth has become exponential. Any advance or progress in this aspect has an impact on many areas, such as business, economy, government, society, education, or healthcare (Cecchinato et al., 2019). Undeniably, all advantages and benefits offered by those new technologies aim to make people's lives to make it easier. However, behind all the benefits, there is a fine line that delimits to what extent such technologies can be positive for users (Akram & Kumar, 2017).

In many cases, smart devices or digital platforms are designed in such a way that they create addiction and the need to constantly and uncontrollably use them (Longstreet & Brooks, 2017). This has given rise to different initiatives such as the "digital detox day", whose main objective is to disconnect users from the excessive use of technology, over-information, and non-stop instant messaging (Syvertsen & Enli, 2019; Bouncken et al., 2022).

According to Centers for Disease Control and Prevention (CDC) (2019), there are different types of well-being such as, for example, material well-being, physical, psychological, social, or emotional well-being. However, in the new digital era where people are 24/7 surrounded by technology, applications and devices, digital well-being could be considered yet another type of well-being. Therefore, the study of digital well-being is of vital importance in all disciplines and sectors where the use of new technologies is present (Saura et al., 2021).

At the same time, owing to the great technological advances, the marketing and business industry has dramatically changed in the last decades. Advanced technologies, such as Artificial Intelligence (AI), machine learning, data mining, among others, are being determinant for business success in online environments (Kelleher et al., 2015).

Most companies are adapting and beginning to reformulate their processes in order to take advantage of all benefits brought by the new advanced technologies. In this way, the incorporation and support of technology in each department leads to improved results. Considering technology as an essential part of a company's day-to-day operations can be decisive in many aspects, including decision-making, problem-solving, innovation, getting to know the target audience, and so on.

Nowadays, companies base their strategies on the massive amount of data they collect from digital environments. Collectively, these huge amounts of data are known as Big Data, a term that refers to large volumes of data that are used, upon their analysis and interpretation, to obtain actionable information in business environments, achieve more effective and personalized actions. While the analysis of Big Data can be seen as an advantage for customers, as companies offer customers a wider range of products and services, the excess of options, information and opinions of other users can jeopardize and deteriorate customers' shopping experience, thus reducing customer satisfaction in tourism business (Martínez-Navalón et al., 2020; Brown et al., 2021).

In the marketing industry, new technologies have opened an infinite number of alternatives for the development of much more advanced strategies. In order to apply all their advantages, other disciplines, such as psychology, data science, computer science, neuroscience, among others, must come into play (Saura, 2021; Calabro et al., 2021). On the other hand, online companies and organizations that use digital platforms as their main channel of selling and communication base their strategies on the data obtained from users. Using these data, companies and organizations can carry out more effective and personalized actions by studying user behavior in digital ecosystems (Agapito & Lacerda, 2014; Kang & Yang, 2020).

In recent years, social media have become the main communication channel, as well as a sales platform for many businesses, both online or offline (Chen et al., 2022). A good social media communication strategy helps companies to establish and build a strong relationship and loyalty with social media (Schreiner et al., 2019; Saura et al., 2021b). According to Enginkaya and Yılmaz (2014), companies increasingly use social media not only for digital advertising, but also to manage customer services, mine innovation ideas, and create engaged brand communities. It is equally important to highlight User-Generated Content (UGC) as a primary means of interaction between users to share ideas, generate engagement, and create communities (Saura et al., 2022).

Social networks are platforms designed for communication among users. However, in some cases, digital architectures are intentionally designed to modify user behavior and incite other types of

actions (Literat & Brough, 2019). Specifically, social networks are designed in a very rigorous way to hold people's attention and capture their interest. The field that studies and implements such design is known as Human-Centered Computing (HCC).

Of note, irresponsible and excessive use of social media can cause serious problems for users, particularly those referred to millennials or digital natives. Some of these problems include addiction, stress, anxiety, or lack of concentration. In the long-term, mental problems could be irreversible unless the society becomes more aware of the hazards of irresponsible or excessive use of social media (Rojas, 2018; Lyu et al., 2022). Other challenges associated with the use of technology and digital platforms are related to violations of user privacy, the spread of fake news, or psychological disorders such as addiction. All these issues generate in users a sense of unease and distrust and lead them to perceive technology as something harmful and negative (Bleier & Eisenbeiss, 2015; Borges-Tiago et al., 2020).

In the recent COVID-19 pandemic, remote working has become a new way of working (Wang et al., 2020). The use of virtual platforms such as Zoom, Microsoft Teams, Google Meet, and others has increased exponentially, making it difficult to switch off at the end of a long working day (Martín & Fernández, 2022). However, without such platforms, many companies would not have been able to continue or reinvent their businesses during the months of confinement (Belo et al., 2014). This situation has adversely affected not only employment and workers, but also has had a significant impact on other sectors, such as education and health systems (Monge & De Russis, 2019; Pal et al., 2020).

On the other hand, the exceptional nature of the situation that the society is experiencing now has led to rapid integration of new technologies in healthcare systems and health consultations. For instance, new applications have been developed to perform online consultations and attend to patients requiring health care and frequent monitoring of their medical issues. These types of assistance platforms have also been implemented in psychology, personal training, nutrition, and other areas. All such platforms focus on promoting people's well-being and ensuring their safety.

Similarly, other applications have also been designed to monitor Covid-19 cases. For instance, some applications track infected citizens to prevent the spread of the virus and to identify possible outbreaks. However, there have been many doubts regarding data privacy and the control that institutions or governments have over citizens through the use of such applications. This type of distrust and fear generates in users' unease and rejection of such applications (Ribeiro-Navarrete et al., 2021).

Therefore, in summary, the negative side of technology influences both individual general well-being (Stankov & Gretzel, 2021) and what it is called Digital Well-being (DW), a concept that has been used to explain the impact of technology on people's physical and mental health (Irish Internet Safety Awareness Centre 2019).

To date, human-centered (or human-centric) approaches—i.e. approaches that place humans at the center of all strategies so that people can feel good in all aspects where technology is the protagonist and, in addition, help them in their daily lives to achieve well-being and satisfaction (Stankov & Gretzel, 2020; How et al., 2020)—have been applied in numerous spheres. However, a thorough understanding of the characteristics, goals, targets, and outcomes of these approaches remain poorly understood. To fill this gap in the literature, the present study addressed the following research questions.

- RQ1: Are human-centric (HC) approaches used together with technology to promote digital user well-being (DW)?
- RQ2: Are HC approaches part of business and marketing strategies in digital environments?
- RQ3: What are the main future lines and themes of research on HC and DW?

The originality of the present study lies in the fact that we conduct a systematic review of the terms human-centric and digital well-being and studying their influence on business and marketing. The remainder of this paper is structured as follows. The theoretical framework that defines HC and describes its varieties is provided in Section 2. The methodology used in the present study is explained in Section 3. Section 4 reports the results of our systematic literature review. The study ends with a general conclusion, a discussion of future research agenda, and an outline of limitations of the present study (Section 5).

2. Theoretical Framework

This section aims to clearly define human-centric approaches, as well as outline their main areas of study and characteristics, with a particular focus on the business environment. On the other hand, the term digital well-being will also be defined considering the contributions of other authors in the scientific literature (Kikot et al., 2014). We will also identify the factors that affect users' digital well-being and the main themes that can help to promote this concept.

2.1 Human-centric Approaches

The term "human-centric approaches" was coined due to the rapid growth of technology in recent decades. On the one hand, novel technologies have favored the creation of new business models, as well as the development and innovation of new products that facilitate more agile and precise decisions in our daily lives (Future of Architecture Human-Centric Approach, Accenture, 2020; Human-Centered Approach to Business, Accenture, 2020).

However, on the other hand, continuous and rapid technological advancement has also led to the emergence of major challenges on the societal level (Ewa Lechman et al., 2020). People have become vulnerable to available technology, such as social media addiction, data privacy, fake news, and so forth (Zivnuska et al., 2019; Ribeiro-Navarrete et al., 2021). Furthermore, the excess of information has led users to become more and more demanding in their decision making, and their needs and interests have started to change faster, making it difficult to satisfy them. Thus, the application of advanced technology together with the application of human-centric approaches is considered a key factor today (Future of Architecture - Human-Centric Approach | Accenture, 2020; Human-Centered Approach to Business | Accenture, 2020).

Major defining characteristics of human-centered approaches are summarized in Table 1 (Talbert, 1997; Snyder & Snyder, 2008).

Table 1. Main Characteristics of Human-centric Approaches

Characteristic	Definition
Human experience	The main objective of the HC approaches is to put people at the center of any action that is to be taken to improve their lives. Knowing and understanding user behavior is fundamental for this type of approaches.
Set of process	All HC approaches must follow a series of prior processes before implementation.
Observation	Observation is essential for the understanding of the current environment and context to orientate actions focused on people.
Critical thinking	It consists of having the ability to be able to analyze and evaluate information in a given context in an objective way. It allows us to see the world in a more objective way, without cognitive biases.
Problem-solving	The HC approach is applied when a problem that needs to be solved arises.
Advanced technology	HC approach relies on advanced technologies, such as AI, ML or Big Data and aims to better understand users and perform more personalized actions.
Data-driven oriented	HC approaches need data to better understand, analyze, and interpret the environment and people in order to improve their lives and experiences.
Dynamic	Due to the volatility in the ever-changing world, HC approaches must constantly adapt to the new needs of the society in conjunction with the advancement of technology.

Source: Own Elaboration

In the present study, we defined human-centric approaches as the ways in which a discipline, technology, action, or strategy is understood and applied in any field. A human is at the center of everything, and everything developed around him or her must preserve human autonomy, intelligence, and well-being. To date, the term "HC approaches" has been extensively in the scientific literature in areas such as design, artificial intelligence, innovation, leadership, computing, marketing, and so on.

There is a wide variety of human-centered approaches. The main objective of those different approaches is to solve problems and satisfy human needs using technology by placing the human being at

the center (Kumar et al., 2020). Also, this concept is used to refer to the development and improvement of intelligent systems technology (Bannon, 2011; Eskridge et al., 2014). Table 2 provides descriptions of major human-centered approaches developed to date.

Table 2. The Main Human-Centered Approaches

Human-centered approach	Definition
Human-Centered Design (HCD)	In this approach, the design of any system or product should be developed considering user needs and expectations. It favors innovation, improves user well-being, and the quality of systems or products (Zoltowski et al., 2012; Fernandez-Carames & Fraga-Lamas, 2018).
Human-Centered Interaction (HCI)	This concept considers the relationship between technology and people, focusing mainly on human values, ethics, and morals (Bannon, 2011).
Human-Centered Innovation (HCIa)	This approach seeks innovation by prioritizing social factors, such as culture, values and people's behavior, before the development or implementation of any action or strategy (Perelman, 2007).
Human-Centered Systems (HCS)	HCS are systems that complement human skills and are adapted to people's needs taking into account the paradigm shift from passive end users to active contributors in the development phases (Talbert, 1997).
Human-Centered Interfaces (HCIb)	The term HCIb is used to refer to the design of more natural virtual environments to achieve greater user immersion and collaboration, thereby enhancing user experience (Talbert, 1997).
Human-Centered Leadership (HCL)	HCL refers to the application of leadership by focusing on the self, self-awareness, self-care and mindfulness, in order to build trust and interaction in a group of people (Kennedy et al., 2020).
Human-Centered Computing (HCC)	HCC embraces a set of human-centered methodologies in any field of computing. It is applied when people have a direct interaction with technology in devices and systems (Jaimes et al., 2006).
Human-Centered Data Science (HCDS)	HCDS focuses on collecting data from users who leave the Internet in order to conduct more enriching and meaningful quantitative and qualitative research (Aragon et al., 2016; Kogan et al., 2020).
Human-Centered AI (HCAI)	HCAI refers to the development of systems with AI incorporating the HC approach to enhance human self-efficacy, promote creativity, or facilitate social participation (Auernhammer, 2020; Shneiderman, 2020).
Human-Centered ML (HCML)	HCML focuses on combining ML techniques and human feedback to obtain a more effective data analysis (Fiebrink & Gillies, 2018; Riedl, 2019).
Human-Centered Algorithm Design (HCAD)	This concept, initially proposed by Baumer (2017), incorporates human-centered practices for the design of algorithms that will later be incorporated into digital platforms and systems.
Human-Centered Security (HCSa)	The term HCSa is a human-centered approach to enhance user privacy and security when using technology and browsing the Internet (Renaud & Cutts, 2013; Barhamgi et al., 2021)

Source: Own Elaboration

As argued by Lepri et al. (2021), owing to advances in technologies such as ML or AI, it has become possible to better understand user behavior based on the data users generate in digital environments. The interpretation of these data can help to apply HC approaches in any field.

Furthermore, Zimmermann et al. (2021) noted the implementation of HC approaches in large companies, such as those known as GAFAM (Google, Apple, Facebook, Amazon, and Microsoft), could help users to be more secure and empowered with the use of technology. Similarly, Deibert (2018) argued that it is important to implement HC approaches in institutions and governments to preserve human rights in digital environments. Other relevant areas for the application of HC approaches are health systems support and digital innovation projects (Przybilla et al., 2018).

In the last year and a half, the education sector has been adversely affected by the COVID-19 pandemic, which has led to the emergence of new technological solutions to ensure that students' learning can be guaranteed during this time. As noted by Karakaya (2020), HC approaches should be applied during the development of new learning methods in digital environments.

Finally, companies such as IDEO have been pioneers in incorporating HC approaches in their practic-

es, obtaining successful results in each of their projects, such as the implementation of HCD practices in problem solving based on innovation in the business environment (IDEO). Similarly, HC approaches can be incorporated in a large number of areas characterized by a close interaction between technology and humans.

2.2 Digital Well-being

The term digital well-being, or digital wellness, has been variably defined in the literature. For instance, Birnholtz et al. (2019) defined DW as the positive physical and mental impact that the use of technology brings to us, and how it helps our perception of the overall well-being. On the other hand, the authors also argued that DW can be negatively affected by the following three aspects: (i) the continuous engagement caused by technology; (ii) self-interested and unethical use of technology to obtain greater benefits; and (iii) beliefs that favor people's discomfort, insecurity, and invalidity.

According to Marie and DeVito (2019), DW is related to satisfaction that users experience when using technology. Furthermore, the authors also argued that, while, for marginalized groups, the use of online platforms may help to counteract the feelings their loneliness, some users can also may experience negative emotions. The authors concluded with an argument on the need of fining balance between the positive and negative aspects of technology use.

Furthermore, Sang and Huang (2019) defined DW as the state in which people find it pleasant and beneficial to use technology in their daily lives. For their analysis, the authors relied on the Theory of Planned Behavior (TPB), a theory whose main objective is to understand how the design of technology can affect people's digital well-being.

In another relevant study, Peters et al. (2018) proposed a model to improve people's DW. This model was labelled the Model for Motivation, Engagement, and Thriving in User Experience (METUX). Used to evaluate the impact of technology on people's well-being, this model focuses on the following three key concepts: (i) autonomy; (ii) competence; and (iii) relatedness. Similar ideas were also voiced in several other studies (Widdicks & Pargman, 2019; Widdicks, 2020; Burr & Floridi, 2020).

Table 3. Key Concepts to Evaluate the Impact of Technology and its Influence on DW

Concept	Definition
Autonomy	A person's sense of acting consistently following his/ her goals and values when interacting with technology or digital media.
Competence	The feeling that the individual feels capable of and skilled in interacting with technology and digital environments.
Relatedness	The sense of belonging and acceptance of feeling connected to other users through the use of technology and social networks.
Data privacy	Excessive concern about data privacy in digital environments and the inability to have control over it.
Self-awareness	Awareness of users' use of technology and ensuring that their self-determination is not violated.

Source: Own Elaboration

According to Gui et al. (2017), the conditions for feeling DW include the prerequisite that digital media should be oriented towards users' sense of pleasure, security, and satisfaction. On the other hand, the authors also argued that DW has a great impact on general wellbeing.

Likewise, Roffarello and De Russis (2019) referred to DW in relation to the creation of applications that help users to engage in healthier behavior with social networks and technology. Furthermore, the authors also highlighted that one of the main problems in achieving DW is the overuse of technology.

To date, many studies have documented that excessive use of technology can lead to increased stress, addiction, lack of productivity, or lack of control (Dabbish et al., 2011; Mark et al., 2014; Mark et al., 2015). Similarly, Burr et al. (2020) argued that a major concern in the present-day society is the so-called technostress, which is caused by the excessive use of Information and Communication Technologies (ICT). Technostress has a strong negative impact on human physical and mental health.

Such issues have led researchers to discuss ethical implications of technology for users and social well-

being. For instance, Burr et al. (2020) analyzed three general themes that expose opportunities and risks related to DW. In Table 4 briefly defines the three general themes explained by Burr et al. (2020) and their relation to DW.

Table 4. Implications of these Themes in the DW

Theme	Implication
Positive computing	More ethical promotion of the development and design of digital technologies in terms of privacy, security, innovation, all focused on user well-being to enhance human capabilities.
Personalized human-computer Interaction	Offering a personalized technology to each individual to meet their needs, motivations and favor DW by monitoring user behavioral data combined with advanced management and analysis.
Autonomy and self-determination	Encouraging user freedom and independence when using technology and prevention of behaviors that could adversely influence other people's wellbeing.

Source: Own Elaboration

3. Methodology

To answer the research questions posed in the present study, we conducted a systematic literature review (SLR). This methodology has been previously used by other authors, and the results have proven to be enriching for both academia and industry (Webster & Watson, 2002; Stieglitz et al., 2018).

SLRs are mainly aimed at identifying and synthesizing findings found in the literature. According to Snyder (2019), the results of a SLR can provide a clear understanding of a specific topic—in this case, of the DW and HC approaches especially applied in the business and marketing industry.

A SLR requires the collection of information for subsequent analysis and interpretation. Therefore, in the present study, we followed a systematic sequential process proposed by Polanco-Diges and Debasa (2020). Specifically, articles related to the research topic were collected and a first evaluation was carried out to ensure that they were relevant to address our research questions. For this, a PRISMA statement was conducted (Moher et al., 2015).

The searches for relevant publications were performed in the following four databases: Web of Science, ScienceDirect, IEEE Xplore, and ACM Digital Library. The results of these searchers are summarized in Table 5.

Table 5. SLR Results

Database	No. of Results	No. of Relevant Results
Web of Sciences	13	6
ACM Digital Library	7	2
IEEE Explore	74	11
Science Direct	49	22

Source: Own Elaboration

Table 6 shows key terms used in database searchers. A total of three searches were conducted.

Table 6. Search Terms used in the SLR

	Abstract		By topic	Databases
1st search	Human centric OR human-centered	*AND*	Digital well-being OR digital wellness	Web of Sciences ACM Digital Library IEEE Explore Science Direct
2nd search	Human centric OR human-centered	*AND*	Digital marketing OR business	
3rd search	Digital marketing	AND	Digital well-being OR digital wellness	

Source: Own Elaboration

The first search was carried out with the term "human centric" OR "human centered" included in the abstract and the term "digital well-being" OR "digital wellness" in the results section of reviewed papers. In addition, the results were filtered to include only reviews and research articles; all papers had to be Open Access publications.

The first search returned a total of 76 articles. However, to be more specific and to keep only the most relevant information for further analysis, an exhaustive content analysis of the papers was performed. As a result of this filtering process, a total of 30 articles were retained in the dataset

In the second search, the following terms were considered. On the one hand, we searched for the term "human centric" OR "human centered" appearing both in the results section and in the abstract and, at the same time, the term "digital marketing" would have to be present in the results when it appeared like a subject. As in the first search, the results were filtered to include only Open Access articles and reviews.

The second search returned a total of 48 papers, but not all of these papers were relevant, so a first analysis was carried out in order to compile the most relevant studies. This led to the identification of 9 most relevant studies.

Finally, the third and last search was performed to find publications containing the term "digital marketing" in the abstract and that the results sections; the term had to be related to the terms "digital well-being" OR "digital wellness". In the third search, 19 results were obtained, 11 of which were then evaluated as relevant to the present study.

In Table 7, the column 'Total results' corresponds to all results obtained from each of the searches prior to subsequent filtering. The second column corresponds to the number of articles after filtering. The third column reports the final number of articles retained in the database after duplicates were removed.

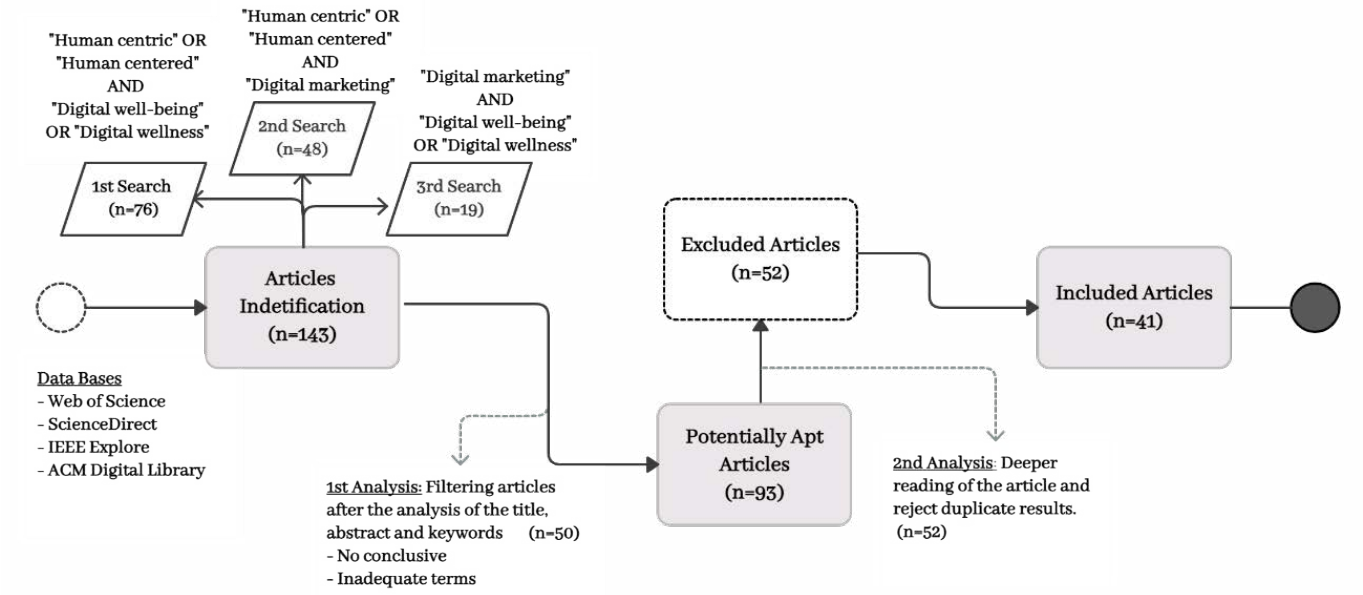
Table 7. Resulted Searches

Search	Total results	Final results	Results (without duplicates)
1st search	76	30	
2nd search	48	9	41
3rd search	19	11	

Source: Own Elaboration

To better understand the process, Figure 1 shows the PRISMA flow diagram for each of the steps and the corresponding results.

Figure 1. PRISMA Flow Diagram



Source: Own Elaboration

To justify the importance of the included papers, we followed the steps previously proposed by Saura (2021). Table 8 shows the authors, journal, category, and main focus of each investigation (namely, human-centric, digital well-being, and/or digital marketing).

Table 8. Relevant Studies found in the SLR

Author	Journal	Category	Main focus in SLR		
			Human centric	Digital well-being	Digital marketing/ Business
Aguilar et al. (2021)	*Computers, Environment and Urban Systems*	Interdisciplinary; Computer based-research	•	•	
Alwis et al. (2021)	*IEEE Open Journal of the Communications Society*	Science; Technology	•	•	
Biloria (2021)	*Frontiers of Architectural Research*	Architectural science and technology	•	•	
Bouraqia et al. (2020)	*IEEE Access*	Communication technology	•	•	
Chin et al. (2018)	*Mindfulness*	Psychology; Psychiatry		•	
Corbett & Spinello (2020)	*Heliyon*	Computer Science; Information Systems	•		•
Dwivedi et al. (2020)	*International Journal of Information Management*	Information management	•	•	•
Forlano (2017)	*She Ji: The Journal of Design, Economics, and Innovation*	Innovation; design; economics	•	•	
Garcia-Magarino et al. (2019)	*IEEE Access*	Data Mining for Internet of Things	•		
Garrido-Hidalgo et al. (2018)	*IEEE Access*	Communication technology	•		
Gesualdo et al. (2021)	*Human Vaccines & Immunotherapeutics*	Biotechnology & Applied Microbiology	•	•	•
Jacobson et al. (2019)	*Journal of Retailing and Consumer Services*	Consumer behavior; Managerial decisions		•	•

Javaid et al. (2019)	*IEEE Access*	Security and Privacy for Cloud and IoT	•		•
Jonathan et al. (2021)	*JMIR Mental Health*	Psychiatry	•	•	
Junginger (2017)	*She Ji: The Journal of Design, Economics, and Innovation*	Innovation; design; economics	•		•
Kaasinen et al. (2020)	*Computers & Industrial Engineering*	Communication technologies	•	•	•
Kamali et al. (2020)	*IEEE Access*	Computer and information processing	•	•	
Kolesnichenko et al. (2021)	*Sustainability Science*	Science & Technology	•	•	
Lepri et al. (2021)	*IScience*	Interdisciplinary	•	•	
Li et al. (2018)	*IEEE Access*	Human-Centered Smart Systems and Technologies	•		•
Meshram et al. (2020)	*Journal of Advanced Research*	Computer Sciences	•	•	•
Muratovski **(**2015)	*She Ji: The Journal of Design, Economics, and Innovation*	Innovation; design; economics	•		•
Nicholson et al. (2018)	*BMJ Open*	General & Internal Medicine	•	•	
Parker & Grote **(**2020)	*Applied Psychology*	Psychology	•	•	
Paschen et al. **(**2020)	*Business Horizons*	Business	•		•
Poggenpohl (2020)	*She Ji: The Journal of Design, Economics, and Innovation*	Innovation; design; economics	•	•	•
Rangaswamy et al. (2020)	*Journal of Interactive Marketing*	Innovation	•	•	•
Rinkus et al. (2005)	*Journal of Biomedical Informatics*	Biomedical informatics methodologies	•		
Rowe & Lester (2020)	*Journal of Adolescent Health*	Multidisciplinary; Health and well-being	•	•	
Roy et al. (2021)	*ACM Transactions on the Web*	Information systems	•		•
Sánchez-Vergara et al. (2021)	*Journal of Cleaner Production*	Sustainable development and sustainability	•		•
Saura **(**2021)	*Journal of Innovation & Knowledge*	Innovation		•	•
Suchan et al. (2021)	*Artificial Intelligence*	AI, robotics	•		
Tao et al. (2018)	*IEEE Access*	Computer and information processing	•		
Torkura et al. (2020)	*IEEE Access*	Communication technology	•	•	
van der Bijl-Brouwer (2017)	*She Ji: The Journal of Design, Economics, and Innovation*	Innovation; design; economics	•	•	
Vermeer et al. (2019)	*International Journal of Research in Marketing*	Marketing research		•	•
Williams & Corwith (2021)	*Education and Information Technologies*	Education & Educational Research	•	•	
Wulfovich et al. (2019)	*Frontiers in Psychology*	Psychology	•	•	
Zeng & Xiang (2021)	*IEEE Access*	Computational and artificial intelligence	•		
Zhang et al. (2020)	*IEEE Access*	Computer and information processing	•		•

Source: Own Elaboration

On the other hand, a summary of the main purpose of each of the investigations has been made, specifying the author and the title of the paper (see table 9).

Table 9. Obtained Results and Main Purpose

Author	Article Title	Main Purpose
Aguilar et al. (2021)	OGITO, an Open Geospatial Interactive Tool to support collaborative spatial planning with a maptable	The authors developed a software application namely OGITO (Open Geospatial Interactive Tool) based on human-centered design and agile methods. This allows the usability and functionality of the software to function correctly.
Alwis et al. (2021)	Survey on 6G Frontiers: Trends, Applications, Requirements, Technologies and Future Research	The study focuses on key driving trends towards 6G, applications, requirements for its implementation and collects related work about this topic. They explore this new paradigm taking into account the influence on society and how 6G can empower and enrich peoples' life.
Biloria (2021)	From smart to empathic cities	It proposes a change of perspective to understand smart cities and gives rise to a new model called emphatic cities. It is characterised by incorporating human-centric and ethical approaches to achieve greater well-being and inclusion in cities.
Bouraqia et al. (2020)	Quality of Experience for Streaming Services: Measurements, Challenges and Insights	In this review, the authors introduce the concept of Quality of Experience (QoE) that includes an objective and subjective perspective when using technology and digital platforms. The objective perspective corresponds to the technical features, the Quality of Service, however, the subjective it is related to the individual experience of the user (emotions, feelings, expectations...) interacting with technology.
Chin et al. (2018)	Mindfulness Training Reduces Stress at Work: a Randomized Controlled Trial	Workers spend long hours in front on screens and it provokes severe damage to their health. Therefore, mindfulness training programs can reduce those effects and improve people's wellness.
Corbett & Spinello (2020)	Connectivism and leadership: harnessing a learning theory for the digital age to redefine leadership in the twenty-first century	This review focus on the study of connectivisim and leadership. The authors propose the study of technology from a connectivist framework to understand how new technologies affect our brains, ways of leading and learning. To do so, they introduce a new concept, "the connectivist leadership".
Dwivedi et al. (2020)	Setting the future of digital and social media marketing research: Perspectives and research propositions	This research describes issues and challenges related to the usage of AI, AR, e-WoM, mobile marketing and advertising among others and the ethical concerns therein.
Forlano (2017)	Posthumanism and Design	The author summarizes literature about posthumanism focusing on design practices among humans and technology.
Garcia-Magarino et al. (2019)	Human-Centric AI for Trustworthy IoT Systems With Explainable Multilayer Perceptrons	The authors support the application of Human-Centric AI in IoT systems to understand and learn about user's preferences, interests and so on. The study proposes Human-Centric AI techniques that make easier the interaction between humans and technology while achieving transparency and trustworthiness.
Garrido-Hidalgo et al. (2018)	IoT Heterogeneous Mesh Network Deployment for Human-in-the-Loop Challenges Towards a Social and Sustainable Industry 4.0	This research proposes Human-centric approach systems to get an optimal collaboration system between humans and machines through technologies such as IoT in Industry 4.0 environments.
Gesualdo et al. (2021)	Digital tools, multidisciplinarity and innovation for communicating vaccine safety in the COVID-19 era	The research supports the implementation of Human-Centered design to promote campaigns regarding the vaccine Covid-19 to inform society combined with data science, design thinking or digital marketing strategies.
Jacobson et al. (2019)	Social media marketing: Who is watching the watchers?	This research analyses the user's perception of social media and introduce a new concept named Marketing comforts that entails the individual's comfort when their data is used for different digital marketing strategies like advertising or opinion mining.
Javaid et al. (2019)	ARCA-IoT: An Attack-Resilient Cloud-Assisted IoT System	The study proposed a complex system, ARCA-IoT, to face three challenges of IoT (trustworthiness, interoperability, and scalability) This system is designed following a user-centric approach.
Jonathan et al. (2021)	A Smartphone-Based Self-management Intervention for Bipolar Disorder (LiveWell): User-Centered Development Approach	It explains the development of wellness and mental health application to help users with disorders. The application follows a Human-Centric approach. It is confirmed that technological support and usability help user's well-being.
Junginger (2017)	Design Research and Practice for the Public Good: A Reflection	This study focuses on the applicability of Human-Centered Design to identify new ways of working in the public sector. It is explained different cases in where design leadership and design management are applied in the business sector to understand how they will work and how they can suit the public sector.
Kaasinen et al. (2020)	Empowering and engaging industrial workers with Operator 4.0 solutions	This study presents a new concept called Operator 4.0 that arises from the application of the Human-Centric approach in Industry 4.0. This new concept could not take place without the incorporation of new technology in factories, so the impact it has on workers, their wellbeing and adoption are studied.
Kamali et al. (2020)	Virtual Coaches for Older Adults' Wellbeing: A Systematic Review	It is researched the role of virtual coaches to improve the wellbeing of older adults. The e-coaching system architecture is divided into three parts: i) Monitoring, (ii) processing and (iii) intervention medium. Each of these phases reflects a Human-Centric structure.
Kolesnichenko et al. (2021)	Sociological modeling of smart city with the implementation of UN sustainable development goals	This study focuses on the development of smart cities through a hybrid sociological and technological concept. Smart technologies as AI will interpret big data to provide solutions and to ensure citizens' wellbeing.
Lepri et al. (2021)	Ethical machines: The human-centric use of artificial intelligence	This study presents solutions in three areas that the authors have considered important for incorporating Human-Centric AI: privacy and data ownership, accountability and transparency and fairness.
Li et al. (2018)	An Anti-Noise Process Mining Algorithm Based on Minimum Spanning Tree Clustering	The authors propose an anti-nose process mining algorithm to implement in the Business Process Management (BPM) to build and improve human-centric information and company efficiency.

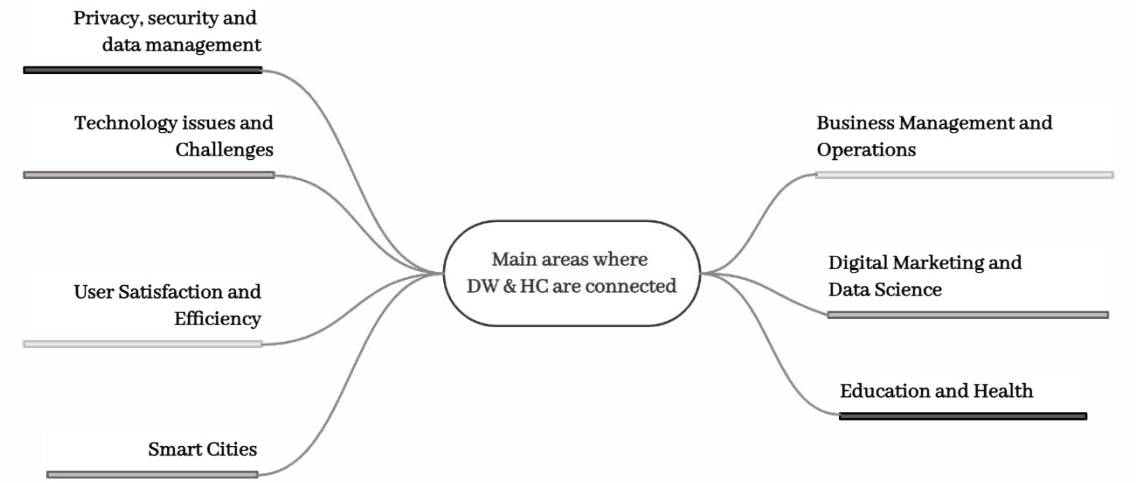
Meshram et al. (2020)	Fractional chaotic maps based short signature scheme under human-centered IoT environments	This research addresses one of the major challenges of Human-Centered IoT, the data protection of users. They propose a Short Signature Scheme (SSS) to reduce the processing time and verification of signature operations and improve the caption of attacks.
Muratovski **(**2015)	Paradigm Shift: Report on the New Role of Design in Business and Society	The author examines multinational investment in the design field and the benefits they obtained from design practices. It is demonstrated that design could be considered as a strategic resource and how contributes to the al success of social innovation and sustainability projects.
Nicholson et al. (2018)	Pre-post, mixed-methods feasibility study of the WorkingWell mobile support tool for individuals with serious mental illness in the USA: a pilot study protocol	The authors focus on the analysis of a mobile support tool designed to help individuals with mental illnesses. The study confirms the effectiveness of this app in the well-being and quality of life of individuals.
Parker & Grote (2020)	Automation, Algorithms, and Beyond: Why Work Design Matters More Than Ever in a Digital World	The authors identify the positive effects of new technology such as AI, robots and automation in individuals. However, technology can also affect negatively on social, human, legal and ethical aspects. It concludes by enhancing the importance of educating and training people for the implementation of more human-centred forms of technology.
Paschen et al. (2020)	Collaborative intelligence: How human and artificial intelligence create value along the B2B sales funnel	This research studies the role humans play with the adoption of advanced information and communication technologies such as AI, and how it affects the traditional Human-Centric process in B2B sales.
Poggenpohl (2020)	Waste and Agency in the Digital Era: Who's in Charge?	This study presents an overview of the short- and long-term consequences of the use of technology. It does so from a human and material point of view. It retains a pragmatic stance for the use of Human-Centered design in new technologies and business models.
Rangaswamy et al. (2020)	The Role of Marketing in Digital Business Platforms	This research focuses on how Digital Business Platforms (DBP) are designed to encourage user interaction and the use of these platforms.
Rinkus et al. (2005)	Human-centered design of a distributed knowledge management system	This paper presents a Human-Centered distributed information design methodology to be implemented in a management system for biomedical engineers (BMEs) showing the value of this human-centric methodology in the design information systems.
Rowe & Lester (2020)	Artificial Intelligence for Personalized Preventive Adolescent Healthcare	It is studied the effectiveness of implementing AI technologies y Human-Centered applications of AI to improve teenagers' wellbeing. Additionally, it is presented challenges related to privacy, ethics and bias in clinical and adolescent lives.
Roy et al. (2021)	An Integrated Approach for Improving Brand Consistency of Web Content: Modeling, Analysis, and Recommendation	The study analyses the consistency of brand companies by computing methodologies to improve them. The brand personality should be customer-centric transmitted and integrating human qualities to generate trust and retain customers.
Sánchez-Vergara et al. (2021)	The emergence of the sharing city: A systematic literature review to understand the notion of the sharing city and explore future research paths	This review focuses on the study and evolution of sharing cities in recent years with greater involvement of technology. This type of city is created from a Human-Centric perspective to guarantee the well-being of citizens.
Saura **(**2021)	Using Data Sciences in Digital Marketing: Framework, methods, and performance metrics	The author carries out an exhaustive analysis of the relationship between data science and its implication in digital marketing. It is found different topics that influence the development of digital marketing strategies.
Suchan et al. (2021)	Commonsense visual sensemaking for autonomous driving – On generalised neurosymbolic online abduction integrating vision and semantics	The study implements a Human-Centered Computing and Design in the development of autonomous driving.
Tao et al. (2018)	Outlet: Outsourcing Wearable Computing to the Ambient Mobile Computing Edge	The research proposes a system based on the Mobile Computing Edge (MEC) to take advantage of the computing resources of the user's ambient without the need for specific cloudlet servers to store and process information generated by wearable devices (smartphones, smartwatches...). This type of system reduces dependence on internet connectivity and availability, improving the user experience.
Torkura et al. (2020)	CloudStrike: Chaos Engineering for Security and Resiliency in Cloud Infrastructure	The study proposes a model to guarantee stronger cloud infrastructure security due to its vulnerabilities. The authors use a Risk-driven Fault Injection (RDFI) to address the challenges of cloud platforms regarding cloud security issues.
van der Bijl-Brouwer (2017)	Designing for Social Infrastructures in Complex Service Systems: A Human-Centered and Social Systems Perspective on Service Design	It studies the design service with a human-centered perspective that helps and contributes to resolving complex societal problems.
Vermeer et al. (2019)	Seeing the wood for the trees: How machine learning can help firms in identifying relevant electronic word-of-mouth in social media	This article investigates the importance that an aesthetic icon in consumer's perception when it is presented in an app.
Williams & Corwith (2021)	Beyond Bricks and Mortar: The efficacy of online learning and community-building at College Park Academy during the COVID-19 pandemic	Due to the Covid-19, schools should adapt to the new era of online learning. An important issue, they should address is the emotional well-being of their students that could be achieved by the correct use of digital technologies.
Wulfovich et al. (2019)	"I Must Try Harder": Design Implications for Mobile Apps and Wearables Contributing to Self-Efficacy of Patients With Chronic Conditions	It focuses on mobile health technologies such as mobile apps and wearables and how they are positive and effective in supporting patients and improving their wellbeing.
Zeng & Xiang (2021)	Edge Oriented Urban Hotspot Prediction for Human-Centric Internet of Things	It focused on the Human-Centric IoT and MEC (Mobile Edge Computing) application to identify accurately traffic regions in urban city areas through online and offline human behaviour.
Zhang et al. (2020)	Overview of Edge Computing in the Agricultural Internet of Things: Key Technologies, Applications, Challenges	The authors study the application of Edge Computing in IoT Agriculture when it is combined with other technologies like AI, VR or Blockchain, everything with a human-oriented approach. Challenges related to privacy, security, data processing among others are presented.

Source: Own Elaboration

4. Results

This section presents the results of data analysis. Before starting with a more in-depth discussion of the findings, Figure 3 shows the main areas where the DW and HC approaches are related, as suggested by our findings.

Figure 3. Main Areas where DW and HC Approaches are Connected



Source: Own Elaboration

4.1 Privacy, Security and Data Management

Different authors state that use security and privacy are among main user concerns when interacting with technology (e.g., smartwatches, smartphones, etc.) or when using platforms in the online environment (e.g., social networks, e-commerce, etc.). This concern and lack of self-control over the data are important factors that influence users' DW, leading to the rejection of the use of technology or more serious problems such as anxiety or stress (Javaid et al., 2019; Garcia-Magarino et al., 2019; Dwivedi et al., 2020).

As argued by Kaasinen et al. (2020) and Meshram et al. (2020), IoT devices or applications can present many challenges related to user privacy and security. However, the development of human-centric systems or models can serves as a solution to these challenges to improve not only users' wellbeing, but also workplace environment and company effectiveness (Li et al., 2018). For instance, Meshram et al. (2020) proposed a new signature system, the Short Signature Scheme (SSS), to reduce the verification and processing time of transactions while safeguarding user privacy.

4.2 Technology Issues and Challenges

Furthermore, Poggenpohl (2020) stated that the misuse of technology and digital platforms can have negative consequences in the long term. Therefore, this study focused on investigating digital wastefulness from two different perspectives: psychological and physical.

From a psychological point of view, the wasteful technology has a negative impact on human beings. According to the results of this study, technology that constantly pursues innovation and development causes us anxieties, addiction, and continuous adaptation to new models or systems.

Furthermore, the use of technologies such as Artificial Intelligence (AI) or Intelligence Augmentation (IA) calls into question who is in control of technology, promoting the idea that technology should contribute and collaborate with humans, rather than supplant their identity' said differently, technology should be designed based on human-centered values. This idea was also supported by other authors, such as Forlano (2017), Garrido-Hidalgo et al. (2018), Sánchez-Vergara et al. (2021), and Parker and Grote (2020).

From a physical perspective, the wasteful technology has to do with the waste of materials and energy generated by new technologies. In a world of constant change and innovation, a technology becomes obsolete increasingly sooner, which causes a significant amount of environmentally unsustainable pollution

(Palos-Sanchez et al., 2018). Accordingly, Poggenpohl (2020) supported the idea of creating technological devices that can be repairable or recyclable to achieve greater sustainability, as well as increase the useful life of each product. In this way, the author proposed to implement a life-cycle approach in new business models so that to continue supporting innovation, but, at the same time, reduce environmental degradation (Reyes-Menendez et al., 2018; Agapito & Quelhas Brito, 2020).

However, despite highlighting many challenges in the use of advanced technology, most authors underscored the great benefits of the novel systems or models based on AI, ML or IoT that favor the coexistence and adaptation between humans and technology in different fields (Garcia-Magarino et al., 2019; Rowe & Lester, 2020; Parker & Grote, 2020).

Mobile Edge Computing (MEC) is another term identified in the literature when talking about the use of IoT technologies or devices. Several authors proposed this system to ensure greater security of the data that users leave on the Internet. MEC allows data to be processed in locations close to where they were created without the need for cloud computing. At the same time, this type of systems allows data to be analyzed in real time, which is an advantage for companies for which data analysis and interpretation are key elements of their business (Zeng & Xiang, 2021).

Tao et al. (2018) also proposed systems based on the MEC, intending to avoid dependence on continuous connectivity and Internet availability for the use of wearable devices. Introducing such systems would allow users to access available information more quickly from devices such as smartwatches or smart glasses.

Finally, Torkura et al. (2020) addressed the issue of security and data management in relation to cloud computing. Specifically, the author proposed a system called Risk-driven Fault Injection (RDFI) to be more effective and capable of dealing with cloud computing vulnerabilities and security issues.

4.3 User Satisfaction and Efficiency

Furthermore, Bouraqia et al. (2020) investigated a new concept called Quality of Experience (QoE) that focuses on the user for the development of applications or technological systems. QoE considers not only the efficiency of the technical part and the offered functionalities, but also user satisfaction that emerges when users interact with applications or technological systems. In a similarly, Vermeer et al. (2019) focused on the aesthetic parts of technological systems and user perceptions of their design.

As demonstrated by Aguilar et al. (2021), the combination of HCD and agile methods has a positive impact on users. Specifically, HCD improves usability of new technologies for users, which leads to greater effectiveness, efficiency, and user satisfaction. On the other hand, agile methods improve the functionality of the application, making it possible to meet customer requirements in a short time. Finally, Fornalo (2017) and Lepri et al. (2021) analyzed advanced technology and associated problems related to discrimination between humans. Based on the results, the authors advocated for design practices that support equality and fairness between humans and technology.

4.4 Smart Cities

Another important topic in the reviewed studies was new models of understanding cities, i.e. smart cities (Kolesnichenko et al., 2021) and sharing cities (Sánchez-Vergara et al., 2021). In both models, technology plays a major role, and interaction with humans is part of everyday life. Therefore, in order to guarantee well-being of citizens with regard to technology, human-centric practices are implemented as one of the main characteristics in this type of cities. Likewise, Biloria (2021) proposed another model called empathic cities, which also include the same principles as those of smart cities.

4.5 Business Management and Operations

Implementing new technologies in companies leads to more in-depth studies on the impact such technologies have on employees and workers' well-being (Garrido-Hidalgo et al., 2018; Chin et al., 2018; Kaasinen et al., 2020). The main objective of such technologies is to find a balance and optimal adaptation for the proper functioning of operations and to achieve a more sustainable and satisfactory human-technology coexistence.

Advances in information and communication technologies not only have had a large impact on workers, but also have modified traditional sales processes, such as those with a human-centric perspective (Stankov & Gretzel, 2020). Accordingly, Paschen et al. (2020) argued that technologies such as AI still present some problems, particularly when they are applied in B2B sales processes that require human support. This supports the idea that advanced technology is only useful when it can increase human intelligence and collaborate with people without replacing them (Stankov & Gretzel, 2021).

Furthermore, Lepri et al. (2021) expressed their concern about the risks of using algorithmic decision-making processes, such as the lack of transparency, violation of user privacy, discrimination, and bias. The authors proposed addressing these limitations from a multidisciplinary perspective where areas such as machine learning, human computer interaction, ethics, social and cognitive psychology, or law are integrated to give rise to a human-centric AI model that is more respectful of citizens and ethical rules (Martínez-Navalón et al., 2020).

Finally, among the reviewed articles, several papers dealt with the application of human- centered design in management, leadership, and innovation (Junginger, 2017; van der Bijl-Brouwer, 2017; Corbett & Spinello, 2020; Gesualdo et al., 2021). On the other hand, Muratovski (2015) analyzed different multinational companies that introduce human-centered design practices in different strategies related to innovation, management, recruitment, or marketing strategies, among others. The results of this study demonstrated that such companies obtain positive return for their investment.

4.6 Digital Marketing and Data Science

With regard to digital marketing and data science, Dwivedi et al. (2020) outlined a series of challenges and issues related to digital marketing and social media. On the one hand, the authors supported the implementation of tools and mechanism to create a more confident content and to make it easier for users to take decisions based on data, thereby ensuring user DW. On the other hand, the authors argued that it is essential to analyze user behavior on social networks and to explore how user-generated content (UGC) influences users. In addition, the authors noted that new technologies are a fundamental tool for increasing what they call Customer Engagement Behavior (CEB) to improve user experience and well-being.

In addition, Dwivedi et al. (2020) also discussed the role of AI and AR in digital marketing. In general terms, the authors supported the use of these technologies in digital marketing strategies due to their usefulness for decision making and ability to provide a better understanding of customers. Dwivedi et al. (2020) also supported the implementation of Explainable AI (XAI), an AI approach that helps companies in their social media marketing strategies to perform much more personalized actions focused on customers, taking into account their interests and tastes. However, Dwivedi et al. (2020) also highlighted several ethical issues related to the user DW, such as privacy, fraud, lack of transparency, data violation, transparency, and so forth. Accordingly, the authors highlighted the need to develop ethical AI design and governance. The authors suggested three areas where further study on user behavior and their interaction with technology would be needed, namely (1) users' dependence on technology; (2) the influence of the user, technology, and a brand/company, and (3) cognitive and emotional user limitations. These aspects are fundamental to achieve user DW.

Furthermore, Saura (2021) outlined a series of topics where the implementation of digital marketing strategies using data science has a relevant impact. These topics are as follows: Medical data and eHealth, Smart cities and governance, Internet of Things (IoT), Data privacy and management, People, Development of new machine learning models, Operational CRM and data management, Sustainable strategies based on data and social media listening.

All these topics are related to user DW, as the strategies in these areas are developed based on the data generated by users in digital ecosystems. For that reason, the technology and the interpretation of the data must be as transparent and accurate as possible so that the impact on DW is positive and does not harm humans (Garcia-Magarino et al., 2019; Dwivedi et al., 2020; Lepri et al., 2021).

Furthermore, Rangaswamy et al. (2020) considered it important to design Digital Business Platforms (DBP) in a way to avoid generating confusion or distrust in users. To this end, a user-friendly design was proposed to encourage and improve user satisfaction when using these platforms.

In another relevant study, Jacobson et al. (2019) showed that users feel uncomfortable when mar-

keters use their social media data to develop digital marketing strategies, which leads to a negative DW. Therefore, the authors proposed to develop guidelines and standards to use social media data that would favorably influence both users and marketers. To this end, the authors introduces a new concept called Marketing Comforts, where the well-being and comfort of users were sought through the analysis of their data to carry out personalized digital marketing for each individual user. In a similar study, Roy et al. (2021) focused more on the creation of Brand Personality to build trust and retain customers.

Finally, Vermeer et al. (2019) used machine learning techniques to analyze user sentiment in social networks through UGC and e-WoM. Using this technique enabled authors to identify insights to detect dissatisfied users, as well as to obtain relevant information from users to improve digital marketing strategies on digital platforms. Other authors, including Dwivedi et al. (2020), also considered the analysis of UGC and e-WoM to be relevant to identify issues and salient user concerns.

4.7 Education and Health

In a study focusing on the domain of health, Williams and Corwith (2021) investigated how the COVID-19 pandemic led to the new era of online learning. This new educational model had a profound impact of students' DW. The authors argued that it is essential to be aware of making responsible and correct use of digital technologies to avoid harm to mental health of teenagers.

Furthermore, Rowe and Lester (2020) stated that incorporating AI technologies and human-centered applications of AI would adolescents to prevent health problems according to their behavioral habits. Similarly, Kamali et al. (2020) confirmed using an e-coaching system architecture with HC approaches improves older adults' DW.

In another pertinent investigation, Nicholson et al. (2018) confirmed the effectiveness of apps designed to treat mental illnesses. These apps, when developed with an HC approach, were proved to effectively improve individuals' quality of life.

Finally, Wulfovich et al. (2019) demonstrated the positive impact of mobile health technologies designed with HC approach on patients. Such apps enable a considerably more accurate and controlled monitoring of patients' illnesses, thus improving their well-being and sense of security and being taken care of by healthcare systems.

5. Conclusion

To conclude, based on the results of the systematic literature review undertaken in this study, we identified seven areas where the DW and HC approaches are related. This finding highlights the interdisciplinarity of the concepts DW and HC approaches. Indeed, due to the recent digital transformation, the concepts of DW and HC approaches are currently applicable in any discipline. Accordingly, work must be done to try to ensure that both DW and HC approaches positively complement each other and ensure human wellbeing.

With regard to the first research question addressed in this study, we found that HC approaches are being applied in most areas where advanced technology has a significant presence. Among many other areas, this includes, for instance, the design of digital platforms such as websites, social networks, or e-learning platforms, as well as the development of devices or machines that facilitate human work in factories or, on the user level with smart devices.

HC approaches are considered for the development and design of the architecture of digital platforms and smart devices. In this way, user experience and satisfaction can be improved, thereby creating a friendly coexistence between humans and technology.

As suggested by the results of the present review, key technologies to foster user-technology interaction without creating any harm to the health and well-being of individuals include AI, ML, AR or IoT. On the other hand, as seen in our results, many challenges and issues slow down the implementation of advanced technology in some areas. Accordingly, it is necessary to study the long-term hazards that such technology can cause in each of these fields and learn how to avoid possible negative effects on users. To this end, relevant policies should be created, and limits to the power

that technology has over human beings should be set. To achieve user DW, it is equally important to address the issues related to user data security and privacy.

At the same time, advanced technologies such as AI, ML, AR or IoT are extremely powerful and effective when used with large amounts of data. Despite the dangers of irresponsible and unethical use of these new technologies, being sceptic about them does not favor progress and innovation, as these technologies also offer great benefits to the society, if they are used in the right way and with a human-centric perspective.

Furthermore, according to the results, we can conclude that, in the business and marketing fields, HC approaches lead to the development of more personalized strategies by analyzing the data generated by users in digital environments, also known as UGC. In this way, users receive information that is of interest to them, which positively influence their well-being and satisfaction. On the other hand, our results also revealed that companies offer services or implement initiatives that aim to improve user well-being in digital environments, which has a positive effect on user satisfaction and perception of a brand.

5.1 Theoretical Implications

Based on the results of the present study, we identified seven areas where there is a close relation between DW and HC approaches. We believe that the introduction of the term digital well-being is a relevant contribution to the academia and research with the purpose of continue investigating more effective and beneficial ways to incorporate advanced technologies such as AI, ML, AR or IoT to enhance DW through HC practices. Other important implications of our results is that they underscore the importance of user DW and show how DW can influence in their behavior, opinions and its interaction with digital environment.

5.2 Practical Implications

Advanced technologies and digital environment are an essential part of the development and implementation of marketing strategies. In addition, advanced technologies and digital environment generate considerable economic and non-economic benefits. Some of them can range from having a better knowledge and understanding of user needs owing to Big Data to knowing the kind of strategies or practices that are working best when users interact with technologies.

Accordingly, a better awareness about the characteristics and implications of DW for users will help marketing specialists to improve KPIs performance and identify improvements by implementing HC approaches, as well as make better strategy decisions.

Finally, our results suggest that manifesting commitment to user DW can become a highly pioneering way for companies to differentiate themselves from other companies running their business in the digital sphere. Predictably, such companies would be positively valued by consumers. Therefore, businesses should consider building strong brand awareness and acquire a competitive advantage promoting DW in their company's values and practices in the digital domain.

5.3 Future Research Agenda and Limitations

Table 10 outlines different lines of research in each of the identified areas for further study. In summary, an in-depth study of the DW and HC approaches would be of great interest and can be reasonably be expected to make a significant contribution to both academia and practitioners because of the influence of these concepts on all areas.

Table 10. Future Research Agenda

Subject	Future Research Propositions
Privacy, security, and data management	Which are there most suitable HC approaches that can be implemented to empower user privacy control in digital environments?
Technology issues and challenges	What are the solutions to address the challenges of new technologies considering the DW concept and HC approaches as the main axis?
User satisfaction and efficiency	What do a user with a positive DW and a user with a negative DW differ in terms of their behavior when receiving digital marketing strategies with a HC approach?
Smart cities	What impact do smart cities have on citizens' DW? What new policies with a HC perspective would ensure the DW of society in smart cities?
Business management and operations	What are the new forms of leadership and internal communication methodologies applying HC approaches in remote workplaces to foster employees' DW?
Digital marketing and data science	What are behavior patterns of users with a positive and negative DW during their customer journey to applied strategies from a HC perspective?
Education and health	How should new digital education models be created so that they do not affect students' DW? Are HC approaches necessary to encourage patients to use e-Health apps, and do they harm users' DW?

Source: Own Elaboration

The present study has several limitations. First, in some cases, we explored DW in the literature without referring to the exact term,but maintaining the characteristics of digital well-being. In fact, most of the analyzed articles refer only to the concept of wellbeing, which presumably encompasses all types of wellbeing (including also digital well-being). Second, we failed to identify previous publications on the relationship between the concepts of DW and HC approaches. Finally, as illustrated by our literature review, little research where digital marketing strategies focusing on DW would be explored together with HC approaches is currently available.

Therefore, the present study is one of the first attempts to analyze the interconnection between DW and HC approaches. Given the lack of education and information about possible medium- and long-term negative consequences of the use of technology, the importance of such investigation can hardly be overestimated.

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Travelling to Tourism Destinations through the lens of Sustainability: An extended TPB Model to predict behavioural intention of Gen Z Consumers

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ABSTRACT

The aim of this study is to predict Gen Z Consumers' behavioural intention towards travelling to tourism destinations in the context of sustainability by developing an integrated structural model that incorporates the Theory of Planned Behaviour model with the additional constructs i.e. climate change awareness and desire for digital disconnection. The data was collected using the online questionnaire developed with Google forms and examined using SEM with AMOS and SPSS software. The hypotheses were statistically tested and the results revealed that integrating the theory of planned behaviour with climate change awareness and desire for digital disconnection leads to a strong model for examining behavioural intentions towards visiting tourism destinations. The findings may be used by government agencies, tourist management departments, and tourism businesses to establish suitable tourism development policies in tourism destinations. To the best of the authors' knowledge, this study is one the first in tourism research to integrate the theory of planned behaviour with climate change awareness and desire for digital disconnection to investigate Gen Z Consumers' behavioural intention towards travelling to tourism destinations.

KEYWORDS

Gen Z Consumers, Theory of Planned Behaviour, Climate Change Awareness, Desire for Digital Disconnection, Tourism Destinations

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1. Introduction

Generation Z is predominantly Generation X's offspring which was brought-up through the transformations brought forth by the internet, cell phones, laptop computers, publicly available networks, and digital content (Robinson & Schanzel, 2019). This generation has grown up in an atmosphere progressively penetrated by ICT (Information and communication technologies) and might be described as a 'hyper-connected' population, surrounded by smartphones, computers, and the internet, where part of their daily lives are spent exchanging e-mails, sending SMS, and liking photographs (Haddouche & Salomone, 2018). Despite the reality that there are now more than enough apps for individuals to utilise, Web 2.0 technologies are appearing every day (Liu, 2010). Given that digital technologies have become so ubiquitous in our lives, defining "the digital" may seem superfluous. Revolutionary advancements in a variety of key gadgets and communications infrastructure have made online services, smartphones, big data, algorithms, AI, and machine learning essential components of almost every aspect of life (Bettini, Gioli & Felli, 2020). Nonetheless, DTs include all technologies for creating, analysing, transmitting, and using digital commodities that may be grouped together under the umbrella phrase information, communication, and media technologies (Agapito et al., 2014; Berger, Denner & Roeglinger, 2018).

Without a question, all of these advancements have a tremendous influence on human lifestyles and wants. In 2019, the amount of carbon dioxide (CO2) and additional emissions into the atmosphere stretched unprecedented heights, making it the second hottest summer, ushering in the warmest decade in history to a close (2010-2019). Climate change is harming every single nation on every continent, destabilising national economies and endangering lives. Climate patterns are shifting, sea levels are increasing, and weather conditions are getting further severe (UNSD, 2022). The reality of climate change cannot be denied any longer (Hall, 2016).

Consequently, younger Gen Zers have a much greater tendency to adhere to green values, to preserve the earth's resources, and to reduce consumption, as well as to help society flourish in a sustainable way in which they live (Seitz, Mihai, Morshed, Mattias & Rizkallah, 2014). In general, Gen Zers have a heightened awareness of environmentalism, conservation of resources, and reducing their consumption than older generations, hence contributing more to society's sustainable development (Entina, Karabulatova, Kormishova, Ekaterinovskaya & Troyanskaya, 2021).

At this stage, sustainability plays an extremely significant role in the triangle of environmental, societal, and consumption issues (Caliskan, 2021). The impacts of climate change are generally acknowledged as global issues. However, it is also significant to emphasize that all human beings can make a significant contribution to combat climate change (Halady & Rao, 2010). In academia, there has been substantial investigation into the issue of climate change and sustainability in varied settings (Halady & Rao, 2010; Ekpoh & Ekpoh, 2011; Weaver, 2011; Scott, Gossling & Hall, 2012; Korkala, Hugg & Jaakkola, 2014; Dillimono & Dickinson, 2015; Hall, 2016; Masud et al., 2016; Lenzen et al., 2018; Juschten, Jiricka-Pürrer, Unbehaun, & Hossinger, 2019; Kim & Hall, 2019; Bradley, Babutsidze, Chai & Reser, 2020; Liu, Ma, Qu & Ryan, 2020; Seyfi, Hall & Vo-Thanh, 2020; Hall & Saarinen, 2021; Hu, Becken & He, 2022; Abdelwahed, Soomro & Shah, 2022; Seyfi, Hall & Vo-Thanh, 2022). In spite of the fact that climate change has been a problem for decades, it has recently gained much more attention and a whole new generation of supporters, the Gen Z (Belo et al., 2014; Kumar et al., 2020).

Gen Zers primarily motivated by humanistic ideals, morals, and ethics, are more conscious about the human influence on the environment than any previous generation, and are more willing to assume responsibility for the harmful impacts of climate change (Entina et al., 2021). The Gen Z cohort has previously been studied in a variety of settings, including green computing (Seitz et al., 2014), social media usage (Haddouche & Salomone, 2018), travel experiences (Robinson & Schanzel, 2019), workplace behaviour (Schroth, 2019), sustainable tourism (Caliskan, 2021), global transformations (Entina et al., 2021), gaming technology in augmented reality (Mavragani & Dionysios, 2022) and many more, however empirical research pertaining to Gen Z with climate change (McCreary, 2021) is limited. Despite the clear connection between technological advancement and global warming solutions, the digital dialogue furthermore points out the adverse side-effects of extensive technology usage, including product waste, resource consumption, and greenhouse gas emissions (Dwivedi et al., 2022).

Digital activity, despite its apparent separation from the physical world, has added to the environment's carbon footprint in an unexpected way. An analysis by the Shift Project in 2019 found that the collective digital carbon footprint of the world accounts for about 3.7 percent of all greenhouse gas emissions, almost as much as the aviation industry. Moreover, the energy consumption of digital technology has gone up by almost 70% between 2013 and 2020 (Jungblut, 2022). The misuse of excessive technology usage has moved to tourism, with new study showing that visitors may prefer "disconnection" when travelling (Ozdemir & Goktas, 2021). Drawing on the concept of `digital detox` and `digital disconnect`, which tourists usually undertake by avoiding technology in order to live a healthy lifestyle, whether physically, intellectually, or spiritually (Ozdemir & Goktas, 2021) for their own well-being, the current study elaborates on the concept of 'desire for digital disconnect' (Dickinson, Hibbert & Filimonau, 2018) for the wellbeing of the planet, to mitigate the impacts of climate change.

In light of the ubiquitous presence of technology in everyday life, a backlash is brewing (Dickinson et al., 2016). The ideas of digital free tourism (DFT) (Li, Pearce & Oktadiana, 2020), digital disconnect (Dickinson et al., 2016), digital detox (Felix & Dean, 2012), dead zones, unplugged tourism (Pearce & Gretzel, 2012) etc., are emerging. More recently, a number of researchers have investigated this in distinct domains such as motivations for digital free tourism (Egger, Lei & Wassler, 2020), digital detox and authenticity (Syvertsen & Enli, 2020), emotions in digital-free holiday (Cai, McKenna & Waizenegger, 2020), carbon footprint of ICT's (Cordella, Alfieri & Sanfelix, 2021), trends in digital detox holidays (Ozdemir & Goktas, 2021), ICT'S and wellbeing (Gretzel & Stankov, 2021), digital technologies and climate change (Dwivedi et al., 2022). In contrast, there is a paucity of literature addressing the question of digital disconnection and the Gen Z demographic. Individuals who desire to travel but avoid using ICT or digital gadgets generate a market for 'digital escapers' (Paris, Berger, Rubin & Casson, 2015). It is crucial to note that Gen Z is an entirely digital generation that has never encountered a world without mobile devices, social media, the internet or some kind technology. The combination of this particular young demographics' concerns and Behavioural intentions regarding climate change while travelling in conjunction with the issue of digital footprint makes for an intriguing topic of study.

This research adds to the discourse on digital technology and climate change for sustainability in the context of the Gen Z population's travel intention through the prism of Theory of Planned Behaviour. The TPB is considered an exceedingly effective approach for predicting human intents and Behaviours (Ajzen, 1991) and its applications span a range of fields (Masud et al., 2016; Khan, Ahmad & Najmi, 2019; Liu et al., 2020; Alzubaidi, Slade & Dwivedi, 2021; Fenitra, Tanti, Gancar & Indrianawati, 2021; Nowacki, Chawla & Kowalczyk-Anioł, 2021; Juschten et al., 2021; Zheng, Qiu, Morrison, Wei & Zhang, 2022; Abdelwahed et al., 2022).

The arrangement of the chapter is as follows: An in-depth literature review follows the introduction, in which the TPB model and its additional constructs are explained. In the same section, a table presenting previous studies on this topic follows the conceptual framework. A discussion of the methodology, including such topics as sampling and data collection, analysis of the data, and design of the research instrument, was also included. Analysing the findings, the discussion and conclusion have been provided. The study concludes with some limitations and directions to consider for upcoming research.

2. Literature Review and Hypotheses Development

2.1 Theory of Planned Behaviour (TPB)

Adapted from the theory of reasoned action (Fishbein & Ajzen, 1980), the theory of planned Behaviour (Ajzen, 1991) has been useful in explaining social behaviours, including pro-environmental Behaviour. Conforming to the theory of planned behaviour, intentions are subject to three elements: attitudes: how one perceives a particular behaviour and its consequences, subjective norms: how societies encourage, pressure, or control behaviour, and perceived behavioural control: the comfort or struggle with which the behaviour can be accomplished (Ajzen, 1991).

2.2 Attitude (ATT)

Individuals' attitudes are a psychological evaluation of the value, wisdom, necessity, and benefit of performing an action. A positive attitude as a product of favourable expectations generates positive motivation to drive Behavioural intentions, in line with the expectation-disconfirmation paradigm, and vice versa (Wong, Wan, Huang & Qi, 2021). In this context, the narrative conceptualizes the attitude towards a tourism destination through the context of sustainability that is Gen Z's feelings/attitude towards the issues related to the sustainable use of the environment. Concerning sustainable consumption, there is evidence that attitude has a significant association with Behavioural intention (Kim & Hall., 2019; Safshekan, Izturen & Ghaedi, 2020; Sujood, Sheeba & Bano, 2021; Nowacki et al., 2021; Ng & Cheung., 2022; Zheng et al., 2022). Hence, the hypothesis:

H1 Attitude is significantly and positively associated with behavioural intention towards travelling to tourism destinations.

2.3 Subjective Norms (SN)

Subjective norms express favourable or unfavourable attitudes about specific behaviours displayed by a specific group surrounding a person (Ajzen, 1991). Subjective norms, which function as a form of peer pressure, urge individuals to modify their conduct when it comes to environmentally friendly and socially responsible behaviour (Ulker-Demirel & Ciftci, 2020). That is to say, family members and friends can influence sustainable lifestyle choices in a person or discourage unsustainable Behaviour. People who are subjected to more social pressure are more probable to practice environmentally responsible behaviour (Khan et al., 2019). Prior literature on sustainability show a favourable association between SN and behavioural intention (Kim & Hall., 2019; Juschten et al., 2019; Khan et al., 2019; Nowacki et al., 2021; Zheng et al., 2022). This leads to the ensuing hypothesis:

H2 Subjective Norm is significantly and positively associated with behavioural intention towards travelling to tourism destinations.

2.4 Perceived Behavioural Control (PBC)

Perceived behavioural control refers to a person's assessment of the easiness or complexity of a specific action (Ajzen, 1991). In context of sustainable behaviour, while some studies have demonstrated PBC to have a significant relationship with behavioural intention (Toni, Renzi & Mattia, 2018; Juschten et al., 2019; Kim & Hall., 2019; Nowacki et al., 2021; Zheng et al., 2022), others have found little or no significant association (Pikturniene & Baumle, 2016; Khan et al., 2019; Fenitra et al., 2021; Abdelwahed et al., 2022). In light of the above review, the following hypothesis is suggested:

H3 Perceived Behavioural Control is significantly and positively associated with behavioural intention towards travelling to tourism destinations.

2.5 Climate Change Awareness (CCA)

Climate change awareness refers to being mindful of the threats that climate change poses to the human species and natural ecosystems (Achakulwisut, Mickley & Anenberg, 2018; Kim & Hall, 2019). Climate change is a complex phenomenon because of its gradual nature and uneven distribution of its harmful effects (Liu, Liu & Su, 2021). Creating awareness of climate change encompasses developing knowledge, awareness, principles, attitudes, skills, and aptitudes amongst people and social groups, therefore resulting in an improved quality of life (Ekpoh & Ekpoh, 2011). The increased knowledge of climate change promotes the embracing of low-carbon consumption (Korkala et al., 2014). A handful of researches in the past have found a significant association between Climate change awareness and behavioural intention (Masud et al., 2016; Kim & Hall., 2019; Abdelwahed et al., 2022). Following the above discourse, the subsequent hypothesis is proposed:

H4 Climate Change Awareness is significantly and positively associated with behavioural intention towards travelling to tourism destinations.

2.6 Desire for Digital Disconnection (DDD)

In the tourist industry, the fascination with digital disconnect is part of a larger debate that questions the downsides of perpetual connectedness. The psychological diagnostic of burnout underpins the crisis diagnosis. (Neckel & Wagner, 2013). The hyper connectivity of networked societies are increasingly being criticised for being harmful to health and a security concern and consequently 'Disconnection' has become a lucrative concept, with the tourist sector marketing it as "unplugged travel" or "digital detox" (Staheli & Stoltenberg, 2022). Regardless of the fact that the notion of digital detox is fairly recent, its use has grown significantly. Taking a pause from online media or technological devices for longer or shorter periods, as well as restricting the use of smartphones and other devices are all part of digital detox (Syvertsen & Enli, 2019). Dickinson et al. (2016) examined the issue of digital disconnection during camping tourism for mobile phones. A dilemma in terms of the importance of connectedness against the urge to "escape away from everything" occurred regarding the usage of mobile technologies in travel. A small effect of digital engagement on disconnection was detected, but patterns were not discernible. A number of researchers have investigated the concept of digital disconnection in other diverse backgrounds, such as digital detox holidays (Cai et al., 2020; Ozdemir & Goktas, 2021), motivations of Dutch tourists for digital detox (Hoving, 2017), digital detox for authenticity (Syvertsen & Enli, 2020), attitudes and motivations for digital detox tourism at Egyptian destinations (Gaafar & Allah, 2021), digital detox camps (Karlsen, 2020), dead zones (Pearce & Gretzel, 2020), digital disconnection (Dickinson et al., 2016), digital free tourism (Li et al., 2020; Egger et al., 2020). Hence, the hypothesis:

H5 Desire for digital disconnection is significantly and positively associated with behavioural intention towards travelling to tourism destinations.

Table 1. Represents previous studies related to TPB, Climate Change Awareness and Desire for Digital Disconnection and Sustainability.

Table 1. Previous Studies Related to TPB, Climate Change Awareness and Desire for Digital Disconnection and Sustainability

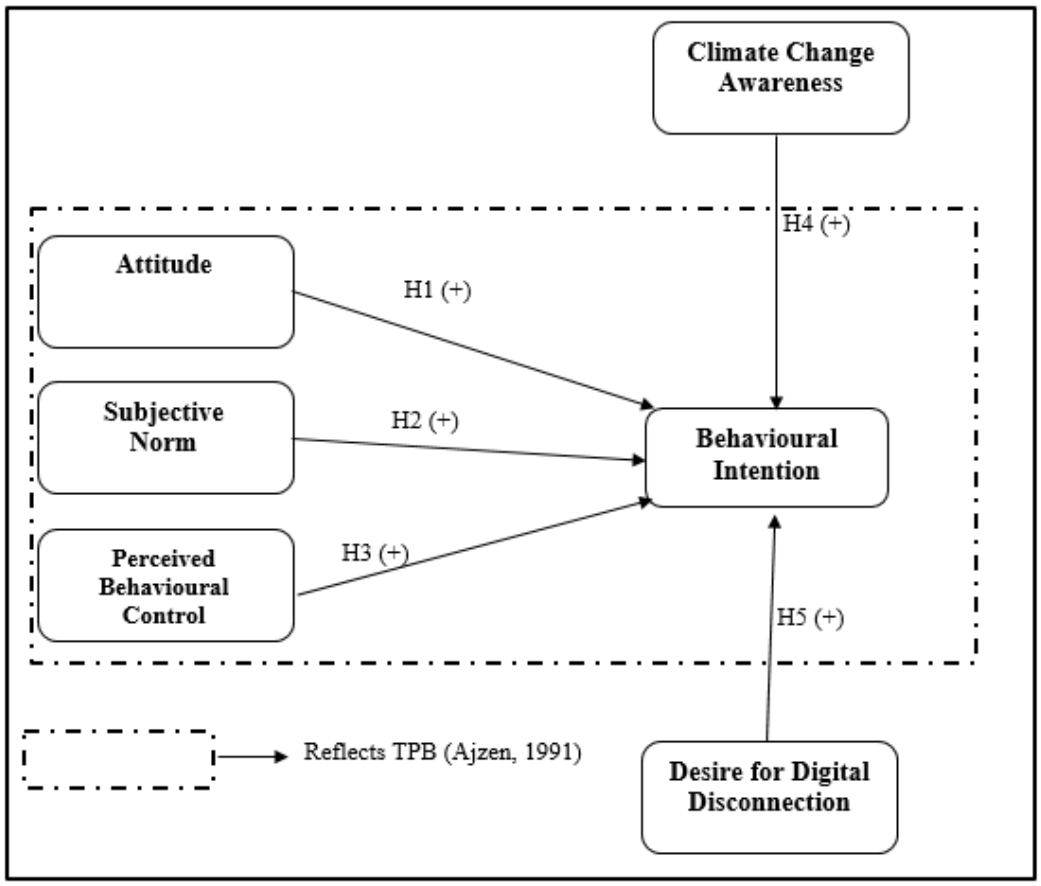
Author's/ (Year)	Purpose	Country	Sample (n)	Concept	Result
Zheng et al. (2022)	To investigate visitor PEB intentions in a rural context using TPB and the CAB model.	China	403	TPB and CAB	The suggested integrated theoretical framework demonstrated more predictive value than TPB alone when investigating PEB intentions.
Abdelwahed et al. (2022)	To evaluate climate change adoption intentions and PEB among citizens of a developing nation.	Pakistan	976	TPB	ATCC and SN have a strong favourable influence on ITCC. Furthermore, ITCC has been shown to be an effective predictor of PEB. The PBC, on the other hand, has no effect on ITCC.
Hu et al. (2022)	To assess the level of CCA and adaptation intention among Chinese tourism workers.	China	733	PMT	Those who recognize larger climate risks and have greater capacities for adaptation are more likely to take measures. Increasing adaptability inducements will encourage staff to act and adopt adaptability measures.
Ng & Cheung (2022)	To create an integrated framework that investigates the origins of PEB intentions among younger generations.	China	279	TPB and CVT	Younger generation's perceived values on environmentalism influence pro-environmental ATT and BI including an intention to recycle or conserve. CVT indicates that youths' perceived values in three dimensions - emotional, functional, and relational - predict their pro-environmental ATT.
Kim & Hall (2021)	An analysis of the effects of air quality perception and climate change mitigation on attachment to walking, related to walkable places and subjective well-being, as well as comparisons of tourism, leisure, and work activities was undertaken.	South Korea	330	-----	5 out of the 6 hypotheses were supported with attachment to walking on subjective well-being as the strongest effect.

Nowacki et al. (2021)	To test the relationship between ATT to the environment and eco-friendly tourism, SN concerning ERB, PBC, BI concerning eco-friendly places and the willingness to pay.	India	598	TPB	Significant relationship between ATT to environment and eco-friendly destination and SN, PBC to travelling BI. Weak association between ATT and willingness to pay more.
Gaafar & Allah (2021)	To explore the phenomenon of Digital Detox Tourism (DDT) and visitors' knowledge of the consequences of excessive ICT use.	Egypt	348	-----	Escapism, relaxation, health and wellness, and relationships are identified as four motivators that induce visitors to engage in DDT.
Safshekan et al. (2020)	To scrutinize the influence of people' community attachment, community participation and environmental ATT on ERB	North Cyprus	300	-----	All three variables demonstrated a significant affiliation with ERB.
Juschten et al. (2019)	To inspect the consequence of climate change on visitors' intentions to visit summer tourist destinations	Vienna	877	TPB	ATT had a small insignificant impact on BI. SN, social norms had strongest influence on BI. The effect of PBC on BI is less strong, but still significant. Other significant predictors were travel motives related to outdoor sports, media coverage, and past Behaviour
Kim & Hall (2019)	To inspect consumer's intention to reduce waste as a way to combat climate change, specifically when dining out	Korea	482	TPB	ATT, SN and PBC had a significant influence on waste reduction intention. CCA significantly affects ATT and BI of reducing waste for sustainability.
Dickinson et al. (2016)	To investigate the desire for digital disconnect when camping.	UK	339	-----	Tourists are not continuously connected, with up to 50% expressing a wish to unplug. The study discovered that internet interaction had a minor impact on the urge to disconnect, but no discernible trends.

Abbreviations used in the table- "BI = Behavioural Intention, ATT= Attitude, SN= Subjective norms, PBC= Perceived Behavioural Control, TPB= Theory of Planned Behaviour, CAB= Cognition-affect-behaviour, CCA= Climate Change Awareness, PEB= Pro-environmental Behaviour, ITCC=Intention to adopt Climate Change, PMT= Protection Motivation Theory, ERB= Environmentally responsible Behaviour, CVT= Customer Value Theory"

Source: Own Elaboration

Figure 1. Proposed Conceptual Framework



Source: Own Elaboration

3. Research Methods

3.1 Data Collection

This study made use of an online questionnaire created with google forms. From February 3, 2022 to March 29, 2022, the questionnaire's link was distributed online via social networking sites. To ensure that the respondents were appropriate for the current study, two screening questions were asked. First, Only Generation Z consumers should participate in the survey. Second, Only Indian (Gen Z) consumers should participate in the survey. The survey link was repeatedly posted on various travel agency social media webpages to attract more responses. Respondents were instructed to read the instructions of the study, understand the study narrative and carefully take the survey.

3.2 Development of Questionnaire

Adapting existing scales from the literature, a measurement instrument was created. Appendix A lists the measurement instrument's items and variables, as well as their sources. To examine Gen Z consumers' perceptions of all constructs, the questionnaire instrument used a seven-point Likert scale ranging from "strongly disagree (1)" to "strongly agree(7)". A pilot test with 20 responses was also done, and a few items (CCA5, DDD5, DDD6, and ATT5) were omitted based on the results of the pilot study.

3.3 Data Analysis and Screening

Structural equation modelling (SEM) was utilised as an analytical technique to evaluate the proposed model and its related hypotheses, and the data was analyzed using SPSS and AMOS softwares. Following the two-step technique advocated by Anderson and Gerbing (1988), we have analysed the measurement model to determine the reliability and validity of variables. The structural model was then evaluated by assessing the significance of the causal links between the variables. After an assessment of the data for outliers and missing values. We have tested the data for normalcy and common method bias. As given in Table 3, the skewness and kurtosis values lie under the suggested range, i.e., +3 and −3 (George & Mallery, 2003). Hence, data is normally distributed. Harman's single factor test was used to assess common method bias. The highest variance explained by a single factor was 39.557 percent, which was less than the recommended threshold value of 50 percent. This demonstrates that the current data is free of common method bias. SPSS was used for descriptive statistical analysis of each variable (Table 3). All of the variables' means are higher than the medium value of 4. The highest and lowest mean values were found in BI (5.9294) and CCA (5.1851), respectively, whereas the highest and lowest SD values were found in PBC (1.1978) and CCA (0.9778).

3.4 Respondents' Demographic Profiles

Table 2 displays the demographics of the respondents: Of the 456 participants, 250 (55.09%) are males, while 206 (44.91%) are females. Approximately 28.02 percent of the respondents are between the ages of 21 and 23. According to their educational background, most of the participants 206 (42.54 percent) are graduates. The majority of respondents (28.98%) have monthly income ranging from 15,000 to 30,000 rupees (1 US dollar Equals around INR 76.00 as of 2022).

Table 2. Demographic Profiles of the Respondents

Items		Frequency (n = 456)	Percent (%)
Gender			
	Male	250	55.09
	Female	206	44.91
	Others	-	-
Age (Years)			
	<18	106	23.34
	18-20	119	26.20
	21-23	128	28.02
	23-25	103	22.44
Education			
	Others (Diploma/Certificate)	11	5.12
	High School	74	16.12
	Intermediate	89	19.58
	Graduation	217	42.54
	Post-Graduation	76	16.63
Monthly Income (INR)			
	<15,000	37	08.12
	15,000-30,000	132	28.98
	30,001-45,000	110	24.16
	45,001-60,000	123	26.98
	>60,000	54	11.76

Source: Own Elaboration

3.5 Measurement Model

Exploratory Factor Analysis (EFA) was performed to analyse the underlying variables before employing the measurement model and structural model (Anderson & Gerbing, 1988). The results display that the KMO value is 0.928 which surpasses the recommended value of 0.6 (Kaiser, 1974, 1970) and a significant value for Bartlett's test (9736.482, $p<0.001$) (Bartlett, 1954) indicating that the data was sufficient for factor analysis (Tabachnick & Fidell, 1996). Confirmatory factor analysis was utilised to examine the validity of the study constructs and test the measurement model. Several goodness-of-fit indices were considered to check the model fit. The model fit results were, CMIN/DF= 2.980, GFI= 0.900, NFI= 0.942, RFI= 0.931, TLI= 0.953, CFI= 0.960, RMSEA= 0.066, indicating that the it was a good model fit.

Table 3. EFA

Items	Loadings	Mean	SD	Skewness	Kurtosis	Cronbach's Alpha
Behavioural Intention		5.9294	1.13132	-1.371	2.814	0.952
BI1	0.791					
BI2	0.753					
BI3	0.763					
Climate Change Awareness		5.1851	0.97786	-0.926	1.162	0.869
CCA1	0.816					
CCA2	0.751					
CCA3	0.765					
CCA4	0.729					
CCA5a						
Desire for Digital Disconnection		5.8795	0.99938	-1.322	2.096	0.891
DDD1	0.787					
DDD2	0.810					
DDD3	0.773					
DDD4	0.764					
DDD5a						
DDD6a						
Attitude		5.5728	1.19254	-0.721	0.523	0.936
ATT1	0.745					
ATT2	0.832					
ATT3	0.836					
ATT4	0.811					
ATT5a						
Subjective Norms		5.2722	1.02170	-0.725	0.718	0.908
SN1	0.792					
SN2	0.796					
SN3	0.727					
SN4	0.761					
Perceived Behavioural Control		5.5870	1.19780	-0.700	0.062	0.931
PBC1	0.857					
PBC2	0.869					
PBC3	0.638					

[a]Items dropped due to low alpha values
Source: Own Elaboration

The best way for determining internal consistency is to evaluate the coefficient alpha of the variables. Cronbach's alpha values higher than 0.70 (Table 3) indicate that measures are more reliable in terms of internal consistency (Nunnally & Bernstein, 1978). The average variance extracted (AVE) and composite reliability values were obtained to assess construct reliability and validity (Fornell & Larcker, 1981). As given in Table 4, the composite reliability (CR) and average variance extracted (AVE) both are higher than the recommended values of 0.5 and 0.7.

Table 4. Reliability and Convergent Validity Test

Variables	Items	FL	CR	AVE
Behavioural Intention			0.955	0.878
	BI1	.98		
	BI2	.85		
	BI3	.97		
Climate Change Awareness			0.870	0.626
	CCA1	.74		
	CCA2	.81		
	CCA3	.82		
	CCA4	.80		
Desire for Digital Disconnection			0.891	0.672
	DDD1	.83		
	DDD2	.85		
	DDD3	.81		
	DDD4	.80		
Attitude			0.937	0.788
	ATT1	.84		
	ATT2	.88		
	ATT3	.90		
	ATT4	.92		
Subjective Norms			0.908	0.711
	SN1	.83		
	SN2	.85		
	SN3	.82		
	SN4	.87		
Perceived Behavioural Control			0.940	0.840
	PBC1	.99		
	PBC2	.99		
	PBC3	.76		

Source: Own Elaboration

As given in Table 5, the square root of each AVE value exceeded its correlation values with other variables, hence, it confirms discriminant validity (Fornell & Larcker, 1981).

Table 5. Discriminant Validity Test

Constructs	BI	CCA	DDD	ATT	SN	PBC
BI	**0.937**					
CCA	0.599***	**0.791**				
DDD	0.680***	0.529***	**0.82**			
ATT	0.649***	0.579***	0.533***	**0.888**		
SN	0.654***	0.592***	0.647***	0.650***	**0.843**	
PBC	0.496***	0.614***	0.516***	0.575***	0.562***	**0.917**

Source: Own Elaboration

3.6 Structural Model

The data analysis results in table 6 show that four of the five hypotheses that tested a direct relationship with intention were supported and one was not. Thus, attitude (β=0.274, p < .001***), subjective norms (β=0.142, p < .01**), climate change awareness (β=0.204, p <.001***), and desire for digital disconnection (β=0.391, p <.001***) all positively and significantly influence behavioural intention towards travelling to tourism destinations, whereas perceived behavioural control (β= -0.09) did not. All these variables explained about 65% (R^2 = 0.649) of the variance in the behavioural intention towards travelling to tourism destinations. The SEM model path diagram is shown in Figure 2 and standardised path coefficients were calculated to check the relationships among study constructs.

Table 6. Results of Hypotheses Testing

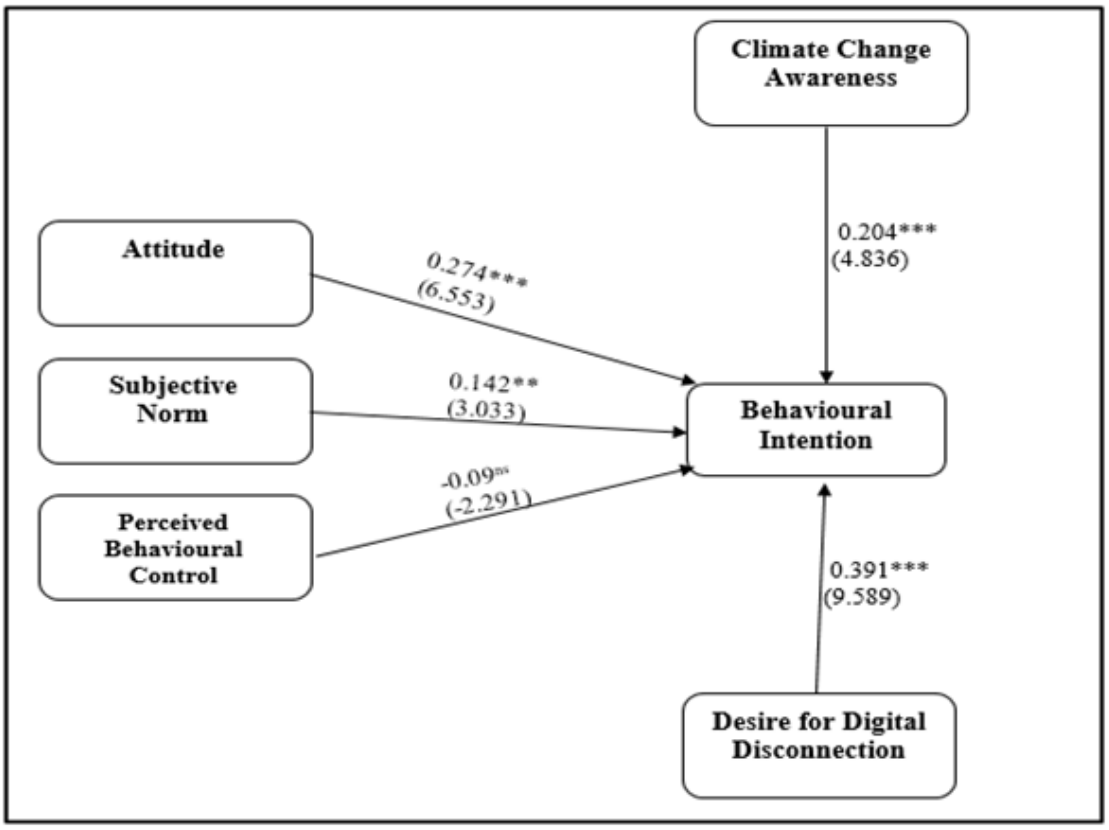
H	Paths	*β*-value	*t*-statistic	*p*-value	Results
H1	ATT → BI	0.274	6.553	***	Supported
H2	SN → BI	0.142	3.033	**	Supported
H3	PBC → BI	-0.09	-2.291	**	Not Supported
H4	CCA → BI	-0.09	4.836	***	Supported
H5	DDD → BI	0.391	9.589	***	Supported

Source: Own Elaboration

4. Discussion and Conclusion

In this study, Climate Change Awareness (CCA) and Desire for Digital Disconnection (DDD) have been incorporated to the Theory of Planned Behaviour Model to investigate Gen Z Consumers' behavioural intentions toward visiting sustainable tourism destinations. A model with five hypotheses was developed focusing on the available literature. The presented model has been tested and interpreted using structural equation modelling (SEM) on AMOS 22 software. ATT and SN significantly and positively influence BI, while the relationship between PBC and Gen Z Consumers' behavioural intentions toward visiting sustainable tourism destinations is found to be insignificant. While, CCA and DDD, the two additional constructs, have a direct and positive association with BI. This research has great contribution both to theory and practice. Gen Z consumers' attitude has a significantly and positive (β = + 0.274) association with BI towards visiting the sustainable tourism destinations. Hence, H1 was accepted. This is similar with the previous studies (Nowacki et al., 2021; Ng & Cheung, 2022; Park, Hsieh & Lee, 2017).

Figure 2. The Estimated Structural Model and Hypotheses



Source: Own Elaboration

ATT is the second strongest predictor of Behavioural Intention. The reason for this could be that the Gen Z consumers prefer to visit sustainable tourism destinations for intrinsic reasons, realizing that his/ her visit will be both beneficial and advantageous. Subjective norms of the Gen Z consumers also has the direct and significant relationship (β = + 0.142) with BI. Therefore, H2 was accepted. This is in match with the earlier studies (Juschten et al., 2019; Liu et al., 2020). The possible reason could be that the opinion of a person of concern to Gen Z consumers' may affect their intention to visit the sustainable tourism destinations. According to findings, PBC does not significantly influence (β = - 0.09) behavioural intention of Gen Z consumers. Thus, H3 was rejected. The result is similar to the earlier studies (Shah & Soomro, 2017; Liu et al., 2020; Abdelwahed et al., 2022). The reason could be that Gen Z consumers do not have enough time, knowledge, or decision-making power to travel to sustainable tourism destinations. They may believe they have little control over practicing sustainability, and external or internal circumstances may discourage them from visiting tourism destinations. The findings show that CCA has a positive and significant and positive relation (β = + 0.204) with behavioural intention of Gen Z consumers to visit sustainable tourism destinations. Hence, H4 was accepted. This is in line with the previous studies (Abdelwahed et al., 2022; Kim & Hall, 2019). The reason for this could be that Gen Z consumers seem to have a much strong desire to commit to green values, safeguard global resources, minimize usage, and make an important contribution to the advancement and sustainable development of the society. The findings show that DDD has a significant and positive (β = + 0.391) influence on the behavioural intention of Gen Z consumers to visit sustainable tourism destinations. Hence, H5 was accepted. This finding is matched with the previous studies (Smith & Puczkó, 2015; Nguyen, 2021). The reason could be that abstinence from digital platforms is now considered a tactic for lowering utilisation and/or energy use. Furthermore, Gen Z consumers recognize that excessive use of technology while traveling can harm the quality of the tourist experience, and therefore tourists may indeed look for "disconnection" while traveling. Also their daily activities and sense of well-being may benefit from digital disconnection practices. DDD also helps in focusing on the priority of overall health, performance, true meaning of existence and contribution to the earth's climate.

Moreover, DDD must not be limited to behaviours at tourist destinations but might be extended to include other behaviours as well. The desire to disconnect is probably an extremely personal and situational decision based on individual perspectives and experiences.

5. Implications

5.1 Theoretical Implications

The study on its own differs from earlier research, as per the authors' expertise, it is among the first studies in tourism research to integrate the theory of planned behaviour with climate change awareness and the desire for digital disconnection to investigate Gen Z Consumers' behavioural intention towards visiting tourism sustainable destinations. The findings of this research add to related literature and studies on sustainable tourism, as well as tourists' desire for digital disconnection.

Because DDD-related research is still in its early stages, there is an opportunity to promote tourism research to progress well outside the technological persuasion and take a more critical view of ICT in tourism, primarily in terms of health and psychological well-being. This study assists in identifying the main factors that drive tourists to choose DDD, designed to allow tourism suppliers to not only advertise but also customize their products to this booming industry.

5.2 Practical Implications

The present study also contains practical implications. Government agencies and destination management companies may consider organising climate change awareness CCA events to make people more aware of environmentally friendly knowledge and practices.

This might help destination policymakers determine whether to generate technological alternatives or restrict mobile phones being used in tourism destinations like natural areas or historic sites. Evaluating DDD as a travel option rather than unpleasantness, the present study can significantly help professionals to effectively encourage DDD as a tourism product, optimizing the participants' associated satisfaction and positive perceptions. Consequently, this study indicates that not only is it practicable to create strategies that can support preserving sustainability from climate change but that sustainable tourism may be an important cause of enhanced climate change awareness. The key obstacle will be upgrading that awareness into action on climate change, as well as the willingness to work besides the costs of sustainability preservation and managing the tourist destinations and resources. According to the results and literature reviewed, it appears to be more feasible to limit or decrease the technology used instead of completely removing it.

6. Limitations and Directions for Future Research

There are several limitations to this research that need to be acknowledged. First, this study was based on investigating the behavioural intentions of Generation Z, which limits generalizability; therefore, future research should focus on the behavioural intentions of other generations or the general population. Second, the study's potential to generalise was limited because data was collected via convenience sampling. Third, as previously stated, the data was gathered via an online questionnaire created with Google forms. The questionnaire was answered by people using the internet and hence, excludes the people who are unaware of this technology which reduced the generalizability, therefore for future studies; it should be kept in mind. Furthermore, choosing to focus on a certain Generation group is by interpretation restricting, as it does not allow for a wider paradigm on other age groups' perceptions of technology. Additionally, in the field of sustainable tourism destinations and the behavioural intentions of Generation Z consumers, it appears that the TPB model should be enlarged with contrasting variables for increasing the prediction power of the model, namely sustainable tourism, government interventions, consumption intention, global environment, social connections, digital detox, and so on.

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APPENDIX A

Attitude (Ajzen, 1991; Ajzen & Fishbein, 1980)

ATT1: Travelling to tourism destinations is good.
ATT2: Travelling to tourism destinations is wise.
ATT3: Travelling to tourism destinations is pleasant.
ATT4: Travelling to tourism destinations is beneficial.
ATT5: Travelling to tourism destinations is attractive.

Subjective Norms (Ajzen, 1991; Hsu & Huang, 2012)

SN1: Most people who are important to me think I should travel to tourism destinations.
SN2: Most people who are important to me would want me to travel to tourism destinations.
SN3: People whose opinions I value would prefer me to travel to tourism destinations.
SN4: Most of my friends encourage me to travel to tourism destinations.

Perceived Behavioural Control (Ajzen, 1991)

PBC1: Whether or not, travelling to tourism destinations is completely up to me.
PBC2: I am confident that if I want, I can travel to tourism destinations.
PBC3: I have the resources, time and opportunities to travel to tourism destinations.

Climate Change Awareness (CCA) (Kim & Hall, 2019)

CCA1: I am concerned about climate change.
CCA2: I am alarmed about the reasons for climate change.
CCA3: I am worried about the consequences of climate change.
CCA4: I am concerned about the threat of fine dust.
CCA5: I am alarmed about the reasons for fine dust.

Desire for Digital Disconnection (DDD) (Dickinson et al., 2016)

DDD1: Travelling to tourism destination is a time to avoid digital communication.
DDD2: When travelling to tourism destination, I like to engage with the natural world and switch off all the digital gadgets.
DDD3: I switch off all the digital gadgets to avoid intrusion from friends and family while travelling to tourism destination.
DDD4: Digital gadget is an intrusion in a travelling to tourism destination.
DDD5: I only carry my digital gadgets for emergencies when travelling to tourism destination.
DDD6: I only switch on digital gadgets to check for messages from close friends and family when travelling to tourism destination.

Behavioural Intention (Ajzen, 1991)

BI1: I am willing to travel to tourism destinations in the future.
BI2: I plan to travel to tourism destinations in the future.
BI3: I will make an effort to travel to tourism destinations in the future.

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QR Codes: A Case of its Level of Adoption in Portugal

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ABSTRACT

The choice of this work arises from the interest in the topics of entrepreneurship and technology transfer toward launching more innovative products/services. It focuses on delivering a technology, QR code, which brings more innovation to a product especially with the current growth of mobile activities. Then, with the help of a strategic plan, it evaluates the level of potential acceptation and adoption of the proposed service and of widespread use of QRs in Portugal. Thus, an interactive prototype of the supporting platform is described and used for its validation with users. Most participants in this project know the technology and consider the idea interesting and promising. They even suggest add-ons such as more video functions and a higher variety of events and/or resources for combination. However, through a deeper analysis, aspects related with effective use of the service, eventual payment, and explaining how it works reveal lower enthusiasm. Thus, although there is a promising scenario for its implementation in the Portuguese market, training aimed at effectively knowing and using QR-code technology must evolve. Given the challenges of today's society, the future application of this product/service shall pass through an innovation accelerator program to launch a business model that can deal with several trends such as quick and contactless use of specialized information or resources for activities in the areas of tourism, banking, health, etc.

KEYWORDS

Entrepreneurship, Innovation, Technology Transfer, QR Code, Prototype, Mobility

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1. Introduction

The motivation behind this project is due to the interest in the areas of entrepreneurship/ innovation and technology transfer. After selecting the theme, as well as the technology to support the innovation of the underlying product, we chose to apply QR code technology. QR means quick response, which is represented by a bar code. This designation stems from the ability of quick interpretation by mobile devices. Given the related potential and creativity, we decided to go ahead with a business idea. However, the focus of this work is on the presentation and validation of its prototype.

There is an increasing number of innovation accelerator programs to support this kind of ideas based on new or emerging technologies. Usually, these programs have practical or entrepreneurial goals (Sá & Lee, 2012). Thus, this work has both sides: describing the prototype of a business project and doing investigation for a research/academic purpose. It also fills a gap because there are several studies about QR code, but rather focused on technical aspects (Booba, Shindeb, Rathodc & Gaikwadd, 2014; Moisoiu, Negrău, Győrödi, Győrödi & Pecherle, 2014) or purchase intention (Hossain, Zhou & Rahman, 2018) than on a business idea/plan.

1.1 Objectives and Research Question

This work, based on a business idea, aims to approach a stage of development that ought to support the future launch of a start-up company. This project is related to the innovative offer of a product/service, which culminates with the presentation of a prototype of a platform for sending messages in videos through QR code, called *Send and Surprise*.

In order to achieve this goal, this study will analyze some of the topics that should guide prototyping according to the market, which make up the strategic plan of the project. This will give understanding and motivation to know if there are conditions for its adoption and use. Then, this project culminates with the validation of the proposed product/service, firstly presented through an interactive prototype.

Thus, the research question to be considered is: *Which age group most uses QR codes and at what 'level'?*

A study that also validated a QR code app-based idea is from Pal and Jha (2017), but it is related to personal marketing for professional job seekers. Hossain et al. (2018) also examined the impact of QR codes on purchase intention and customer satisfaction, however without a concrete business plan and resulting prototype for launching and nurturing a new service based on it.

2. Related Work

This project has to do with the creation of opportunities, given the increasing use of wireless devices connected to the internet and the variety of associated applications (Kumar et al., 2020). In opportunity entrepreneurship (discovery of a business opportunity), the entrepreneur is, above all, an expert observer. Always attentive to the needs and desires of the contemporary consumer, which include more intangible aspects (sensory, interactive, dynamic, informal). Upon realizing the lack of a certain product, he decides to conceive and implement it. Identifying good opportunities is not a simple task. It is noted that this profile has prior knowledge about the market, even if not in-depth (Leite & Oliveira, 2007).

On the other hand, Pessoa (2005) defines three types of entrepreneurs: corporate entrepreneur (intra-entrepreneur); start-up entrepreneur (creates new businesses/companies); and social entrepreneur (creates enterprises with a social mission). Corporate entrepreneurship involves a process of identifying, developing, and implementing new opportunities within the existing company. The start-up entrepreneur aims to give rise to a new business. He analyzes the scenario and, when faced with an opportunity, presents a new enterprise. His challenges are clear: supplying an existing demand, to which has not been given attention; seeking competitive differentials in an existing market; beating the competition; wining customers; and achieving the profitability and productivity necessary to maintain the enterprise.

Finally, another type of entrepreneur is the technological one. His profile is normally characterized by familiarity with the academic world, by a search for business opportunities in the digital and knowledge economy, by a technical culture that leads him to riskily invest in niche markets with a low survival rate (Lodi, 2000; Belo et al., 2014).

The QR Code is the main technology to be applied in the proposed prototype. Therefore, it is necessary to deepen this subject and its variants to better understand the service.

2.1 Exploring QR Code

The adoption of technology implies many advantages for companies and people, such as: cost reduction, availability, timeliness, usefulness, and ease of use. At the end of each decade, a new technology propels us into the next era. The quick response code (QR) has revolutionized the code barrier. It is an interesting technological breakthrough, which has transformed the way consumers interact with sellers, service providers and other consumers.

The QR code activates tags and directs them to links that can open web pages, videos, text messages, among other resources. This technology was invented by the Japanese company Denso-Wave, a Toyota subsidiary, in 1994. The main goal was to facilitate the process of cataloging automobile components. It consists of high-density bidimensional graphical images, like barcodes composed of digital squares instead of bars. The compounds of those squares come together to create codes that, in turn, host the data that will be verified by mobile devices (Bashir, Naik & Madhavaiah, 2013).

QR code reader applications (apps), downloadable on mobile communication devices (mobile phones, tablets, etc.) require the action of a built-in camera to decode the data. This technology allows integrate such apps with other systems or objects. QR codes are barcodes that connect us quickly from physical objects to the digital world (Bashir et al., 2013). The use of QR code is free of any license as it is an open source, defined and published as an ISO standard in 2010. Then, in 2011, the QR code became commercial for the first time in the telecommunications' sector. Today, it has gained great popularity due to mobile technology, a decisive support for its proliferation. With this technology and its mobile use, the opportunities for technology transfer are also enormous.

In the beginning, the main objective was a code to be quickly interpreted by reading equipment. But after some time, other companies began to explore different ways of using QRs so that their commercial use became widespread all over the world. These codes are changing the way we interact with people and products (magazines, books, ads, events). QR codes have also changed the way content is created and delivered (Jharotia, 2018). They provide a new *channel* for direct sales rewarding the advertising investments.

2.2 QR Code and Applications

The use of QR code is increasing globally, due to its greater popularity around the world, particularly in China, Korea, Japan and the USA (Tarjan, Senk, Kovac & Horvat, 2011; Shin, Jung & Chang, 2012). In the year 2019 about 2.7 billion people used smartphones and an estimated 90% of the population will access high-speed internet in 2020. Smartphone updates have also added QR code scanning capabilities to the camera app, so these codes become an integral part of daily life.

Even the latest android smartphones have made QR code scanning a native feature. Inspired by China, South Korea has also witnessed an impressive growth in the number of QR scans. India and US markets have also adopted QR to make payments and turn shopping into a unique experience (Beaconstac, 2019).

Alipay, a leader in online and mobile payments, whose digital 'wallet' is used by millions of people, has partnered with 6 European operators to promote the interoperability of digital payments based on QR codes. Pagaqui has the exclusive use of the system in Portugal, whose project also involves the Spanish service Momopocket, the Austrian Bluecode, the Norwegian Vipps and the Finnish ePassi and Pivo that will adopt a QR code format compatible with Alipay.

The possible uses of QRs are almost infinite, as this technology is present in our daily lives in the most diverse services/products (Shin et al., 2012). Due to its versatility, it is used in several fields such as: online banking, customer service management, medical assistance, assistance for the disabled, security applications (with different types of encryption). It can be integrated in print ads, products, smooth surfaces, etc. Another form of QR, widely used, is in invoices and other documents for paying products/services, in which the user is directed to his digital invoice for immediate payment (figure 1).

Figure 1. QR-based Invoice

Source: Edicom (2021)

Futuristic stores and supermarkets that operate without staff and queues, as Amazon Go and Apple Store, also use QR codes. Before entering the store, the buyer needs to create an account and then download the app, creating a personal QR (like a digital signature). Thus, when entering the store, an electronic check-in is performed which identifies the personal QR and then automatically pays the products purchased.

2.3 QR as a Digital Marketing Tool

With QR codes marketers can better understand which campaigns are performing well, based on the number of checks (Beaconstac, 2019). URLs (website addresses) are often long, obscure and difficult to remember. That is why more companies are adopting this technology of quick recognition, due to its easiness in how people interact with digital content (Marketing charts, 2012). Whether QRs will be here in the long run is unknown, but for now it is a highly effective and valuable interactive tool. Tracking analyses, monitoring campaigns, analyzing scans based on date, time, location and device used helps to adjust the codes of various campaigns. Exporting and integrating those analyses within Google Analytics also allows to create other useful measures and innovate the campaigns/projects.

Dynamic QRs (figure 2) are another great variant of this technology, as they offer versatility to edit the linked URLs according to business requirements, even after printing and distributing them. Dynamic (or smart) QR codes allow managers to vary campaigns at different times of the day and different days. This helps campaigns to adapt to seasonal launching, special campaigns, festive offers, and seasonal products, without changing the QR code in the printed material.

Figure 2. Dynamic QR Code *vs*. Static

Source: Beaconstac (2022)

Based on these aspects, next section deals with the transition of the proposed idea to become a real enterprise. In this transition, the role of a strategic plan focusing on the prototype of an interactive platform is highlighted.

3. Research Framework

After the theoretical bases described in the previous section, regarding several aspects that served as basis for the idealization of this project, it is essential to consider the main steps to support the business idea. The ultimate goal is to create an innovative service underlying the launch of a start-up company.

The phase that must precede the launch of a product/service is the so-called strategic plan which, due to its importance, is required by any interested mentor or investor. Its main stages of development, within the scope of the purposed idea, are:

1. Market analysis and characterization
2. Proposed product/service
3. Target audience
4. Competition analysis and future trends
5. Idea presentation questionnaire
6. Prototype of the idea/project
7. Prototype validation interview
8. Product implementation
9. Promotion and publicity

The following section (and sub-sections) focus on the description of the proposed product/service, the idea-presentation survey to evaluate familiarity with QR codes, the prototype of the product, and the interview carried out for its validation.

4. Methodology

This project, *Send and Surprise*, intends to be a start-up in the area of new technologies, with a differentiating purpose in the interaction with customers through message sending (in video) among other possibilities (Agapito & Quelhas Brito, 2020). It allows an interaction between the offline/traditional (invitations, cards, gifts, etc.) and the online/contemporary (videos, digital platform, QR code, smartphone) on an individual and personalized way. Emotional/affective issues are aggregated factors as another differential side of this idea.

4.1 The Proposed Product/Service

A simple message sent, either digitally (through a chat app) or by letter/printed card, is forgotten in time. But through the suggested platform, the message is delivered in the form of a video, using a QR-code tag embedded in a chosen card or gift. This has a printed QR, which can be visualized anywhere at any time, through the camera of a mobile device with web access. In addition to the object received (a carrier of a special message from a special person) it will provide a sense of affection and closeness to whom receive it, even if distant.

To do it, you must access the *Send and Surprise* website and view (or download) the prepared video, where a QR-code is generated which can be printed on an object (or other items) of choice, available on the same website. The following figure illustrates the steps and processes involved.

Figure 3. Sequence of the Proposed App and Service

Source: Own Elaboration

An original aspect is the goal of *Send and Surprise* which is not sending ordinary messages/ videos, as those we often send and receive through Youtube. These are special messages regarding events, special occasions with a high degree of personalization and creativity. It is expected that the videos sent will be made from the sender's own mobile phone, in an informal and simple way. However, in other cases the video should be professionally produced if the event requires it.

4.2 Idea Presentation Questionnaire

To test the feasibility and acceptance of the idea, an online survey was applied using Google forms with multiple choice questions. These are related to familiarity and adoption degree of QR code and the proposed service. Having been available for 15 days, we obtained a total of 56 responses whose data are discussed. Thus, 55 respondents *recognize* the use of QRs on different surfaces in their daily lives (only 1 person gave a negative answer).

Asking whether the respondents *know* well *this type of code*, 54 respondents said yes. However, knowing it does not necessarily mean that they dominate its functioning. Thus, 49 participants answered they *know how a QR code works* and 7 gave a negative answer. Regarding its *effective use*, 50 respondents answered positively, while 6 have not used it yet.

In these 50 participants, who had already used a QR code, 25 did it 1 to 5 times; 16 did it 5 to 10 times,

and 9 did it 10 to 15 times. The number of respondents who *considered* this technology *easy to use* was 49, while 7 considered the opposite.

About 34 respondents *consider interesting to send an object with a message*, using a QR code, while 19 said perhaps, and 3 do not find it interesting yet. In the question *about receiving this kind of object*, 37 participants find it interesting, 15 answered perhaps, and 4 gave a negative response. Half of the sample used (28) would *recommend this app* to friends, 24 may recommend it, and only 4 would not recommend it.

In this survey, an open non-mandatory question was also added: "Regarding this idea, which other resource(s), in addition to objects or messages, would you consider relevant to include in this app?". Among the answers obtained, some more pertinent are: sending an invitation that integrates Google maps to add geo-location; advertising links associated to the object sent; photos' inclusion; gift cards; codified documents (such as payable invoices); and collective messages.

It should be noted that the data collected result from a convenience sample, not representative of the population, and therefore non-probabilistic and occasional. Thus, the data obtained apply only to it, but are useful to generate a knowledge base for the app development as it helps to define its scope and added value.

4.3 Idea/Project Prototyping

In computing, a prototype is a software model or pattern. In this first prototype of the proposed idea, an architecture based on screens (or 'scenes') could be defined: an initial scene; intermediate scene(s), and final scene. For each of these scenes, specific routines are defined. We emphasize that the display of each scene is generic. Briefly, the application is organized as follows:

Initial interface: this is the first scene to be displayed when starting the application. There we can view the options available. Among the options, we can select the one we want and start it. When finished, it returns to the initial interface. In this step, there is an explanatory video about the platform's operation, an icon for login/sign up;

Intermediate interface1: in this scene, the user can upload his video to the platform;

Intermediate interface2: in this step, after the video has been sent, the user can watch it on the platform. If there are no errors, it proceeds to the next scene - 'generate QR code';

Intermediate interface3: in this phase, after the QR is generated, it is up to the user choose from among the objects available on the platform so that his choice is sent to the recipient;

Intermediate interface4: in this scene, the user will have a first image (preview) of how the chosen object will look and function with the printed QR. Then, it is necessary to fill in the 'Surprise' shipping address. Certainly more items can be chosen (in the interface3), to avoid repeating the process for sending each item.

4.4 Prototype Validation Interview

The interview has the main objective of knowing the opinion related with *Send and Surprise* application, especially to evaluate its prototype. It was an individualized interview, to 5 users from the sample, in order to validate the functionality and clarity of the prototype.

The tests were carried out informally and in parallel with the development. Such tests focused basically on the interactivity of the application, verifying if the functionalities defined were executing as planned. To obtain this feedback, six open questions were applied whose results are summarized below. Here are highlight the general responses:

1. Are the layout and user interface of *Send and Surprise* friendly?

The respondents answered yes, but they suggested other color combination. They also proposed to change the font used.

2. Is it easy to navigate/interact with *Send and Surprise*?

All answered yes, as they did not find difficulties in this interaction.

3. Does *Send and Surprise* offer the products/services you need?

Although they do not perceive the proposed service as essential, most of them answered yes. However, some respondents have suggested to include other options as items, such as: chocolates, t-shirts, etc.

4. Would you like to create the video directly in the platform?

They generally answered yes if there exists the function of video edition.

5. Would you like to associate photos (besides videos)?

The participants of this experimental sub-sample answered yes, but some mentioned the inclusion of videos assembled in power-point style.

6. Are you comfortable with the service supported by this platform?

Although these participants had not used something similar before, they said they feel comfortable using the proposed platform and imagine its use in several events.

5. Discussion of Results

Due to new challenges, accelerated by the covid-19 pandemic, people have increased the use of mobile internet and apps in their daily life (Dennison, Morrison, Conway & Yardley, 2013; Hui, Inman, Huang & Suher, 2013; Datta & Nwankpa, 2021). Therefore, the main objective of this work is to present an idea of a platform for sending video messages, through a QR-code tag. Before presenting it, it was necessary to review some theoretical concepts related to the creation and development of a platform for a start-up. These concepts include entrepreneurship, innovation, technology transfer, marketing and QR technology, discussed in order to sustain the empirical part of this project.

Data on the use of smartphones/e-commerce in Portugal justify market demand for the type of product/service here proposed. To guide its implementation into a first prototype, some steps of the strategic plan were considered. Namely within the scope of QR-code technology, a survey was applied in order to capture the familiarity with it and the acceptance/adoption of the idea. Then, an interactive prototype of the service was presented and an interview to some survey participants could give insight about it. The resulting answers help to outline further changes or innovations.

Regarding the survey there is familiarity about QR codes, having been used by most respondents at least 1 to 5 times in the last year. It is considered an easy-to-use technology by the majority of them. However, this interaction still occurs through conventional means such as product package, concert invitation and invoice payment. Regarding the service offered, it is considered interesting to send or receive messages by QR-code. However, only 6 respondents are willing to pay for the application.

Finally, regarding the interview for prototype validation, the participants find it easy to understand and interact. However, in the layout, they propose a change in color patterns and fonts for a more friendly navigation.

Deepening the data obtained in the light of the research question - *Which age group most uses QR codes and at what 'level'?* - the participants who use QR the most, and find it easy to use and useful, are aged

between 26 and 35 years old. In regard to *'at what level'*, the variables (questions) such as if they would like to send an object with it, or if they know how it works, had a lower percentage of positive (yes) answers. The outputs from SPSS (statistical software used in this analysis), such as bivariate correlations (table 1), also show lower values for these two variables (questions 6 and 10 - table 1) comparing to those related with frequency of use and ease of use (questions 8 and 9). This can reveal that more knowledge on this technology and its potential is needed.

Table 1. Bivariate Correlations Obtained

Correlations

		9 - Is the QR Code technology easy to use?	10 - Would it be interesting to be able to send an object with a message via QR code?	8 - In the las 12 months, how many times have you used technology QR Code?	7 - Have you used QR Code technology? (If not used, go to question 10)	6 - Do you know how a QR Code works?	4 - Is the image shown familiar to you?	5 -Do you know a QR Code?	Female	Male
9 - Is the QR Code technology easy to use?	Pearson Correlation	1	-,015	,576**	-,734**	-,129	,053	,066	,226	-,226
	Sig. (2-tailed)		,912	<,001	<,001	,339	,695	,628	,091	,091
	N	57	57	57	57	57	57	57	57	57
10 - Would it be interesting to be able to send an object with a message via QR code?	Pearson Correlation	-,015	1	-,173	,093	-,033	,097	-,022	-,100	,100
	Sig. (2-tailed)	,912		,197	,491	,810	,475	,869	,461	,461
	N	57	57	57	57	57	57	57	57	57
8 - In the las 12 months, how many times have you used technology QR Code?	Pearson Correlation	,576**	-,173	1	-,917**	-,254	-,245	-,175	,166	-,166
	Sig. (2-tailed)	<,001	,197		<,001	,056	,066	,194	,219	,219
	N	57	57	57	57	57	57	57	57	57
7 - Have you used QR Code technology? (If not used, go to question 10)	Pearson Correlation	-,734**	,093	-,917**	1	,394**	,219	,151	-,199	,199
	Sig. (2-tailed)	<,001	,491	<,001		,002	,101	,262	,138	,138
	N	57	57	57	57	57	57	57	57	57
6 - Do you know how a QR Code works?	Pearson Correlation	-,129	-,033	-,254	,394**	1	,245	,431**	-,166	,166
	Sig. (2-tailed)	,339	,810	,056	,002		,066	<,001	,218	,218
	N	57	57	57	57	57	57	57	57	57
4 - Is the image shown familiar to you?	Pearson Correlation	,053	,097	-,245	,219	,245	1	,809**	-,157	,157
	Sig. (2-tailed)	,695	,475	,066	,101	,066		<,001	,244	,244
	N	57	57	57	57	57	57	57	57	57
5 -Do you know a QR Code?	Pearson Correlation	,066	-,022	-,175	,151	,431**	,809**	1	-,194	,194
	Sig. (2-tailed)	,628	,869	,194	,262	<,001	<,001		,148	,148
	N	57	57	57	57	57	57	57	57	57
Female	Pearson Correlation	,226	-,100	,166	-,199	-,166	-,157	-,194	1	-1,000**
	Sig. (2-tailed)	,091	,461	,219	,138	,218	,244	,148		,000
	N	57	57	57	57	57	57	57	57	57
Male	Pearson Correlation	-,226	,100	-,166	,199	,166	,157	,194	-1,000**	1
	Sig. (2-tailed)	,091	,461	,219	,138	,218	,244	,148	,000	
	N	57	57	57	57	57	57	57	57	57

Source: Own Elaboration

Thus, there is a promising scenario for the implementation of an e-service like *Send and Surprise* in the Portuguese market. Nevertheless, training aimed at promoting the effective use of QR-code technology must evolve. Then, the level of adoption of this and other similar platforms will increase.

6. Conclusion

QR code technology has been commonly used to store and transfer information of various kinds. It became a popular means of information storage and exchange, and then can be found almost everywhere. People and companies use them to store and distribute information from restaurants, retail, and packaging ever since their advent in the 90s. Now they are popular as contactless/virtual means of exchange and brand awareness, much-needed these days. They are efficient and easy to use. However, the literature review on the subject reveals a lack of studies about their effective use and potential for business model innovation. That is where this work particularly contributes with its proposed approach.

6.1 Practical Implications

This study acknowledges a promising scenario for the implementation of this kind of e-services in the Portuguese market. Nevertheless, training aimed at promoting the effective use of QR-code technology must evolve, since the analysis captured a lack of mastery of this technology what can be related to some of the security and privacy risks around its use.

An interesting result is that the surveyed users are sensitive to more video functions and a more friendly layout what can reflect the need of more visual accessible content, a trend also acknowledged in social networks and digital marketing and commerce. All these aspects are important to consider in future projects, such as the trends in terms of smart tourism systems and smart cities whose roots can lie in this and other technologies.

6.2 Managerial Implications

Some management implications (or recommendations) are thus related to the need to train key workers in this technology and its potential, in order to follow up growing trends such as BYOD (Bring your own device) at work or enhanced e-commerce. Another implication is that this study, through the design of its idea, business plan and prototype, paved the way for a type of innovation in the business model itself.

6.3 Limitations and Future Work

Several goals underlying the development of *Send and Surprise* platform-prototype were achieved. However, there are still issues that can be tested and developed to enrich it. In the future, we intend to extend the horizon of the proposed platform as a mobile app namely on Android, iOS and Windows Phone.

Currently the main function of the platform is to send video messages by QR-code activation, but we intend that it also allows sending, along with video, sponsored links creating other return sources for the business. Also, its interaction with geo-location resources can complement messages for many events. Additionally, we intend to add more languages to the platform's interface in order to broaden its geographical scope. Over time, adding the users' database to the experience acquired with the platform, other products/services may be implemented such as: documents to pay by the generated QR, invitations to social networks through a QR, etc.

Given the challenges of modern society, other possibilities to consider relate to its application to quick requests for information and/or resources for critical activities (especially in tourism, health, etc.). Moreover, since it allows a virtual exchange of information, the associated risks (malware attacks, bugs, among other) are often overlooked and forgotten. These are issues we intend to address in the *Send and Surprise* platform and resulting start-up, to be submitted to an innovation accelerator program where managers, IT specialists and investors participate.

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Tourist Behavior and Demand for Digital Disconnection: A Review

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ABSTRACT

The hyper digitization of the current moment has led to the emergence of new behaviors and trends such as the one that occupies the object of study of this research about vacations free of digital media. The main objective is to shed light on a subject that has been little explored but is already present and future in the tourism sector. In this study, it is intended to classify and find the main motivations of tourists to take this type of vacation and see the relationship of this trend with today's environmental awareness. To meet the objectives, a systematic literature review is carried out from which the 3 main motivations that drive this type of disconnection tourism are constructed: nature and authenticity, reconnecting with oneself, and the search for human connection.

KEYWORDS

Tourism, Digital Detox, Sustainability, Free Digital, Holidays, Behavior

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1. Introduction

The history of the tourism sector has always been influenced by changes in the mentality and behavior of consumers, who seek to live experiences beyond those they live in their daily lives (Barbosa et al., 2020). From the first trips motivated by curiosity and the desire to discover new cultures, to the boom of mass tourism from the 1950s onwards, tourism has not stopped evolving and adapting to the social reality of the moment (Agapito & Lacerda, 2014; Malika, 2022). That is why today we can distinguish new forms of tourism that seek to meet the most demanding needs of today's tourists, who are mainly looking for unique, personal experiences and, in many cases, linked to the local culture. It is precisely one of these new trends that has emerged in recent years that will be the main theme of this paper, the relationship between the consumer and user of this tourism with the need to be disconnected from technology and digital options that govern our daily lives (Saura et al., 2021).

Today's growing awareness of environmental issues (Perron et al., 2006) has generated new needs among tourists, who seek to cause the least possible impact on the environment during their travels. As a result, many players in the industry have decided to move towards a sustainable model in order to satisfy these consumer concerns. Tourism activity can have a highly detrimental impact on the environment (Belo et al., 2014; Ren et al., 2019), and cause irreversible damage caused by irresponsible tourism development. Excessive tourist load, waste management, the use of non-renewable energies, and many other activities, can eventually cause the destination to lose the value and tourist attraction that served as a lure in the beginning, in addition to representing an irreparable loss for the environment. In order to solve this set of problems brought about by tourism, it is necessary to encourage a change of mentality in businessmen, so that they adapt their strategies and manage to create the least possible negative impact on the environment (Bertello et al., 2022).

Up to this point, the trend followed by the sector in recent years has been described, but for some time now there has been a new trend that goes hand in hand: using those vacation days to disconnect from the digital world. Although this disconnection may not have to do with the awareness of the user or tourist consumer, there is a certain relationship, so this study aims to learn more about this new trend, its relationship with the behavior and desires of tourists, as well as to see to what extent it goes hand in hand, or not, with environmental awareness (Caloghirou et al., 2020).

This research aims to resolve these doubts and will first situate the current reality of tourism, the behavior of the tourist consumer, and the trend on the part of the user of not being connected during the vacations as a claim for companies, tour operators, hotels, and other businesses related to the sector. The following are the doubts and questions that are intended to be solved by this research: first of all, the aim is to situate sustainable tourism in the current framework and check whether the trend of both tourists and the sector in the field of sustainable development is growing, and thus outline the future of the same. For this purpose, after the analysis of the literature and the corresponding research, the aim is to answer the questions: RQ1: What are the motivations and character behaviors that drive DFT? and RQ2: Is the sustainable trend related to digital free tourism?

It's important to mention that, although as will be seen in the analysis of results, there is already bibliography on the subject that concerns this study, it is precisely the small amount of it that makes it more interesting and necessary to continue researching on the subject and creating new theories that can shed light on a changing environment that can represent a great opportunity for companies in the sector. This is where the originality of the research lies.

In order to scale doubts and answer the aforementioned questions, we will work through a methodology based on a systematic literature review, following the approaches previously proposed by Ramírez and García-Peñalvo (2018) and Carvalho et al. (2019). With the results obtained, the theoretical implications on the relationship between tourism concepts of sustainability and the new trend of digital detox will be discussed, as well as verifying the settlement of the desire for such a vacation by the consumer or tourist. A further objective will also be to elaborate theory based on the most current major articles and relevant papers on the relationship between the topics on which this study focuses.

The present research is structured as follows: Section 2 contains an in-depth review of the important literature on the specific topic. Section 3 presents the methodology used to develop the study, and Sec-

tion 4 presents the results. Finally, Section 5 identifies the conclusions, theoretical and practical implications, as well as the limitations it may entail.

2. Theoretical Framework

The incessant increase in the world population, coupled with the growing wealth gap and practices that are highly unhealthy for the environment, but rooted in people's lives, have raised all kinds of alarms for environmentalists and professionals in the environmental sector (Klein & Anderegg, 2021). Increased sensitivity to questions such as whether it is possible to feed an increasing number of people, the scarcity of water and natural resources, reducing global poverty, or guaranteeing a healthy planet for future generations are problems that have set organizations around the world in motion to try to solve something that affects us all equally. In the year 1987, the UN (United Nations Organization) held the World Commission on Environment and Development (Artaraz, 2002), in which matters relating to the issues outlined above were discussed, and the conclusion was reached that active participation by all countries was necessary to curb this situation in a real and effective way (Verma, 2019; Martín & Fernández, 2022).

In the committee, the concept of "sustainable development" is defined for the first time by an international organization and is defined as "meeting the needs of the present generation without compromising the ability of future generations to meet their own needs" (Ávila, 2018), i.e. the development of civilization must be achieved accompanied by respect for nature, the environment and people (Conca & Dabelko, 2018). When economic objectives, social responsibility and environmental protection go hand in hand, we will be talking about sustainable development. A few years ago, in 2015, a UN (United Nations) meeting was held again to address sustainability and environmental issues, and the 2030 Agenda for Sustainable Development was born (Agbedahin, 2019).

A commitment on the part of all member states, 193 countries, to implement plans that manage to boost sustainability on the planet and achieve a necessary social transformation to avoid making the mistakes that have been dragging on until today. The agenda consists of 17 SDGs (Sustainable Development Goals) that address issues such as the end of poverty, food security, education, equality, water and energy supply, responsible production and consumption, and climate change, among other issues (Agut & Del Pilar, 2015). The progress of the 2030 Agenda must be accompanied by a predisposition on the part of all sectors to contribute to the cause and direct their actions towards a more sustainable world and achieve the different goals set by all member countries. Next, the importance of the tourism sector in recent years in relation to the sustainable development goals will be discussed.

As a precedent to the object of study, which is the tourist interested in taking a vacation disconnected from the digital world (Jiang & Balaji, 2021), we find a market segment that has been developing in recent years, called LOHAS (Lifestyles of Health and Sustainability). This term was coined by the Natural Marketing Institute (NMI), but this new trend became known during the 1990s (Yeh & Lin, 2011), with the publication of the book The Cultural Creatives: How 50 Million People are Changing the World by Paul H. Ray and Ruth Anderson. This segment is currently one of the most relevant, since it is where a large part of the consumers of New Age goods and services are concentrated; therefore, it is one of the most profitable. This specific profile, defined by renowned sociologists, is part of a broader socio-cultural group known as "trendsetter", which is capable of creating trends and represents more than 130 million people in the USA and Europe alone. Specifically targeting LOHAS is a good business idea (Emerich, 2000) as they could quickly promote that specific form of consumption or tourism as long as they are satisfied with the product or service received.

Delving deeper into LOHAS, this term refers to all those people who, in short, lead a peaceful, sustainable, healthy and quality lifestyle, have green initiatives, care about the Earth and social justice (Choi & Feinberg, 2018). They are also quite connected to the community, transfer their strong personal beliefs and values to their consumption habits (Lubowiecki-Vikuk et al., 2021), have a high economic-educational level, and are not satisfied with satisfying their strictly functional needs, but are looking for out-of-the-ordinary bets that manage to impact their emotions, they want to connect with the experience. It is just at this point where it connects as the first example of consumer niche interested in disconnecting from their

day to day, and consequently with the digital environment that surrounds them. They have a very specific consumer behavior (Picha & Navrátil, 2019) as it relates to the field of tourism.

LOHAS are motivated to escape from monotony and common or mass tourism environments, preferring to experience the diversity and richness of local cultures. They are always willing to pay a higher rate if the service or product meets their expectations, making them good potential customers. They are essentially looking for a type of tourism that is sustainable in all senses, although ecological sustainability stands out (Baybars & Ventura, 2020). Additionally, they require social and fair ethical standards to be met, just as they demand fair trade and high corporate social responsibility from companies. On the other hand, they are also lovers of technology and innovation, with which they are very familiar in their daily lives but which they prefer to set aside during their vacations to disconnect from their devices and connect with nature. They are also usually associated with sports and good nutrition, as well as with all those actions that allow them to contribute to improving the world while traveling. They also like to consume local products and collaborate with the local economy. As can be seen, this segment is very demanding in its demand and is already an option that tourism companies (Osti & Goffi, 2021) have to take into account in order to satisfy and be connected with the behavior, needs and desires of this type of customer.

The trend that has begun to be glimpsed is that of a vacation consumer behavior that seeks and bets on technological disconnection. This disconnection leads to what is called a digital detox tourism that bets on a temporary disconnection as a response to the great burden and stress experienced by today's society. In addition, this disconnection brings the benefit of experiencing a more authentic world and reconnects the human being with that more conscious part. Today, with ubiquitous digital media, and the strong social drive to be connected and available 24/7 (Staheli & Stoltenberg, 2022), it is a rebound effect for people to feel the need to disconnect from all the pressure and connectivity they are exposed to. This desire of tourists to make a free digital tourism (DFT), has been observed, recognized and incipiently worked by professionals in the sector. In this way it has attracted the attention of tourism service providers for its benefits in gaining a niche market, and seeing how they can satisfy the desires of their customers by identifying the benefits in terms of improving the well-being (Ostic et al., 2021; Hassan et al., 2022) and experiences of tourists in the respective destinations they offer.

3. Methodology

This study is based on a systematic literature review, providing a degree of rigor and transparency appropriate to achieve the objective of identifying the new trend of digitally free tourism. The objective of this Systematic Literature Review (SLR) is to obtain a summary of the topic to be addressed, always starting from the literature that already exists as a basis (Saura et al., 2021a). This methodology called SLR is a type of literature review that collects and critically analyzes all studies and research through a rigorous systematic process (Ramírez and García-Peñalvo, 2018). It is a systematic method to be able to identify, evaluate, and interpret the work of different researchers, academics, and professionals in the chosen field (Rother, 2007). They are studies that collect information previously generated by other authors, come from articles already published, it is research on a specific topic, evaluated through a meta-analysis (García et al., 2018), ending with results that are summarized in the conclusions of the study. For optimal research execution and results, the systematic review must be conducted in a rigorous and objective manner, and strategies that limit errors are usually used (Okoli & Schabram, 2010). Some of them are the search for reproducible and explicit selection criteria (Okoli, 2015), the exhaustive search of all relevant articles on the topic, the evaluation of the synthesis and the interpretation of the results (Papadopoulos et al., 2019). In this type of research, quantitative and qualitative viewpoints are used, and data are collected through primary studies using mathematical and methodological tools to create a combined effect to conclude with a synthesis of the evidence generated.

One of the strengths of this type of studies is that they constitute an efficient research design, have consistency in the generalization of the results, are precise in their estimation (Ortiz et al., 2004), and offer a strict evaluation of the published information. In addition, if one seeks to answer the same question by integrating different studies, the sample size is increased, which in turn increases statistical power (Xiao & Watson, 2019; Saura et al., 2021b).

The papers were extracted from three of the most recognized databases within the field of study at the international level such as Web of Science (WoS), Scopus, and IEEE Access. In order to exclude the subjectivity of the researchers in data collection, a keyword search of the bibliography was followed. The research query included articles published in peer-reviewed journals included in the aforementioned databases. To carry out this study using the selected methodology, a structure similar to that proposed by Saura et al. (2021) was followed, in which the key terms of the research were first identified and then the relevant searches were performed. The search terms referred to in the study are "free digital" and "tourism". In order to obtain optimal results, it was decided to limit the search to documents and articles from the last five years. In this way, a total of 105 documents were obtained that could have relevant information for the present study and research.

Figure 1. Database

Source: Own Elaboration

One of the premises with which this figure was obtained is that they were scientific articles, thus guaranteeing the rigor of the results and refining a search that could generate confusing results or results that were not so specific to the object of study.

Table 1. Search Terms Used and Results

Database	Web of Science (WoS), Scopus, and IEEE Access	
Data range	2018 - 2022	
Search date	May 2022	
Search terms	"free digital" OR "digital detox" AND "tourism"	
Initial number of documents	105	
Filtred process	Inclusion criteria: Articles, Open Acess	Duplicates Author not identified Not related to the topic
Final number of documents	11	

Source: Own Elaboration

With this search, the details of the document, such as the title, abstract and keywords, were carefully reviewed to verify that the documents were related to the topic in question. In some specific cases of doubt, or of greater interest in a specific article, the entire document was read, extracting the most interesting parts (Saura et al., 2022). In this way, all the documents that did not deal to a large extent with the topic developed here were excluded. This is how the resulting sample was obtained, which, as indicated in the table above, consists of 11 documents. In order to carry out this methodology, a PRISMA diagram was drawn up, showing the progress made by means of articles extracted from the aforementioned databases.

The results obtained are classified according to the information of value that each of the documents has, depending on whether it is a strictly related content as a whole, or whether it has some important point to highlight within the whole. For this reason, theoretical and practical implications will be presented with the intention that they can be used by companies, tourism businesses and organizations to understand in a more rigorous way this new trend that is marking a turning point in the tourism supply market.

The present study follows a literature review as a methodology to classify the relevant studies in the most relevant databases. Thus, the terms "free digital" and "tourism" have been identified in the literature to determine which studies address the research question, and when the results are inconclusive, "behavior" has been used. The results are sorted and filtered according to previously established selection criteria in order to select the precise articles, conferences or book chapters. The articles are then carefully studied to determine whether they contain terms relevant to the research. In this way, studies containing irrelevant specifications are excluded.

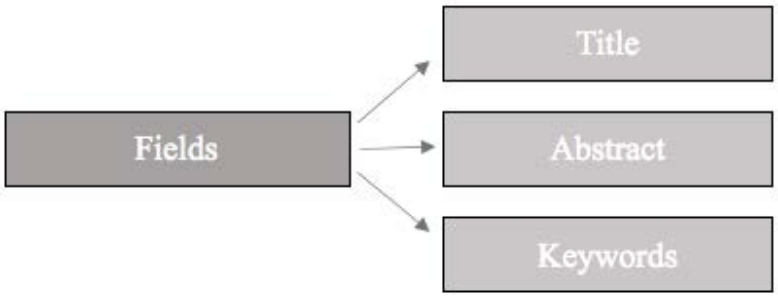
Figure 2. Search Terms and Databases

Source: Own Elaboration

Figure 2 below shows the fields that have been used to search the databases.

Given that the object of study is the behaviors of different online users, we focused our research on the publications that include these terms in the following databases, according to the search criteria mentioned. Specifically, we used the Web of Science (WOS), Scopus, and IEEE Access databases. The searches were performed focusing on titles, abstracts, and keywords in order to identify the most relevant contributions in the field.

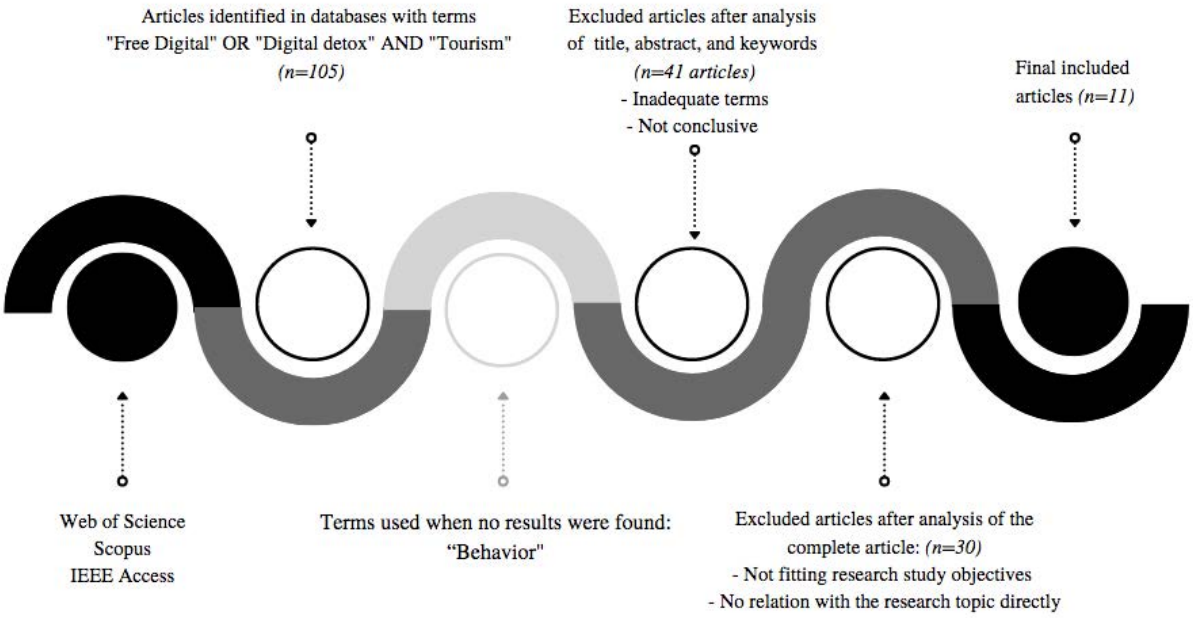
Figure 3. Fields in Databases



Source: Own Elaboration

As a result, a total of 105 related articles were obtained, of which 41 met the established criteria. Figure 4 shows the PRISMA process with which the methodology was carried out.

Figure 4. PRISMA



Source: Own Elaboration

Figure 4 shows the development of the methodology applied in this research. First, using the databases; Web Of Science, Scopus, and IEEE Access, the searches were related through two key terms “free digital” or “digital detox” and “tourism” with which 105 articles were found, then, the keyword “behavior” was used to focus the results to a greater linkage with the objective of the research. Then, the results were filtered according to table 1, leaving only articles, published between 2018 and 2022, which are Open Access, within the most related study categories, and the results were analyzed by title, abstract and keywords, and 30 were eliminated for not being related to the objective of this research. In summary, 11 potential articles were extracted.

Table 2 below shows the potential articles differentiating their authors, the journal in which they were published, the main objectives, and the year of publication.

Table 2. Included Articles

Article	Journal	Main Goals	Category
Cai et al. (2021)	Journal of Travel Research	To analyze free digital tourism through power and resistance To apply authoetnography To sample suggestions for digital free tourist providers	Hospitality Leisure Sport Tourism
Cai et al. (2019)	Journal of Travel Research	To analyze the emotional responses of digital detox To show reconnection after digital free tourism	Hospitality Leisure Sport Tourism
Diaz-Meneses and Estupinan-Ojeda (2022)	International Journal of Environmental Research and Public Health	To analyze de digital detox barrier To show the motivations To describes the relationship with health	Public Environmental Occupation Health
Egger et al. (2020)	Tourism Management	To identify 4 motivating factors to do a digital detox To gives ideas to promote this type of tourism	Management
Floros et al. (2021)	Journal of Sustainable Tourism	To describe related concepts To define psychological sustainability To propose to reduce the use of technology	Green Sustainable Science Technology
Gosslilng (2020)	Journal of Sustainable Tourism	To describe the ICT promote the SDGs marginally To identify free digital tourism as an opportunity	Green Sustainable Science Technology

Hassan et al. (2022)	International Journal of Environmental Research and Public Health	To define DFT profile To propose management strategies to develop vacations	Environmental Sciences
Li et al. (2020)	Annals of Tourism Research	To identify 9 character strenghts of digital free tourist To distributed in a 3 layer model	Sociology
Ozdemir and Goktas (2021)	Tourism & Management Studies	To defines the concepts of disconnection and digital detox To identify the opportunity of the tourism sector	Hospitality Leisure Sport Tourism
Schwarzenegger and Lohmeier (2021)	Convergence – The International Journal of Research into New Media Technologies	To show the reasons to do a digital detox To identify three themes to counter the disconnect To investigates the industry of disconnection with tourism	Communication
Staheli and Stoltenberg (2022)	New Media & Society	To introduces the notion analogization To relates the digital disconnection with authentic experimentation	Communication

Source: Own Elaboration

4. Analysis of Results

The new trend discussed in this research is already a reality that needs to be strongly addressed within the tourism sector. The demand for technology-free vacations and connection with the digital world is on the rise and the growth will be more and more noticeable as the months go by (Altinay & Özdemir, 2021). The relationship between tourism and the digital environment is, and will continue to be, an advantage from which both businesses and users benefit (Bassano et al., 2019). The ICT boom brought about a great change in the tourism sector by being able to offer its services and products online, interacting without intermediaries and directly with the target audience, with the customer and, therefore, with the tourist who finally enjoys the contracted services. This is one of the controversial points of this new trend. A product is demanded and offered with little or no connectivity with the digital world, but it is promoted and generally contracted through digital media. These are two realities that coexist and nurture each other, and it shows one of the most common user behavior traits in this new era, the duality of their needs (Li et al., 2018). On the one hand, they need and enjoy the benefits of the digital world, and on the other hand, they are increasingly aware of the collateral damage and impact they have at the environmental level, as well as in terms of health (Karppi et al., 2020), both physical and mental. From this awareness comes the desire for a real disconnection vacation.

In order to predict the consumption trends of future tourists, it is necessary for companies related to the sector to investigate the multifaceted behaviors (Vamosi et al., 2022) that users have on the network, in order to get as close as possible to cover and meet those desires, needs and new opportunities that constantly arise. Companies in the sector, travel agencies, tour operators, hotels, transportation companies, etc., are increasingly interested in efficiently using the data that users generate, since there are many organizations that store them, but do not treat, analyze and work with them, losing an important part of all that Big Data can offer (Márquez et al., 2018). All that information to be able to segment customers and look for those behavioral similarities can be measured with novel technologies in which companies can invest (Vamosi et al., 2022; Nyagadza, 2022).

The concept that was presented at the beginning, the so-called DFT (digital free tourism), the concept on which all the research revolves, has many benefits on which we will focus below, but first it is necessary to cite the most important negative point. By prioritizing the disconnection of the users or beneficiaries of the vacation, the lack of control over the place (LOC) is one of the aspects that most concern the professionals of the sector (Hassan et al., 2022), since they cannot have a follow-up of the services they are offering and if everything is happening as contracted. Findings from a study on the benefits and attribution of tourists concerning their digital media-free vacations reveal that millennial tourists with an internal LOC are more likely to perceive the advantages of this type of vacation, without giving importance to the possible negative points. On the contrary, millennial tourists with external LOC have a more changeable behavior in their attitudes and focus more on the benefit of their digital detox based on the improvement

of their self-efficacy (Šola et al., 2022). And in this sense, the difference between disconnecting in the usual environment, at home, and doing it on vacation has a lot to do with this. The importance of motivations in the behavior and decisions of future tourists show how these are radically different when deciding between the differences and benefits of doing a detox at home or doing it on vacation. In addition to motivations, age, gender, nationality, and income have a close relationship with decision making (Díaz-Meneses & Estupinán-Ojeda, 2022), in contrast to educational level, which is not presented as a determining factor in the behavior of this type of tourist. Returning to the fundamental aspects in the decision making process when taking a free digital vacation, we can see how they can be grouped into three groups, as shown in Table 3.

Table 3. Types of Motivation

Motivation	Main Feature
Nature and authenticity	Experience nature for what it is and benefit from the purity of nature as an antidote to techno-stress.
Reconnect with oneself	Digitally unplug for a chance to reconnect with yourself, find balance and recharge.
Human connection	Encourage face-to-face, truthful, and in-depth communication that allows for meaningful sociability.

Source: Adapted from Schwarzenegger et al., 2021

This table describes the three types of behavior that tourists want to experience on their free digital vacations and thus the main motivations (Schwarzenegger et at., 2021). On the one hand, there is the motivation that has to do with nature and authenticity that starts from the basis of the frenetic pace of today's developed society (Tiago et al., 2021). There is no place to stop, rest, contemplate, coexist and enjoy the environment and nature, to connect with it, etc. Dedicating conscious time to experience what nature has to offer becomes meaningful for tourists who seek this kind of connection and find it a benefit in itself. In addition, that purity and naturalness experienced by connecting with the more natural world is an antidote to fight against technostress (Christou et al., 2019) and all the negative consequences of the day-to-day life of many of the people with a highly digitized type of life. It is also important to mention at this point relationship of enjoying the natural environment with the impact this activity has on people's identity and pretensions, by bonding with oneself and the real environment, and stop for a while living in another parallel virtual reality of seemingly perfect exposed lives (Baym et al., 2020).

The second motivation of the table is the reconnection with oneself and the inner search to find balance. It has a certain relationship with the previous point since, by not having the digital distraction, one lives and interacts more with the real world and the environment, with nature, which favors this more spiritual point to connect with oneself. It favors pausing, slowing down the pace of the day, and vacations are offered as an opportunity to relax, recharge energy, and to get to know oneself in depth. The third motivation found is human connection, the search for and dedication of quality time with family, friends, local people in the place they are visiting. The connection with other people through social networks or digital media makes one exposed to pressure to provide a quick and timely response (Smith et al., 2007; Kikot et al., 2014; Saura et al., 2022a), in this case, interacting with people nearby or meeting others is sought without the obligation to react, participate, and be connected continuously. Face-to-face interactivity is valued, fostering a true and deep connection that produces a meaningful sociability (Kumar et al., 2020).

It should be clarified that the use of the digital world is not demonized in any case within this trend of making vacations without the use of technology, sometimes hybrid options are offered or sought where you can make a conscious (Rauch, 2018) and useful use of what the digital sector offers, in other cases, although during the vacations no use is made and awareness of it is sought, it is a temporary decision that does not entail radicalisms in future decisions of the usual day to day (Agapito & Quelhas Brito, 2020).

5. Conclusion

The initial objective of this study was to identify the vacation trend with the digital detox, and to see the relationship between this phenomenon and another one that is well established in the sector, such as sustainable tourism. In this way, the aim was to offer professionals in the tourism industry a clearer vision of the new trends that are arriving with force and that represent a clear option for improving offers and an approach to the desires of consumers and tourists. They will be able to take advantage of the knowledge presented here and use it to create new sales strategies in line with market trends, increasing their potential and success in this changing and demanding sector and environment.

In order to achieve these objectives and obtain good results, a Systematic Literature Review (SLR) has been carried out in which 11 potential articles have been inspected, to which others have been added that have also provided valuable knowledge in each of the sections that have been presented. With this, it can be seen how there is room for the creation of new literature on the subject, since there are no studies in the academic or business literature that have analyzed the subject with the same approach. This analysis leads to be able to affirm that we are facing a challenging topic, of complete actuality and necessity, on which new relevant research can be developed. In this line, this study aims to open new perspectives.

Regarding the first question posed RQ1: What are the motivations and behaviors of the characters that drive DFT? It can be affirmed that there are clear motivations and behaviors on the part of people who choose to take a vacation free of a digital environment. As has been seen in the previous section, there are 3 main motivations, which are the nature and authenticity of the environment that they are going to enjoy, reconnecting with oneself and having those moments of personal introspection, and the search for human connection, emphasizing these relationships or conversations that are lost by not paying attention to what surrounds us, thus being able to start conversations with new people that the place itself offers. For this reason, it is important that companies in the tourism sector pay attention to these new travel modalities, being able to incorporate specific strategies focused on this trend and thus being able to obtain successful results in line with current demand.

In response to the second question posed at the beginning of this document, RQ2: Is the sustainable trend related to digital free tourism? It has also been observed, after studying and reviewing the existing literature, that there is a certain relationship between the trend of the tourism sector towards creating offers and having environmentally conscious businesses with this new market niche that seeks to spend vacations free of contact and the virtual world that is so urgent today. Uniting these two concepts can be an option for those companies that have already joined in their day to create options that are aware of the environment, thus being able to add successes and a target audience related to their ideas. In this way, it will be possible to create products and services that have a greater scope and include tourists with specific concerns.

For all of the above to be carried out and to be developed with a significant success rate, it is necessary to highlight the importance and need for tourism companies to invest in market research, implement marketing techniques and new offers that capture the attention of this type of tourist, working with specific and achievable objectives, taking into account industry trends and the recommendations of professionals.

5.1 Theoretical Implications

This research offers a broader and more comprehensive study of a novel topic, which has burst into the sector with force and for which future research can delve deeper, since there are different variables to take into account, taking as a premise the constant change to which everything related to tourism and the digital environment is exposed. It is intended to help simplify concepts, to look for favorable relationships, and to open dialogue so that future researchers and academics can establish new relevant research.

Opportunities are a constant within the tourism sector, and the need to take a break from the daily digital maelstrom to which modern society is exposed is already a reality. These are two worlds that change and adapt rapidly, which means that this study must continue to be worked on and updated as concepts are related and new related trends emerge. In addition, several of the points presented here can be de-

veloped and studied in future research, since they are of interest to the business conglomerate related to tourism.

5.2 Practical Implications

This study is aimed at all those professionals related to the world of tourism, who want to take a step further in favor of their businesses and want to improve the results of their companies, brands, or customers, deepen their knowledge on the subject and be, after all, more efficient with the offers and products they provide within the tourism industry, also having a positive impact, both on the end customers, by satisfying their desires, and for the environment, promoting and accommodating a vacation option with less use of technologies.

The results presented in this research can be used by companies of all types within the tourism sector, travel agencies and tour operators, hotels, create alliances between search engines and their own businesses, tourism services, as well as by the marketing or communication departments of these companies or those who work with them, to better understand which consumers they face and to be able to apply methods and tools related to them, thus improving the effectiveness of their practices and communications. All of this will have a more beneficial impact on improving results, making more timely decisions, and seeking to join and support new trends. In addition, the companies that join now will be able to become a benchmark company or brand within the sector, since it is not yet so massified and there is a need for benchmarks with a strong presence in the market. Limitations and future research.

At this point, it is important to point out that the number of documents analyzed, together with the time period in which the research was carried out, give rise to the limitations of the study. Likewise, and as a counterpoint, it is also these two aspects that make it interesting, since there is not so much specific literature available and the need for further research on this topic is exposed. In addition, another limiting point comes from the databases chosen since, despite being chosen precisely because they are among the most prestigious databases in the field of social sciences, the choice made here to use one or the other marks and determines the possible omission of relevant documents for this research.

It is very necessary to deepen and promote research on the trend of digital detox within the tourism sector, since, as we have seen, it is a growing behavior among vacation consumers. All this can provide opportunities both in the immediate present and in the future, both at the academic and research level, filling and completing the little existing literature, as well as in the business part, being able to offer tourist packages and options demanded by customers.

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Main Uses of Artificial Intelligence in Digital Marketing Strategies Linked to Tourism

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ABSTRACT

Migratory movements and tourism in general, together with the improvement of new technologies, have meant an increase in terms of accessibility and ease of information linked to tourism. At the same time, the use of artificial intelligence has opened new horizons in which digital marketing strategies linked to tourism can improve the industry, thus offering multiple possibilities in the short term. This new business ecosystem can analyze and extract large amounts of data for use in their marketing strategies. In this study, a systematic literature review (SLR) is conducted using the Web of Science (WOS) database. The main objective of this review is to identify the main uses of artificial intelligence in digital marketing strategies to understand the decision-making processes of future tourists, destination selection, automation of decision-making processes, and actions developed by tourists in the destination itself. In this context, through the applied methodology, 24 potential results have been identified, which have been classified in: (i)data-driven learning for decision support, (ii)decision support systems, (iii)social data analysis, (iv)artificial intelligence algorithms, and (v)artificial intelligence strategies for the improvement of the user experience. Finally, theoretical and practical implications are identified to support companies that want to develop data-driven digital marketing actions and, from the applied perspective, to help future authors who want to make new academic contributions.

KEYWORDS

Digital Marketing, Artificial Intelligence, Tourism, Machine Learning, Big Data Marketing

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1. Introduction

The attraction factors of a certain place make people want to visit it in person, being seduced by certain factors such as the climate, infrastructures, monuments, social or family environment, economic factors, among others (Huete, 2009). Public entities and private companies know which characteristics attract the attention of the external public and shape marketing actions to impact them and generalize an intention to purchase services to get them to stay in that particular place (Kitchen & Proctor, 2015). In addition, these actions are related to a directly digital approach, managing to impact a large number of users for a not so high cost, compared to some more conventional marketing actions (Agapito & Lacerda, 2014; Katsikeas et al., 2019; Saura et al., 2021).

This is why companies reserve a large part of their investment for digital marketing strategies aimed at persuading a certain place and getting a greater number of tourists (Bassano et al., 2019). With the advancement of new technologies, digital environments and platforms continue to develop or create new ones. Therefore, there are a large number of different actions that can be carried out in the digital sphere, from actions on a social network, PPC strategies or influencer marketing (Kerdpitak, 2022).

However, before carrying out a marketing strategy, it is positive to carry out a basic analysis, often based on data (Barbosa et al., 2020). The extraction of large amounts of data is one of the main actions that for years has become a basic strategy for many companies internationally (Amado et al., 2018). Before making a decision on specific actions, it is preferred to analyze data in order to be able to make a more suitable choice based on accuracies made by artificial intelligence (Mariani et al., 2018; Bertello et al., 2022).

This has changed the way companies make decisions about marketing strategies (Chu & Yong, 2021). Previously, decisions were made on the basis of a managerial decision, in relation to previous experiences or based on, for example, competitor actions (Agapito & Quelhas Brito, 2020; Kitchen & Proctor, 2015). However, the application of artificial intelligence methods has improved and increased the possibility of achieving a greater number of results depending on the campaign to be carried out (Belo et al., 2014; Saura, 2021a).

Therefore, the objective of this research is to analyze which artificial intelligence strategies can be applied in digital marketing actions aimed at the impact of tourists who are directly or indirectly looking for a new destination to travel to for a long or short period of time. The research question of the study Q1) is: What artificial intelligence methods and actions can be applied to digital marketing strategies related to tourism?

To answer the research question, a Systematic Literature Review (SLR) will be conducted following the studies conducted by Burr et al. (2020). The structure of the article is as follows: After the introduction, the theoretical framework is conducted by reflecting on the perceptions of tourists before embarking on a trip and how they cope with digital advertising. Then, the methodology is developed, specifying the steps that have been carried out to extract potential SLR items. In the next place, the results obtained are classified and shown. Then, by means of the discussion, the results obtained are commented on the basis of academic references. Finally, the main practical and theoretical implications of the research are discussed.

2. Theoretical Framework

Leaving for a new destination on a temporary or extended basis often involves a lengthy decision-making process (Nadalipour et al., 2019). A person may want to travel to or see a certain place for any reason. However, the process of deciding to make the trip in most cases tends to be lengthy, whether for financial, employment or other reasons (Lee et al., 2020). On the other hand, there are also people who have decided to travel but are undecided about the place they should choose (Ojo & Yusof, 2019; Ostic et al., 2021).

The rise of new technologies and the improvement of artificial intelligence in recent years has led to the existence of different methods so that, among many other objectives, data can be extracted and analyzed in order to choose an ideal target audience linked to the interests of a company (Sigala et al., 2019). Once the target of a digital marketing campaign has been chosen, it is time to establish what actions can be carried out (Rather & Hollebeek, 2020). Some of the digital marketing strategies aimed at attracting tourists can be found in Table 1:

Table 1. Digital Marketing Strategies

Strategies	Definition
Search Engine Marketing (SEM)	This type of digital advertising allows ads to be added to SERPs. The main objective is to increase visibility in search engine queries by targeting traffic to a website (Nyagadza, 2022; Sholichah et al., 2022).
Search Engine Optimization (SEO)	Organic positioning of websites with the objective of increasing the position of a given query in search engines and thus achieving higher traffic (Bhandari & Bansal, 2018).
App Search Optimization (ASO)	Organic positioning through the app shops of the different existing mobile operating systems. The main objective is to achieve a better position when a user makes a specific query (Karagkiozidou et al., 2019).
Social Media Marketing (SMM)	Marketing strategies that are mainly carried out in social networks or environments. Their main purpose is to impact a target audience with defined interests and behaviors through advertisements (Lal et al., 2020).
Email Marketing (EM)	Sending mass emails with the aim of reaching a specific audience with a specific piece of information (Singh, 2019).
Programmatic Advertising (PA)	Purchase of advertising space on selected websites to insert banner advertisements (Samuel et al., 2021).
Influencer Marketing (IM)	Actions between a brand and a public figure with a large number of followers in social media interactions (Campbell & Farrell, 2020).

Source: Own Elaboration

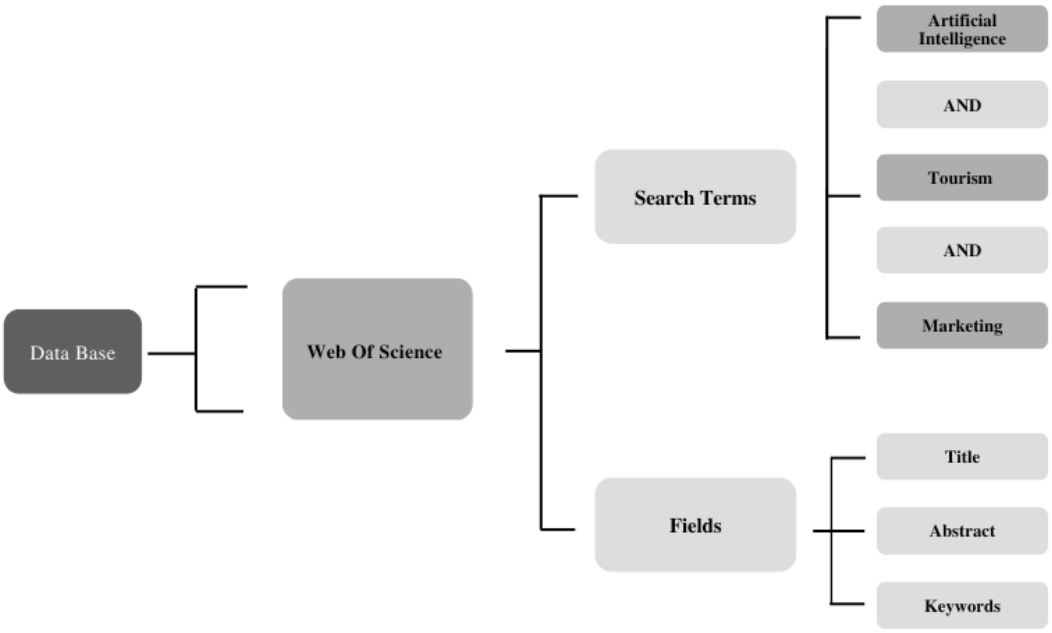
However, the choice of one of these strategies can make or break the success of a campaign. This is why the use of large amounts of data can even predict what is likely to happen (Kopalle & Lehmann, 2021). In parallel, there are also learning systems that improve the performance of a campaign based on the interactions that are being achieved (Roscher et al., 2020). In addition, post-campaign analysis can also determine success through remarketing or geolocation actions (Ekelik & Şenol, 2021).

For all of the above, this article proceeds to find out what different uses can be applied to artificial intelligence to improve digital marketing strategies aimed at impacting potential tourists.

3. Methodology

In this research, a Systematic Literature Review (SLR) is carried out. The aim of this methodology is to answer the research question posed through the search for academic contributions made by other authors (Saura et al., 2022). For this research, a search was carried out in the Web Of Science (WOS) database. The use of this database is based on the objective of obtaining potential articles thanks to its impact factor. Figure 1 below shows the process carried out to search the database (Nedjah et al., 2022).

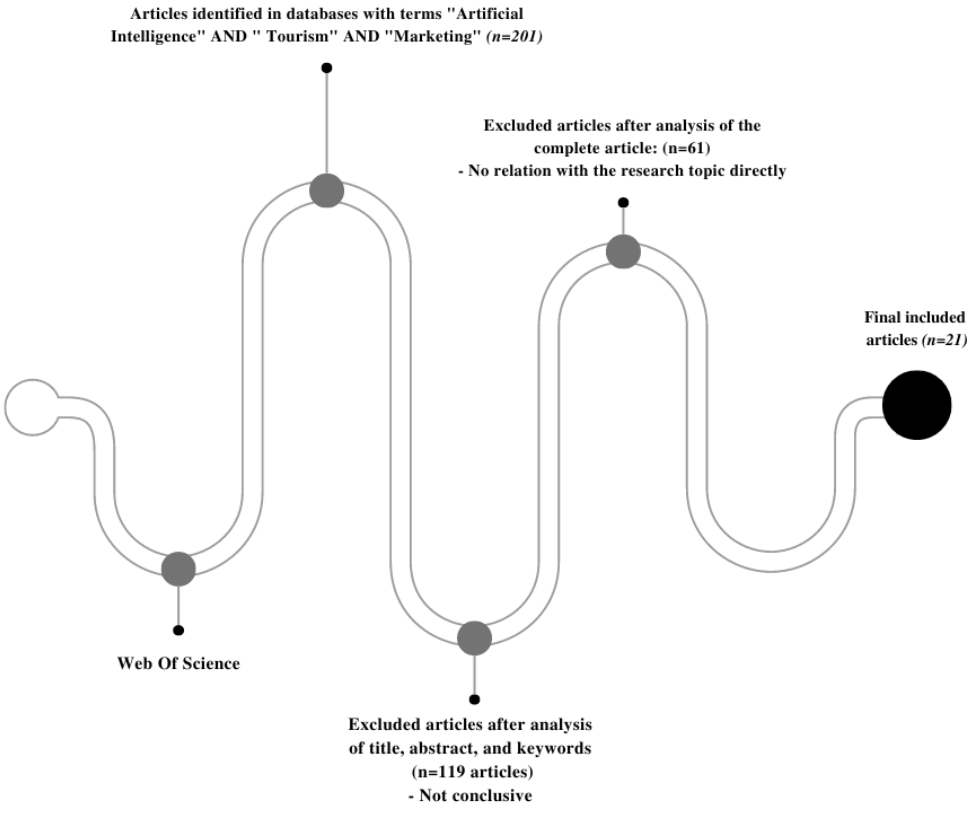
Figure 1. Search Terms and Fields Chosen



Source: Own Elaboration

The WOS database has been searched for three terms: Artificial Intelligence AND Tourism AND Marketing. Next, the following fields were analyzed: Title, Abstract and Keywords looking for potential research results. Figure 2 below shows the following steps that have been carried out to extract the potential articles from which the results of this study have been extracted.

Figure 2. Realization of the SLR



Source: Own Elaboration

Figure 2 shows the overall process of the methodology developed in this research. Firstly, WOS has been chosen as the main database. Secondly, once the different keywords were chosen, a total number of 201 contributions were obtained by searching for Artificial Intelligence AND Tourism AND Marketing. Next, 119 articles were eliminated by analyzing the title, abstract and keywords. Finally, the remaining articles were completely analyzed and 61 were eliminated as they were not related to the research objective. In the end, the potential articles were 21. Table 2 below shows the results of the methodology according to the authors, journal and the category to which they belong.

Table 2. Potential Articles Drawn from the Methodology

Authors	Journal	Category
Duvnjak et al. (2020)	Management Research and Practice	Business & Economics
Li et al. (2022)	Wireless Communications and Mobile Computing	Computer Science
Kirtil & Aşkun (2021)	Advances in Hospitality and Tourism Research (AHTR)	Social Sciences
Prentice et al. (2020)	Journal of Hospitality Marketing & Management	Business & Economics
Samara et al. (2020)	Journal of Hospitality and Tourism Technology	Social Sciences
Li & Cheng (2022)	Advances in Meteorology	Meteorology & Atmospheric Sciences
Sánchez et al. (2020)	Tourism Management Perspectives	Social Sciences
Xie & He (2022)	Mobile Information Systems	Computer Science
Wang et al. (2020)	Journal of Destination Marketing & Management	Social Sciences
Topal & Uçar (2019)	IEEE Access	Computer Science
Martin et al. (2020)	Journal of Destination Marketing & Management	Social Sciences
Schiessl et al. (2021)	Journal of Marketing Analytics	Business & Economics
De Carlo et al. (2021)	Journal of Business Research	Business & Economics
Hui et al. (2021)	Journal of Hospitality Marketing & Management	Business & Economics
Lee et al. (2021)	International Journal of Contemporary Hospitality Management	Social Sciences
Kim et al. (2018)	Expert Systems with Applications	Computer Science
Yu et al. (2007)	International Journal of Engineering Intelligent Systems	Computer Science
Csáji et al. (2006)	Advanced Engineering Informatics	Computer Science
Ameri & Patil (2012)	Journal of Intelligent Manufacturing	Computer Science
Chang & Lin (2011)	ACM Transactions on Intelligent Systems and Technology	Computer Science
Veit et al. (2002)	Applied Artificial Intelligence	Computer Science

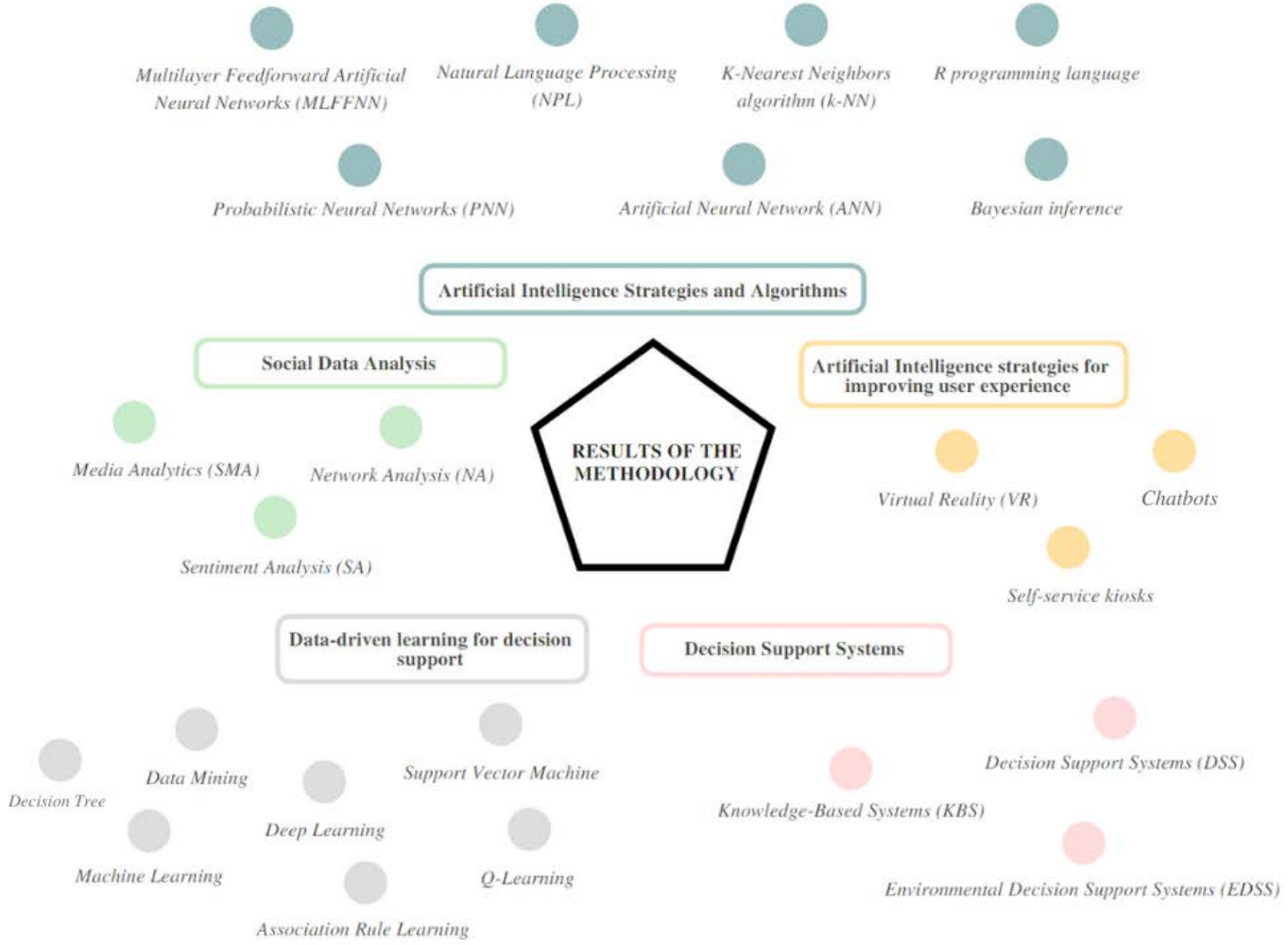
Source: Own Elaboration

4. Analysis of the Results

The research results have been categorized according to the insights that can be applied to the chosen digital marketing actions (Kumar et al., 2020; Saura et al., 2022a). They can also be developed in advance, in order to know which strategy can be more successful based on predictions developed with large amounts of data.

A total of 24 results have been classified into five different categories: Data-driven learning for decision support, Decision Support Systems, Social Data Analysis, Artificial Intelligence Strategies for Improving User Experience and Artificial Intelligence Strategies and Algorithms. Figure 3 below shows the different results obtained, separated by colour.

Figure 3. Results of the Methodology



Source: Own Elaboration

Table 3 below shows the results related to this subdivision and the basic definition of each of the results.

Table 3. Data-driven Learning for Decision Support

Results	Definition
Machine Learning (ML)	Big data learning with the ability to make predictions, identify patterns and learn from data.
Data Mining (DM)	Gathering large amounts of data through machine learning, databases and the use of statistics to aid decision making.
Deep Learning (DL)	Use of neural networks and algorithms with the aim of learning how to use these large amounts of data to make one's own decisions.
Support Vector Machine (SVM)	Machine learning by means of a set of algorithms to solve two-group classification problems.
Q-Learning	Automatic learning that allows a set of rules determined by actions indicated by an agent to be achieved.
Association Rule Learning (ARL)	Machine learning is related to the discovery of rules based on variables from large amounts of data.
Decision Tree (DT)	Non-parametric machine learning with the aim of providing answers to classifications and predictions.

Source: Own Elaboration

Table 4 below shows the results linked to Decision Support Systems.

Table 4. Decision Support Systems

Results	Definition
Decision Support Systems (DSS)	A system that helps to make decisions based on the analysis of large amounts of data.
Knowledge-Based Systems (KBS)	A system that understands the knowledge of a human and helps him or her by means of AI to make decisions.
Environmental Decision Support Systems (EDSS)	A system that helps to make decisions related to environmental modeling with the help of a graphical user interface (GUI).

Source: Own Elaboration

Table 5 below shows the definition of the results related to Social Data Analysis.

Table 5. Social Data Analysis

Results	Definition
Social Media Analytics (SMA)	The process by which large amounts of data are collected from users on different social networks. It is then analyzed to help make decisions.
Sentiment Analysis (SA)	Use of the NPL to analyze user-generated text on the internet in order to identify opinions and emotions (positive, negative and neutral).
Network Analysis (NA)	Analysis of social structures through social interactions by means of data collection using matrices.

Source: Own Elaboration

Table 6 below shows the results related to the improvement of the User Experience.

Tabla 6. Artificial Intelligence Strategies for Improving User Experience

Results	Definition
Virtual Reality (VR)	Simulation of an environment created by computer technology achieving an immersive experience for the user.
Chatbots	Software that simulates a human conversation with the aim of interacting with another human in a common way.
Self-service kiosks	A device that allows a service to be performed directly by means of software.

Source: Own Elaboration

Finally, table 7 below classifies the results most closely linked to strategies based on the use of algorithms.

Table 7. Artificial Intelligence Strategies and Algorithms

Results	Definition
Natural Language Processing (NPL)	A set of algorithms for solving problems in terms of classification of natural language processing, image and speech recognition.
k-nearest neighbors algorithm (kNN)	Algorithm to find a given number of best-fit examples for a query.
Multilayer Feedforward Artificial Neural Networks (MLFFNN)	Neural network that uses its calculations and data with the aim of flowing in the same direction.
Probabilistic Neural Networks (PNN)	One-way neural network commonly used to solve classification and pattern recognition problems.
Artificial Neural Network (ANN)	A group interconnected by technologies that manages to provide computers with artificial intelligence inspired by the structure of the human brain.

R programming language	Open source programming language. It is used as a tool for analyzing large amounts of data and as statistical software.
Bayesian inference	A type of statistical inference in which the probability that an already stated hypothesis is correct is obtained by means of a study.
Data Cleaning (DC)	Removal of large amounts of data by means of certain filters.

Source: Own Elaboration

5. Discussion

Data learns by itself and is able to provide a solution by making predictions, as Li et al. (2022) discuss in relation to the term Machine Learning (ML). In this way, the collection of large amounts of data through ML allows an answer to be given with the use of statistical sets and databases by means of Data Mining (DM). These considerations are provided by different authors in their respective academic contributions (Duvnjak et al., 2020; Hui et al., 2021; Li et al., 2022).

The use of ML helps tourist-oriented digital marketing strategies with the use of large amounts of data, which can be extracted by multiple options such as data analysis of websites, interactions on websites or social networks, user-generated content (UGC) in forums, etc (Tiago et al., 2021).

Data analysis offers solutions or help. For example, choosing a digital marketing strategy to be carried out with the aim of getting a tourist to perform one action or another. This coincides with the results proposed by Hui et al. (2021) in which they mention the use of neural networks and algorithms that allow the understanding of large amounts of data, a strategy known as Deep Learning (DL).

Authors such as Martin et al. (2020), Sánchez et al. (2020, Chang & Lin (2011) also mention the use of ML to solve classification problems between two groups, a concept known as Support Vector Machine (SVM). Also, there is Q-Learning that uses ML to reach a set of rules determined by an agent, a term discussed by (Yu et al., 2007) in their research.

On the other hand, if the use of ML is related to the discovery of rules based on variables of large amounts of data, we can call it Association Rule Learning (ARL) as detailed by Xie & He (2022). On the other hand, there is the non-parametric ML that aims to respond to different classifications and predictions, this concept is called Decision Tree (DT) also commented by Xie & He (2022).

This group of concepts and techniques are grouped into a system, which is mainly to support decision making based on large amounts of data, called Decision Support Systems (DSS). If the system comprises knowledge of a human and is aided by an AI in decision making, it is called Knowledge-Based Systems (KBS). Also, we found a system that helps to make decisions related to environmental modeling with the help of a GUI, called Environmental Decision Support Systems (EDSS) (Duvnjak et al., 2020).

In the social sector the process by which large amounts of user data are collected and then analyzed to help make strategic decisions in tourist-oriented digital marketing campaigns is referred to as Social Media Analytics (SMA) as discussed by Wang et al. (2020). In relation to social environments, data mining based on social interactions by means of matrices is called Network Analysis (NA) mentioned in their research by Schiessl et al. (2021).

AI strategies can also be used to enhance the tourist experience, both in digital or traditional marketing strategies. It is in this case when Samara et al. (2020) point out that different AI methods can be found such as Virtual Reality (VR) which creates a simulated environment to offer an immersive experience to the user. Authors such as Prentice et al. (2020) also comment on a strategy linked to the improvement of the user experience, commenting on the use of Chatbots that simulate a human conversation by means of software. In relation to the improvement of the user experience, the authors comment on self-service kiosks that allow services to be offered to the public in a more direct way through the use of software.

The last classification made on the results of the research is the use of algorithms. Authors such as Prentice et al. (2020) comment on the importance of the Natural Language Processing (NPL) strategy, which is defined as a set of algorithms for solving language, image and speech recognition problems. NPL is used for example in data mining methodologies such as Sentiment Analysis (SA) which uses this strategy to analyze texts to identify opinions and emotions of users on the internet. This methodology of

text analysis can allow, for example, to know the positive, negative or neutral emotions of a certain place depending on the season of the year.

In relation to algorithms, the authors Topal & Uçar (2019) mention the K-Nearest Neighbors algorithm (kNN), which allows finding a specific number of examples that relate to a specific query. They also mention Multilayer Feedforward Artificial Neural Networks (MLFFNN) which is a neural network that uses computation and data with the goal of flowing in the same direction. If the direction is unidirectional, Probabilistic Neural Networks (PNN) are commonly used for solving classification and pattern recognition problems. In the same line of research, the authors De Carlo et al. (2021) comment on the importance of maintaining an Artificial Neural Network (ANN) that manages to provide computers with an AI inspired by the structure of the human brain.

Finally, the authors Kirtil & Aşkun (2021) highlight the use of the R programming language, which is used as a tool for analyzing large amounts of data. The authors Xie & He (2022) highlight on the other hand the Bayesian inference that obtains the probability that a hypothesis already posed is correct through a previous study and for the elimination of large amounts of data the authors Hui et al. (2021) comment on the Data Cleaning (DC) strategy.

6. Conclusion

This research provides an overview of the current state of the theoretical literature on artificial intelligence, tourism and marketing. Constant innovations in terms of technology allow for the development of new improvements in terms of marketing actions impacting people who aim to travel and experience new places.

The process of choosing to travel is sometimes complex, where multiple factors can be triggered. However, the advancement of artificial intelligence even makes it possible to create predictions based on critical and reflective thinking as if it were a human thought. Therefore, the use of big data to develop more accurate digital marketing actions is already a reality in the business world.

The results obtained in this study respond to research question Q1 thanks to the SLR methodology developed, thus achieving 27 potential results divided into different classifications. In the classification corresponding to data-driven learning for decision support, the results have been: *Machine Learning, Data Mining, Deep Learning, Support Vector Machine, Q-Learning, Association Rule Learning* and *Decision Tree.* Regarding the group related to Decision Support Systems, we find: *Decision Support Systems (DSS), Knowledge-Based Systems (KBS) Environmental* and *Decision Support Systems (EDSS).* In next place, in the classification of the results related to Social Data Analysis, are: *Social Media Analytics (SMA), Sentiment Analysis (SA) and Network Analysis (NA).* Consequently, related to Artificial Intelligence Strategies for Improving User Experience: *Virtual Reality (VR), Chatbots* and *Self-service kiosks.* Finally, linked to the last classification, the results were: *Natural Language Processing (NPL), K-Nearest Neighbors algorithm (k-NN), Multilayer Feedforward, Artificial Neural Networks (MLFFNN), Probabilistic Neural Networks (PNN), Artificial Neural Network (ANN), R programming language, Bayesian inference* and *Data Cleaning (DC).*

6.1 Theoretical Implications

The results obtained from this research foster the understanding of other academic contributions allowing to categorize and study the relationship between the tourism field, digital marketing and artificial intelligence. The results of this research can be complemented with new initiatives and improvements, achieving new quantitative and qualitative approaches that seek to answer new research questions.

6.2 Practical Implications

This research can help public entities and private companies to understand the different ways of analyzing, extracting and using large amounts of data to improve their investments in digital marketing actions. From this perspective, marketing departments of agencies will be able to know what use can be directly applied to tourism marketing strategies by means of artificial intelligence.

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Digital Well-Being Tourism in the Fourth Industrial Revolution

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ABSTRACT

The current world changes rapidly. This period of great and rapid transformations is known as the IV Industrial Revolution which is characterized by the fact that industries, processes and stocks are linked in a network globally. It is demonstrated in this article with historical foundations that societies are not prepared for those rapid changes and transformations. Sometimes it takes a few generations for society's changes to be assimilated. However, technology development boots innovation and society's transformation within months. As a result, new mental and physical illnesses appear related to technology, such as techno-anxiety and technostress that are directly linked to the concept of digital well-being. Now, the only way that society has to fight against these pathologies is learning and training using new processes and approaches. As the current society cannot stop using technology, the society should take care of digital well-being. In this study, one of the ways to prevent or minimize pathologies caused by the excessive use of technological applications in tourism is presented and discussed. Theoretical and practical implications are presented to decrease health pathologies intensity caused by the used of technological devices.

KEYWORDS

Digital Wellbeing, Tourism, Technology, Technostress, Fourth Industrial Revolution

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1. Introduction

The evolution of humanity as a result of the discovery or implantation of technology has been slow throughout history. As a result of this slowness, societies have had a long time to take on technological changes. The fourth industrial revolution is characterized as a period of great social transformations. The world is changing faster and faster. The evolution that previously came from political changes and transformations is now coming from technology (Alzamora-Ruiz et al., 2021). The changes must be assumed by society immediately in the face of the risk of generating new social classes based on technological knowledge. But assuming changes quickly creates problems in turn, since people are not used to it and one of the problems it generates is health (Barroso-Castro et al., 2020). Mobile phone manufacturers have been aware of the health problems caused by applications installed on devices practically since their inception. When the first devices allowed to play music, the devices warned of excessive volume or time of use when the user used headphones. The evolution of mobile phones to smartphones considerably expands the list of applications and therefore also the problems they generate. Device manufacturers have progressively included alert services and solutions to try to minimize these risks (Barbosa et al., 2020; Saura et al., 2021).

Other utilities were added to the already mentioned alert of inappropriate use of headphones, such as the dim color of the screen at night; the discrimination of call numbers based on groups such as family, work or friends; the disabling of the image on the screen if the device detects that we are driving or in bedtime mode (Belo et al., 2014; Agapito et al., 2014; Kumar et al., 2020). The definitive step for manufacturers comes in 2018 when Google presents a panel for the Android system to encompass all these functions (Martín & Fernández, 2022). According to Google at that time, 70% of its users were demanding help for the intelligent use of devices and their applications that would prevent pathologies and addictions due to use and created a control panel called precisely digital wellbeing, Widdiks (2020). Through this panel, the user can program system alerts for excessive use and temporary daily blockages of applications. All actions carried out smoothly, avoiding abruptness, playing with times and attenuations. The pathologies caused by technology, once they appear, must be treated within the concept that encompasses digital health but they can also be prevented with responsible usage programs (Tiago et al., 2021).

This study addresses Digital wellbeing tourism in the fourth industrial revolution from a transversal perspective in which we include a historical, anthropological and medical section. The main objective of this work is to demonstrate that the problems caused by technological devices and applications can be prevented with responsible use programs but also with digital wellbeing tourism programs and activities. It will also be a new economic activity that will generate employment and resources with high added value.

The article is structured in three sections. It begins with a historical analysis of human evolution based on the implementation of technology in society and how it causes social transformations. In the final part, it is analyzed how these new changes originate new problems that must be treated with new ideas. Thus, the so-called digital well-being can be achieved in various ways and one of them will be tourism.

2. Historical Approach

Human progress has been very slow. Five millennia passed between the Neolithic revolution and the appearance of writing. And for the establishment of the first great trade route, the Silk Road, which linked the areas of the five great rivers on which civilizations originated, several millennia also passed. Humans could take generations to implement the great changes and social transformations. As a result of evolution and the great migrations, they appeared as human characteristics, for example, straight blond hair and blue eyes. With the age of discoveries initiated by the Spanish in the discovery of America, the Scientific Revolution, the Industrial Revolution and the subsequent French Revolution, the growth of the world begins to be promoted. What used to change in decades or centuries, could now change in years and in one or two generations. And the same will happen in China, with the establishment of the People's Republic by the Communist Party of China. A great country that has made in forty years, the IV Industrial Revolutions that the Europeans made in almost three centuries.

Human evolution has been so slow that five millennia have passed since writing was invented on the planet, until almost all humans knew how to use it. And in the Present World, in which illiteracy is barely 5% on the planet, the shadow of a new illiteracy appears; the digital (Harari, 2016).

Every time a new technology appears, it is common for society to generate a certain rejection (Ostic et al., 2021). 5,000 years ago, with the appearance of writing that put an end to prehistory and began history, Socrates would come to say: "damn writing that makes man lose his memory." The locomotives invented at the dawn of the Industrial Revolution allowed man for the first time to reach more speed than that of a galloping horse. The fear of locomotives was such that there were those who claimed that at such speeds human bodies could disintegrate. Other legends that appeared around the railway were those of the "butter-extractors". A mysterious figure who appears in orally transmitted legends who stole from children to extract grease to lubricate iron machines. Such was the generalization of this type of legend, that when mothers lost one of their children, raids were organized to beat the railway locomotives with sticks. In the same way, the workers attacked each new invention or progress, because they mistakenly thought that what it did was end their jobs, O'Rourke, Rahman and Taylor (2013). This form of protest was called luddism at the time and that is why we now speak of neo-luddism, for those who reject the future. The protests became such during the industrial revolution that England for some time promoted very severe penalties against these attacks.

The BBC series Downton Abbey, Byrne (2014) has spawned numerous scientific articles on social and class analysis and even feminism. It is cited because it shows in a literary way real event of the impact of technology on social transformation. A fact that is necessary to mention was the installation of electric light in large houses at the beginning of the 20th century. Many people were afraid to push the switches as they thought they were summoning the devil, since one of his names, Lucifer, means giver of light. The most traditional people crossed themselves every time they had to press a switch and even today, we find memories of this custom in some European rural areas. Another real event that we find in the series is the fact of the installation of radio sets in houses when they were state-of-the-art and very expensive technologies (Saura et al., 2021a). When making solemn speeches, the people who were listening to the receiver stood up as if they were in front of the people in question. In some rural places when televisions began to be installed in the mid-20th century, some older people thought that the presenters could interact with the viewers, so they came to watch the television, properly dressed. Throughout the 20th century, technology based on electricity first and electronics later became established in society.

The first alerts that occurred throughout the second half of the 20th century were due to the excessive use of television, Domingues-Montanari (2017). People spent a lot of time in front of these artifacts, and they were accused of hypnotizing society. Later the video game consoles would arrive and they would be accused of the same thing, hypnotizing users spending excessive time at the controls of video games. The first medical symptoms that would appear due to excessive use would be dehydration, postural or tension pain due to excessive hours sitting in poor conditions, diseases derived from lack of sleep. In a more severe degree, there will be nervous tics, anxiety and even epileptic seizures. The first of them documented to be caused by video games dates back to 1981, Bureau, Hirsch and Vigevano (2004). Then came the studies that showed additions and more recently cognitive problems or excesses of dopamine and serotonin. Another example of inappropriate use of technology was the appearance of the popular Walkman device. The technological revolution of the device was such that the term Electronic narcissism was even coined, Chen (1998), which is used for people who used technological devices as a symbol of belonging to a status. The use of headphones in the 1980s and 1990s caused incipient deafness in many young people due to excessive volume, Bulbul, Muluk, Çakir and Tufan (2009). Today, electronic devices warn of excessive volume, as well as prolonged use, clearly in line with digital well-being.

This historical introduction explains that technology provides numerous benefits, but also generates numerous problems, especially due to a lack of knowledge of its use. Society does not assimilate the rapid implementation of technology and misuse occurs due to ignorance or addiction, generating health problems that must be treated. Problems can be of two types, physical and mental. Manufacturers and designers, aware of this problem, are beginning to offer, integrated with their devices, solutions that help responsible use in accordance with a healthy lifestyle that is usually precisely called digital well-being.

Although the alarms about the misuse of technology are ringing in the Modern World, mainly as a result of the IV Industrial Revolution, this research confirms that the foundations of the problem appeared even before the generalization of smartphones (Saura et al., 2021b). All this because the speed with which society assumes changes is very slow in relation to the appearance of technology. This research proposes

to demonstrate, through an exercise of Big History, Christian (2017), that societies assume changes very slowly and that the IV Industrial Revolution does not give time to assume these changes. Technology is generating mental and physical health problems, which must be addressed through the concept of Digital well-being. Every challenge must be addressed in search of solutions and this research affirms that digital well-being tourism in the fourth industrial revolution, Debasa (2021), will be one of the different solutions to address the problems generated by technology and digital ecosystems. This work is novel in terms of the transversality of the analysis and the fact that it offers unpublished results of investigations that were unpublished.

3. Technology and Social Changes

Historians tend to establish the changes of cycle or era on the basis of political events. However, it is affirmed with this work that the changes of the era from now on will not come from political events but from the technology developed at each moment. This affirmation is also supported by the demand of political activists, normally from the extreme left, who denounce that the States have less and less control over multinationals or transnational companies that do not understand borders or political ideologies. The last great social transformation appeared after the democratization of smartphones, internet access and the making available to the public, either free or as paid services, of the information of Google users since 2004, Redding (2018). On this approach we affirm that the Modern World is built, above all, with the arrival of Google. Technology is transforming the world, and also people. With each new technology, new challenges and new diseases appear, such as technostress and technoanxiety. Therefore, we can now start talking about a new type of health, digital health (Saura et al., 2022).

The generalization of mobile devices at the end of the 20th century conditioned people to be permanently aware of calls, at any time and in any place. A new step was reached with the appearance of SMS instant messaging, in which, to save writing time, users tended to eliminate vowels from words, which came close to creating new languages, teachers complained. that students frequently used this type of writing in assignments and exams, Renchese (2010). However, it was not very different from the code systems used by secretaries in the 20th century to speed up note taking. The subsequent conversion of mobile telephony into smart phones with Android and IOS systems and the generalization of instant and mobile messaging programs such as Instagram, Viber and later the world famous Whastapp, which encourages us to respond practically immediately to any incoming message, Sutikno, Handayani, Stiawan, Riyadi and Subroto (2016), including systems for the sender to see if the receiver is currently within the application, which is called online; if and when he receives the message. This type of service creates new codes in terms of written communications, generating situations of stress, rejection and even misunderstandings. People want to be answered instantly and sometimes they don't put themselves in the role of the receiver without analyzing if at that moment, even if they are online, they can do it or not. The level of commitment and dependency that forces the recipient to be aware of their mobile device has been increasing progressively.

In the early days of mobile telephony, devices had to be turned off as a sign of respect on numerous occasions. Auditoriums, classes, public transport, work environments, etc. However, mobile phone applications opened the door to not turning off power devices, only putting them on silence, being able to stay connected through messaging services. The owner of the phone, instead of being aware of the activity that requires silencing the device, saves part of his attention to answer messages, Vahedi and Saiphoo (2018).

This is how the new dependencies and addictions appear, Jeong, Kim, Yum and Hwang (2016). In the world there are numerous places in digital shadow, that is, territories that the mobile Internet signal does not reach. Professionals are forced to use very expensive satellite devices that are not widespread and difficult for the general public to access. The most representative place in which this digital shadow is produced is aviation. It is significant that all smartphones have a clearly and easily accessible airplane mode in which all functions of the phone that allow communication are automatically disconnected. Although practically all airlines currently have Wi-Fi in the air, access is expensive and slow and is not usually used by users.

Before the generalization of smartphone models, the author carried out the following study, which is now published for the first time, in order to measure the degree of anxiety among aviation users caused by having to turn off the mobile phone. Eight intercontinental flights and another eight European domestic flights were selected for it; The study was conducted after landing, during waiting times to collect checked baggage at the airport. The author identified himself as a university researcher and explained very briefly that he was measuring the impact of technology on people. It is significant to note that Android and IOS smartphones already existed at that time, but they were not yet widespread. The domestic routes were Brussels - Madrid and the intercontinental ones, Madrid - Beijing. The intention of that moment was to demonstrate the strong dependence caused by the mobile phone and the great anxiety generated by not being able to have it for a few hours. The author selected a sample of 30 passengers on each route, classifying them into two ranges, workers and retirees. He asked a single question, which was: Has it caused you anxiety to have to disconnect the phone during the journey? The study was carried out over two years, between 2008 and 2010. Of the group of passengers that we identified as workers, a percentage higher than 90% in all cases showed an affirmative result on intercontinental flights, while on domestic flights this figure dropped to 80%. However, in the group of travelers classified as retired, this figure fell to levels that did not exceed 30%.

Table 1. Has it caused you anxiety to have to disconnect the phone during the plane ride?

Route	Workers	Retirees
Madrid – Beijing	93 %	27 %
Beijing – Madrid	91 %	25 %
Bruxelles - Beijing	95 %	25 %
Beijing – Bruxelles	94 %	26 %
Madrid – Bruxelles	89 %	19%
Bruxelles – Madrid	81 %	20 %
Madrid – A Coruña	82 %	25 %
A Coruña – Madrid	85 %	23 %

Source: Own Elaboration

With this study we show that anxiety problems related to mobile telephony already existed before the arrival of smartphones and applications, with 2G mobile phones. Therefore, we join the approach that the anxiety problems caused by mobile technology originate mainly from the loss of signal rather than from the application itself.

This shows that the loss of the device itself definitely breaks the link with the signal, so the stress levels it generates are very high. Companies are acting against this problem with copies of the smartphone online and in the cloud and with applications that allow remote geolocation and erasing of the device. The key, therefore, is people's dependence on the Internet signal or the telephone line that comes to condition emotions, feelings, moods and therefore clearly influence health.

4. From SPA Tourism to Digital Tourism

Defining tourism is not easy, just as it is not easy to find or consider its origins. A definition to which we adhere, established by the World Tourism Organization based in Madrid, Spain, is that it is the simple fact of going from one place to another without a specific purpose or need. Implicit in this definition is the need that to do tourism you have to move, make a trip, and therefore allocate time and resources for it. Apart from the adventurers and explorers who have always existed throughout all time, we can consider that the first tourists were born thanks to the railways that became widespread with the Industrial Revolution, Walton (2002). People took this transport to feel part of an era, experience new sensations as a result of technology and therefore move from one place to another without needing to. A train trip in the middle of

the industrial revolution transferred to users the characteristics of the progress of the moment. The aesthetics of the industrial revolution of iron, noise, force, smoke and grease emanating from machinery, will be part of the perception of the feeling of modernity for at least two centuries. Marinetti's futurist movement, Debasa (2021), will gloss in its manifesto this perception inherited from the previous century, which can be concentrated in its first point: "We want to sing the love of danger, force and recklessness". As a result of this way of thinking, the implementation of the electric vehicle and its perception as something modern, ecological and sustainable will be delayed by more than a century. Since the industrial revolution and until the arrival of the IV Industrial Revolution, the man who wanted to show his masculine, futuristic and modern condition in public would need vehicles that caused a great noise, emanating smells of burnt fuel and grease. In the automobile sector, this statement is broken by the change in technological perception that Elon Musk and his tesla vehicle brand have undergone.

The Industrial Revolution caused the problems typical of the appearance of a new era and contemporaneous with them, spa tourism began to boom, what we now call SPA or gym, which more than two thousand years ago were called, respectively, thermae by the Romans and gymnasion by the Greeks. Spa tourism in the 19th century was born out of the need to cure or minimize the problems caused by the First Industrial Revolution in the new social class of wealthy bourgeois that we now call industrialists. Here we find the direct antecedent of the current digital well-being tourism, all of them focused on the best quality of life, Uysal, Sirgy, Woo and Kim (2016).

The appearance of the global pandemic of Covid19, Lim (2021) forced practically the entire world to lock themselves in their homes for long periods of time for health reasons. The world society did not collapse thanks to the fact that essential services continued to function and most processes and jobs were able to digitize. A new social scenario was being created in the world that forced people to digitize from one day to the next with no possibility of escape, Debasa (2022).

This new situation of total digitization caused new health problems to appear, both physical and mental. Thus, during the Covid19 pandemic, the definitions of the new concept of digital well-being appear, ranging from statements that affirm that it is a state that is achieved through the responsible use of technology to those that state that it is protection of the health of people who work with technology, especially vulnerable groups such as young people or the elderly. But Google's definition in 2021 says that they are "actions that enhance life, instead of distract from it."

The author agrees with the last statement, since the addictive effect generated by applications is already known and scientifically proven because their use causes the brain to generate dopamine. An effect similar to that of gambling addictions or drug use such as cocaine. Any type of addiction generates a similar behavior in the user, causing them to experience parallel or alternative realities that lead to self-destruction. At the moment it cannot be affirmed that the addiction of technology causes destructive effects, but since these are new concepts and recent definitions, we can affirm that it is early to see effects in the medium and long term. However, we think that the misuse of technological applications could be assimilated to the consumption of socially accepted and legal soft drugs, according to age, such as alcohol and tobacco.

The economy of surveillance capitalism, Zuboff (2019), is based on obtaining safeguards and custody of the data that users do in the digital economy. Since the applications know exactly the practices and times of use of their platforms by users, specific patterns or indicators could be established to measure the digital well-being of their users.

Making this data public, or treating it in a way that generates an economic benefit, is something that has not yet been considered and whose responsibility, due to data protection systems and the right to be forgotten falls into the hands of the States. This type of issue is dealt with in futuristic films and series, the best known being Black Mirror, although we find others such as Don't look up. These types of films should be called Digital Humanism Films, since they try to analyze the challenges of the person in the digital world of the IV Industrial Revolution. Digital well-being therefore has an emotional and psychological component because it deals with the state of technology users' feelings. That is why, in addition to the legal debate on digital well-being, a philosophical debate is needed to study the concept of Digital Humanism and to rethink how the concept of the human being will be constructed after the generalization of digital environments.

Covid19 forced numerous sectors to reinvent themselves. Due to mobility restrictions, co-living has strongly emerged as a kind of mid-stay digital tourism. Some hotel establishments with an optimal digital connection offered their places to people who could carry out their work completely virtually. It was the seed of a digital tourism of people, normally solitary, who wanted to share their work and residence time with other people with similar characteristics, but reserving some spaces individually. Co-living, von Zumbusch and Llicic (2020) is prevailing in hosted hotels, hotels with shared rooms and bathrooms, in such a way that these establishments reserve spaces to share both leisure time and work time. The age of the users of this type of establishment grows and so does their purchasing power, so, without losing the essence of beds in shared rooms, more and more of these types of places reserve rooms with private bathrooms as hotels for this type of public. It is strongly affirmed that the co-living that emerged with force during Covid19, opens the door to digital tourism typical of teleworkers, digital nomads and ways of life that do not want to anchor the fixed residence to any specific place, in search of knowing new places, make new friends and live new experiences.

This is the essence of the road movies, Eyerman and Löfgren (1995), which marked an era by synthesizing the spirit of rebellion in American youth culture. The young people of the sixties of the last century wanted to travel the country with temporary jobs for a few months, with the idea of living many experiences or several lives in one. That ideal is today fully possible and feasible thanks to teleworking and digital jobs. The debate that opens will be about its name: digital tourism or virtual citizenship.

5. Digital Well-Being Tourism

Previously we affirmed that tourism originated in the 19th century as the trip that does not have a specific objective, but the pleasure of knowing transport, a landscape, moving to another culture; or enjoy a new way to spend time. On this last approach, proposals are being developed that fill this way of spending time. Thus, to historical, cultural, botanical, zoological tourism, especially for ornithology, which was the way in which the majority of Anglo-Saxon Hispanists arrived at Spanish culture; rest tourism known as thermal or spas is added. Free or leisure time spent exploring new places could also be used to strengthen health. This type of tourism was originally associated with hot springs that turned those places into spas. It is common to still find in Europe towns whose thermal tradition begins in the 19th century.

In the 1980s, video game consoles and arcade or digital video game machines installed in public places radically changed children's and young people's entertainment. Progressively, the traditional games that were held on public roads were replaced by the recently appeared digital video games. The origin of this market was in Asia, specifically in Japan, and from there it gradually moved to the rest of the world. The alarms about the problems caused by misuse or abusive use of technology began in the 90s of the last century, from which the first steps were taken for its scientific and medical study, as well as for the creation of specific medical units. The political institutions of the Madrid region were pioneers in creating the technological additions unit to start treating this type of pathology with a multidisciplinary medical team.

The pandemic marks a turning point in digital well-being. After an abusive use of leisure, entertainment, telecommuting and other utilities platforms, society began to show symptoms of digital exhaustion and all the problems caused by it. Muscle pain, contractures, tired, irritated and dry eyes, headaches, hearing problems, sleep disorders and in the most serious cases, epilepsy. In addition to the physical symptoms, there are the psychological ones that are even deeper, since they have not yet been studied and are a field of action for modern neurology and psychology.

Enjoying good digital health, Mathews, McShea, Hanley, Ravitz, Labrique and Cohen (2019), in the Current World and the IV Industrial Revolution, is not something that concerns only users, due to ignorance due to the speed in transformations, just as technology manufacturers are putting an interest in favoring it, work should be done jointly with the States. Just as children from an early age are taught disciplines related to sports, nutrition, human values and more recently with inclusion and sustainability; establishing training programs in mental health is absolutely necessary to prevent a possible pandemic of devastating and unpredictable effects caused by the abuse of technology.

Technology appears in society, and applications will stop being used because society demands it, not because States can prohibit them. In addition to violating censorship with VPN applications, we must bear

in mind that each culture or country, understood as a market, shows its own preferences. Some messaging platforms have become popular in the United States, while others have spread in Russia and China. The same happens with the entertainment platforms of series and movies, B2B commercial applications, etc... For many problems caused by technological applications, the human being will not be able to stop using them for now, until the appearance of new services. Based on the messages from the leaders of the technological platforms, it seems that the new scenario for these services will be the metaverse. Regarding the problems caused by technology, which directly affect digital health, there are clearly two scenarios in which to work: (i) Prevention scenarios and (ii) Impact reduction scenarios.

We affirm that in both approaches coordinated actions should be carried out in which political institutions, manufacturers, and committees of independent transversal experts work. Following the example of how the ratios of conventional health parameters such as cholesterol, blood sugar or vitamin levels are set, the parameters that set the levels of digital health must be established. This responsibility should not fall only on the manufacturers, so perhaps agencies such as the US FDA should acquire new powers in this regard. The proposed approach to diagnosis would be as follows:

Table 2. Prevention Scenarios

1.	Assume that there are problems and not deny it
2.	Identify these possible problems and vulnerable subjects
3.	Promote interdisciplinary communication, with experts and institutions
4.	Assess the scope of the situation
5.	Identify possible physical and psychological damage
6.	Analyze emotional states
7.	Analyze the social environment
8.	Propose prevention measures
9.	Carry out a pedagogical program
10.	Establish a communication program

Source: Own Elaboration

Table 3. Impact Scenarios

1.	Identify the impact
2.	Elaborate interdisciplinary communication, with experts and institutions
3.	Assess the scope of the problem
4.	Study the physical and psychological damage
5.	Analyze emotional states
6.	Analyze the social environment
7.	Establish action measures
8.	Establish monitoring and quality control plan
9.	Carry out a pedagogical program
10.	Establish a communication program

Source: Own Elaboration

The diagnosis made in this research generates by itself a new sector. The need to address the medical and health implications caused by technology within Digital Health. It has been explained how spa tourism, which includes the current wellness tourism, was born from the health problems that appeared in the bourgeois class after the Industrial Revolution.

Digital well-being is based on the problems caused by technology and is structured around two scenarios. Services and activities provided preventively and those configured to reduce the impact of damage. Two concepts that go hand in hand with digital well-being, Stankov and Gretzel (2021), are deinfoxication and resilience or social resilience, Keck and Sakdapolrak (2013). Technological users must learn to handle concepts such as contamination due to excess information and its effects. Similarly, the proliferation of applications, digital files and even hardware, causes what has been called, Digital Diogenes Syndrome or Modern Diogenes Syndrome, Балагера (2019). All this generates what we call mental noise. An uncomfortable situation that is generated every time a computer is opened or an operating system is started, similar to that caused when working in dirty environments, full of things and with great disorder. The digital environment of our systems must be harmonious, function correctly, have harmonious and friendly keyboards and mice, clean and flawless screens (Saura et al., 2022a). Once we access the operating system, it must be equally organized and in optimal conditions. Work harmoniously, not hang up, have enough memory, etc... All in order to avoid the mental noise generated by the techno-stress of devices in poor condition.

6. Conclusion

The topics addressed in this study are completely new, so it can serve as a basis for new research. It is the same reason why it cannot be broader, the fundamental limitation is the youth of the discipline. This study shows that technological changes are causing social revolutions. The revolutions before were political and with globalization, they will become technological. The political revolutions of the past were accompanied by propaganda and dissemination actions so that they were understood by the population and silence contrary opinions. Technological revolutions must be accompanied by educational and informative actions if they want to avoid social rejection.

Technology itself forms a new economic sector, and as such, creates problems of its own. Among these problems are those related to health. This has become clear during the lockdowns caused by the global Covid19 pandemic, when many people had to spend a lot of time locked up in their homes. Thus, health and medical problems typical of digital workers emerged that encompass digital health. Just as digital health already exists, we can speak of digital well-being to refer to the problems generated and caused by technology. In any case, it is a very recent sector for which there are several definitions, some of them different from each other. In this article, it is proposed that it be defined as the sector that deals with physical and mental health problems caused by the use of technology and its applications. Especially technostress and technoanxiety. To address these challenges, it is essential to promote responsible and sustainable use of technology.

Due to the complexity of today's world, especially the precision of the legal system, actions must necessarily be established in collaboration with national political authorities and raise a cross-cutting and interdisciplinary debate. This debate must include technologists, lawyers, engineers, political scientists, and also people from the medical and health disciplines, especially mental health. The user must be at the center of all actions and must be treated individually and not as part of a group. For them, big data and machine learning plans can be implemented, which learn by themselves with the particular use of the user. On the other hand, the user must be aware that by involving artificial intelligence in digital well-being processes, they are giving up data and even faculties of their individual freedom.

There are many types of tourism, and some of them are reflections of economic sectors of society. These are cases, for example, of gastronomic, hunting, mycological, historical or health tourism. As a result of digital health, a new type of tourism is already taking shape, digital well-being. All sectors must overcome many challenges and many of them have to do with the problems of the Fourth Industrial Revolution, such as post-truth or fake news. In this sense, when talking about science, it should be very clear what is science and what is not, since misinformation in science generates pseudoscience and everything that is not validated by a scientific method is not. Digital well-being will be a new sector of the economy that will generate jobs and added value. It is still incipient and has a long way to go.

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Digital Well-Being in Castilla y León, a New Opportunity for the Tourism Sector

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ABSTRACT

In recent years we are experiencing great changes worldwide that lead to rethinking and looking at things from other points of view. The search for digital well-being brings us closer to the adoption of healthy lifestyle habits using the technology that surrounds us. Because of this the Community of Castilla y León in Spain, rich in history, traditions and culture, finds technology useful to endorse its entire tourist tradition, as an example of the relationship between aspects of healthy living and the use of digital technology. These factors allow a sustainable tourism that is necessary at this time when resources are beginning to feel limited; something that have been seen very necessary throughout the COVID-19 pandemic. In this study, we discussed the changes provoke by COVID-19 pandemic using a geographical case study focused on Castilla y León. We discussed the results relative to digital well-being in tourism and its influence in local enterprises.

KEYWORDS

Digital Well-Being, Tourism, Castilla León, Spain, Enterprise

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1. Introduction

Due to its ancient historical configuration, Europe has developed a series of regions that currently form part of different states. Throughout history, these regions have been forming states, sometimes changing countries, and establishing borders that have changed for political or military reasons (Barbosa et al., 2020). The map that we have today is the fruit of years of changes, conflicts, agreements and treaties that have delimited Europe and that, as we have been able to observe in recent events, create a fragile balance of power.

Spain is one of the oldest nations in Europe, and due to its peninsular orography and its separation from the continent by a large mountain range, its borders have remained practically unchanged since its formation. Despite being made up of several ancient kingdoms, Spain never had a strong regional feeling in the past. At the same time, she developed a strong sense of belonging to the Province, a political entity inferior to that of the region. This feeling is described in numerous literary works such as Los Pazos de Ulloa, and is pejoratively described with the term provincial or provincialism.

The Spanish Constitution of 1978 enshrines parliamentary democracy with a modern and current legal text, advanced for its time and even today, as it served as an example to the Baltic countries after the disappearance of the Union of Soviet Socialist Republics and to the countries of the North after the Arab springs. This Constitution proposes transcending the old provincialism by establishing the regionalism that in Spain is called autonomism by the name of the Entity that is the Autonomous Community.

The Autonomous Community of Castilla y León is built on two historical kingdoms and nine provinces. In the area there was no regional feeling and there was a very strong and marked provincialism. The Spanish Constitution imposes a mandate to develop the regions or Autonomous Communities in all their dimensions. This work is carried out from different sectors and one of them is the media, especially the local or regional ones. These media contribute to the constitutional mandate, as we can amply affirm, structuring the two historical kingdoms now as a single entity, and transcending what belongs to a region to become part of a community, in a broader political and legal entity.

With this advance, a new regional directive body is created, an elite body, superior to the provincial one, which works to favor new specific sectors that were previously unthinkable or incompatible with provincialism. One of them is tourism. Castilla y León is the region of Spain with the most cathedrals, castles and monuments of Romanesque art in general. It is still a very characteristic area of Spain since at the time of its union they decided not to put a capital within that Community, as is the case with the Basque Country. This shows that there was no great feeling of community, but there was a clear belonging to the land and the common space they inhabit.

The inhabitants of the Community of Castilla y León feel with pride how the characteristics of the land they inhabit present them, without a doubt, as one of the tourist strongholds of Spain. No one can pass through this land without visiting the Babia area with its characteristic mountains, the Tuerces with its gigantic stone turtles, the Arribes del Duero, the Burgos waterfalls, the Fuentona with its Lobo River canyon, the wine route of Cigales, the aqueduct of Segovia, the walls of Ávila or Puebla de Sanabria, among many other magical spaces where time freezes and nature absorbs you. There are few communities that have such a great variety of history and nature and allow so many different activities to be carried out within a short space of time. This means that Castilla y León, which was already a model in traditional tourism development, can prepare itself in a very complete way for another type of tourism.

All these spaces present Castilla y León as the leader by extension in inland tourism, also known as rural tourism and, one must add that more than a third of the surface of the region does not have access to the Internet, which is Flame Digital Shadow. This is due to the complicated orography of the territory which has large mountains and mountain ranges. These natural spaces are authentic jewels which combine diverse natural ecosystems to show nature in its maximum expression and they attract a type of tourism which is so in demand today. But these same natural areas sometimes make it difficult to extend digitization because their very orography makes it difficult and today many of these spaces have yet to receive the arrival of 5G, which is so crucial to the absorption of everything the fourth industrial Revolution offers. This particularity, which is seen as a great problem of economic development, can be used as an opportunity for the development of "Digital Well-Being", and the local and regional media, as in the

development of autonomy, will have an active role (Beetham, 2016; Kumar et al., 2020).

That is why, using an inductive-deductive methodology, we will address the potentialities of this digital well-being in the limited environment of the Community of Castilla y León and learn how it can help promote a differential tourism that emphasizes and personalizes the benefits of this territory that has so much in history and natural resources, characterizing it as one of the most significant places in the kingdom of Spain.

The objective of this research is to address digital wellness tourism as a new form of disconnection, relating it to the territory of Castilla y León, which offers very significant opportunities for this new recreation that the digital media are already picking up. This new field, despite the fact that it has been analyzed by many other authors, has not been developed in relation to the peculiarities of the Castilian-Leones territory that offers, due to its own singularities, great opportunities for this new model which have not been highlighted by others. The most significant finding that we have achieved after completing this article is to understand how the region of Castilla y León fulfills all the conditions expected to achieve this new digital wellness tourism and how this new leisure model puts it ahead of other Areas of the Iberian Peninsula.

2. Literature Review

The potential of rural space in Castilla y León has been analyzed for several years by different authors who have reflected on the possibilities of these spaces in different articles (Saiz Martín, 2013). (Alario Trigueros et al., 2018). This new tourism goes hand in hand with an increase in motivation and the need to remove oneself from a markedly digital world. All the authors who have studied the role of motivation in digital wellness coincide in affirming that it is a determining factor within the new digital environments (Saura et al., 2021; Ostic et al., 2021).

Generally, there are two types of motivation which arise in the process of a change of mind. First, extrinsic motivation which refers to that which is used as an instrument to achieve an end (Botella & Ramos, 2019). The person motivated by this type of motivation does not do it personally, but acts influenced by external factors (Botella & Ramos, 2019). In turn, Usán and Salavera (2018) classify this motivation into types according to the degree of self-determination that occurs. On the other hand, intrinsic motivation, the one that has a personal basis, which derives from the individual (Usán & Salavera, 2018; Hernández & Cordero, 2021). In this sense, motivation comes from a free personal choice, without being influenced by external factors (Botella & Ramos, 2019). This type of motivation causes us to act following a personal decision to achieve a goal that we have set for ourselves and that satisfies us individually. As Usán and Salavera (2018) state, it is a motivation that does not imply any external reinforcement and is directed either towards stimulating experiences that entail fun, or towards the development of knowledge for the pleasure of learning, or towards the attainment of an achievement that helps us outdo ourselves. In this sense, the new digital well-being that is related to digital tourism seeks to ensure that people's motivation leads them to new experiences of leisure together with disconnection and that is why it is important to analyze the motivation for this type of new state of wellness (Belo et al., 2014; Agapito et al., 2014).

The recent pandemic has made clear the need to look for new spaces where we can find ourselves in a different way, presenting the new tourism related to digital well-being as a primary need (Suchada & Patsachon, 2022). Among younger people who live in a more connected world, this digital wellness and disconnection tourism has become fundamental and that, as many authors tell us, is sought with more intensity every day (Anannukul & Yoopetch, 2022). The research question is as follows. After a moment of pandemic in which we have experienced a great moment of digital connection under the protection of the fourth industrial revolution, a new phenomenon of tourism is taking place. This new model seeks to unite digital disconnection with wellness tourism. Can the territory of Castilla y León be a model of this new digital wellness tourism thanks to its clear peculiarities?

In addition, many of the authors present this new method of tourism related to digital as a new phenomenon of social integration that must be closely tracked due to its importance. The authors highlight how this model is becoming very widespread in rural areas, seeking and adding other geographical attractions to this new tourism model (Hassan et al., 2022).

The work provided in this article shows us the use of digital well-being related to the new type of tourism in conjunction with the unique characteristics offered by the Community of Castilla y León that make it, as we analyzed, an example within Spain and with a view to other model areas of a new type of tourism that must still be analyzed in order to establish it safely.

Everything analyzed leads us to demonstrate how the new generations of digital natives are looking for a new model of tourism marked by a new way of seeing things. Castilla y León is becoming the backbone of this new type of tourism in Spain. Its regional characteristics and its openness towards this new transformation towards this new public show us how the appropriate changes can be made for a new leisure model that is based on the foundations of the need for a digital disconnection.

3. Methodology

In this article we have carried out an applied investigation. In the words of Cívicos and Hernández, (2007) applied research is characterized by the way of studying social reality, placing the resolution of social problems ahead of scientific interest, in order to apply its discoveries to the improvement of different strategies and certain social actions (Cívicos & Hernández, 2007). Regarding the nature of the study, an analytical investigation will be carried out that requires the analysis of different forms of analysis of forms of digital wellness tourism (Quecedo & Castaño, 2002). The research design is going to be of an experimental type, since the researcher guides and controls one or more independent variables and analyzes the dependent variable(s) to assess concurrent variations (Agudelo et al., 2008; Saura et al., 2021a).

4. Analysis of Results

The Covid 19 pandemic forced the immediate digitization of society, in a process that accelerated access to technology. Rapid transformations sometimes do not accompany biological transformations, sometimes generating episodes of great stress. That is why experts have been talking about technological addictions for a long time and after the pandemic the concept of Digital Well-Being emerges. This is a concept that highlights the need to analyze the excessive use that is made of all these new technologies. Companies have already begun to become aware of these issues and recently Mark Zukerberg (founder of Facebook and owner of Instagram) conducted a study on addictions to " likes " within social networks. This study continues to be a sample of the social concern that exists in the face of that digital image that every person possesses. In addition, the Instagram study continues to be a clear example of society's concern for the new models of social relationships that generation Z has and that are anticipated in the Alpha Generation (the authentic digital natives who were born and are going to develop in a digital society). All this has been thoroughly analyzed and we live in a time when the X called digital immigrants, using the concept that Prensky defined as those who moved with technology but without control of it, coexist with the Y, Z and Alpha, who are true digital natives (Saura et al., 2021b).

These new generations are people whose leisure, work and day-to-day life are supported by this digitization but who increasingly need a point of disconnection given that analyzes of the excessive use of technology demonstrate the need to achieve spaces of freedom without using the new media (Olson & Heejung, 2021). The new metaverse that is beginning to take shape shows us how life is going to develop in a digital world in which companies like McDonald's ~~they~~ are asking for franchises of their new restaurants since they anticipate that the new technologies linked to this virtual world will favor new leisure models linked to a large digital presence of people who will dedicate much of their time to this digital world. Given all this, the Digital concept of Well-Being is not only imposed as a new model of relationship with technology but also as a need embodied by our new models of life and a search for healthier and more sustainable living spaces that share with what society demands at this time (Saura et al., 2022).

Recalling the implementation of the vacation period or the rest days imposed after the Industrial Revolution, Digital Well-Being must now begin to be considered as a fundamental part of the development of people. Historically speaking, the models have already presented us with the need to preserve the health of human beings in spite of the addictions that modern society presents, but the adoption of these new attitudes or methodologies must start from the understanding of the need to seek union between the

modern, the sustainable and the healthy that puts the human being at the center of all this analysis with the needs that are anticipated from this world of the fourth industrial revolution (Youngjoon et al., 2022). This digital well-being is forged within the search for healthier lifestyle habits in an increasingly digital world where we can forget the house keys but we cannot forget the element of relationship with that digital world which is normally a Smartphone with which we connect to and relate to every day more and more.

All of this makes us look at Castilla y León from the new approach that this type of tourism offers and makes us understand how the spaces for digital disconnection offered by the multitude of places for tourism in this community serve to make it possible to establish a tourism that is different from the one that we already have samples of and that serves to show a new model of holiday health so in demand in this digital world. The tourist spaces of Castilla y León have been for many years and are now fundamental elements of holiday difference and now, with the changes carried out, they are presented as the benchmark for a new model of leisure with very distinct characteristics (Jañez García, 2015; Saura et al., 2022a).

5. Discussion

The autonomous community of Castilla y León has presented great peculiarities that present it as a unique example within the kingdom of Spain. All the momentum of its public administration has conceived a government standard forged to adapt, with flexability, to the eventualities that occur at every turn, using the communication standard which it created, to modulate an address aimed at society and public opinion capable of legitimizing public policies and forging a significant feeling of excitement in the Castilian and Leonese regional community. The Community of Castilla y León has significant peculiarities, and it has achieved that, over the years, those peculiarities that initially seemed like obstacles that favored a future separation, have become values that anchor their union and favor the contributions that each one of its individuals can perform for the common good. The community has also known how to merge with the new digital communication elements to promote a new communication model, as we can see in examples such as Bierzo Digital. These new elements of digital communication seek global communication in conjunction with the social networks that are so present today and, in recent times, have benefited the adoption of Digital Wellbeing measures, promoting the image of a Community that not only complies with the highest quality standards in tourism but also helps a different type of tourism seizing on these new practices that society is demanding. This Community becomes an example and a reference and opens the panorama to carry out significant actions within any field. Its history and its development have made it unique and have made it possible for other communities to observe its model of digital transformation, since it is the basis of development in the 21st century. This digital transformation, as we have said, also covers digital communication, which becomes the exponential center of any development that you want to present in the digital landscape to achieve maximum optimization.

Tourism communication in the digital age, together with new elements, is already something that has spread worldwide. In all countries, endorsed by large search engines, possibilities of a new type of tourism based on digital well-being are being offered digitally. Examples of all this can be found in different types of tourism such as that offered in New York, The Maldives, South Africa, Peru, Chile or Australia among many others. What we must understand is that although the need for this digital well-being is something ordained and established which does not present any type of doubt when it comes to defining it, this is not the case with the characteristics that this digital well-being tourism must offer since there are many examples that we can find that seem to put on the seal of digital well-being as a way of differentiation, rather than a well-defined quality standard that allows selecting the best spaces.

It is for all these reasons that we must clearly define this digital wellness tourism and within the most present characteristics worldwide we would highlight two main characteristics: A space where we can find a positive effect on our health and a space where we can control our relationship with technology. There would be many other characteristics but those two would encompass what we are looking for with this digital wellness tourism that we can find clearly present in the Community of Castilla y León since, through the media, a diferential type of tourism is presented that allows the clear union between nature and urban planning, making it possible to achieve spaces in which there is the possibility of a digital dis-

connection incited by the natural wonders in which one finds oneself, which demonstrates the need not to be hyper-connected all the time (García, 1999).

Digital well-being is linked to appropriate habits for the use of technology but not to a forced digital disconnection. Many link digital disconnection with digital well-being without understanding that well-being goes hand in hand with a willingness to be connected and not with a lack of means or resources to achieve that connection. We must understand that digital well-being in relation to tourism is linked to people being able to choose healthier lifestyle habits within the time they dedicate to this diferential tourism and that it is giving so many good experiences worldwide. For both technology providers and users, digital well-being is becoming a key element that must be developed and this sector presents itself as a great opportunity for all countries and tour operators to carry out different good leisure practices. After the COVID-19 pandemic, a moment of breakout is demanded that distances us from the excessive use we have made of technology and that favors, as we have said, new approaches and new ways of relating to technology.

6. Digital Well-Being and Tourism, a Sector in Possible Development

As we have already highlighted, digital well-being is fundamental in the world we live in. If we analyze historically this path walked by the workers we can go back to the first industrial revolution where there was no search for well-being of the people who worked in the factories since that revolution was not focused on them, but on maximizing production to achieve Better benefits.

All the revolutions that have occurred throughout the history of humanity have been backed by the need for rupture. This rupture of the old with the new posed, without ~~a~~ doubt, a moment of uncertainty and opportunity. It was, for many, a moment of leaning over a real precipice since it forced them to adapt and reinvent themselves in the hope of being able to keep up with everything that was happening. This was so in the first industrial revolution when machines began to enter factories, which for many was a great threat since it separated them from the reality they had known until then. That first revolution backed by coal brought with it an authentic socio-economic change without comparison that largely laid the foundations for the schools that we know today, since the aim was to train students who would respond to the needs of this new society that emerged in the light of these momentous changes (Hobsbawm, 2009).

The second industrial revolution came hand in hand with the extensive use of electricity and knew how to absorb those machines that emerged in the first revolution to complete the automation processes of factories, generating large and extensive assembly lines that improved production and massified the creation of products. This revolution consolidated the first and, to a large extent, shaped capitalism and the international order that would mark the following years and is still present today (Haradhan, 2019).

The third industrial revolution was the implementation of ICT as a need to assume the existing digitization. It was a revolution that absorbed the automation of the second industrial revolution and gave it a backbone in the shadow of the growing use of the internet as part of the process. This revolution was quite fast, lasting from 1969, when Arpanet emerged as a communication element between universities after its military past, to the arrival of the World Wide Web in 1991, since not many years passed and that is why this revolution emerged with conditions that separated those who had not been born with that technology from those who had. The term adopted by Prensky in 2001 to differentiate digital immigrants (born before 1980) from digital natives (born after 1980) helps us to understand the fragmentation that this revolution entailed and all the changes that were integrated with those previously existing machines (Prensky, 2017). From that moment on, different initiatives were sought to spread digital literacy throughout the world, given that the integration of new technologies in all sectors of the population have demanded the need for digital skills in workers who, in some aspects, have resisted them (Taalbi, 2019).

And finally, we come to the fourth industrial revolution that for many authors is the one we are experiencing at the present time. It is a revolution that is supported by the spread of 5G, the internet of things, the implementation of artificial intelligence in everyday world, digital coordination, the spread of robotics in all work sectors and the use of cyber-physical systems (Gómez Salgado, 2021). For many, this revolution is going to be the most fragmenting of all the revolutions that we have gone through, since it supposes assuming a cyberconnected planet and a use of digital consciousness at a global level that none of the

previous revolutions achieved despite the existence of multiple threats (Saura, Palos-Sánchez & Navalpotro, 2018).

Faced with this great change, there are a large number of opposing positions regarding this revolution, since where some see opportunities, others see threats, which up to now has slowed down the implementation of all the necessary changes that are needed for the complete implementation of a revolution such as this one. It is paradoxical that many authors such as Aldous Huxley anticipated, many years in advance, the reality that this revolution presents us with its lights and shadows, which would be endorsed by that transhumanist term as a reference to overcoming the physical or intellectual limits of humans through the use of technology. That transhumanism for many is the hope for change in a cyberconnected world since it seeks to go beyond the physical barriers of humanity in order to expand the frontiers of knowledge, which is expected to be achieved in this nascent revolution. It is at this point in the fourth industrial revolution that we find the concept of digital well-being present. Machines are going to improve people's lives, but if we do not take advantage of this improvement in life to find spaces of communion between the person and the environment, leaving aside all digital connection, we will not be able to take advantage of this revolution adequately.

We cannot fail to emphasize everything that has happened during the pandemic when talking about digital well-being. For history, 2020 will be a year marked on the calendar by a pandemic, but if we see it in perspective, the history of humanity is full of pandemics that devastated humanity. One of the greatest examples can be found with the polio epidemic that devastated the United States in 1955. Then, as now, the closure of schools and the confinement of many areas of population were ordered. At that time, so that the students would not miss class, it was decided that all clases would all be given through the radio, which shows us once again how education prevails despite all the adversities that occur (Altenbaugh, 2006) .

If we go back further, we can understand that humanity has always lived under the shadow of small viruses ending human existence. The bubonic plague or the Spanish flu are authentic examples of this, and their study helps us to understand how the human being prevails against everything and seeks to improve in every way. In the same way, what happened due to the COVID 19 pandemic has served to transform society, but we must not look at it only in a reformist spirit, we also have to delve into the intrinsic changes derived from everything that has happened in order to analyze the present possibilities and the past difficulties.

The arrival of the fourth industrial revolution, despite the fact that some authors consider that we have not yet fully entered into it, is perceived as something unstoppable. New technologies have been, and are, a disruptive element that change people and their mentalities. But this disruptive element must also be contained, and people must find moments of recreation that bring them closer to other types of experiences within the 21st century since hyperconnection, as has been shown during the pandemic, causes a digital addiction in certain sectors that can endanger the well-being and health of people, so we must be able to find a different leisure model.

Here enters the possibility of looking for another type of tourism that helps people to adequately unite the possibilities of that fourth industrial revolution and the need for a break that is clearly significant. In this, digital well-being as a space for new tourism arises with many possibilities. For the tourism sectors, proposing this new model of remote tourism or controlling the digital, implies the appearance of new spaces that help the person not only obtain what they like but also to be able to establish a type of health that their active rhythm of daily life demands. The leisure of the different generations (X, Y, Z and alpha) as we have mentioned before, is very different, but everyone is looking, as we have seen during the pandemic, for disconnection spaces that improve their digital well-being.

The characteristics of this digital well-being are clear and despite the fact that the large technological platforms are already offering disconnection spaces, the tourism industry still needs to fully adapt to this new sector that offers so many possibilities. These characteristics lead us to understand that everything focuses on two simple characteristics: Disconnection spaces with the possibility of connection and places that favor a type of emotional tourism that helps to achieve disconnection. These two characteristics can be completed with many other approaches that have been taking place in recent times around this new type of tourism, but the fundamental thing is that it seeks to link the digital world with the need to be able

to put a space for peace in the midst of all this daily maelstrom (Sigala, 2019). The possibilities of this new type of tourism are endless and open up new tourism possibilities after the time of confinement that we have experienced caused by COVID-19.

In all of this, as we have been able to analyze, the possibilities of this digital well-being that we can find in Castilla y León are incredible. Communication elements such as Bierzo Digital, among others, have known how to extend and bring to the consumer the unique characteristics that this Community offers due to its own historical roots, its characteristic makeup, its physical space, its innumerable artistic attractions, its gastronomy and a long etcetera that they already revealed the Community of Castilla y León as one of the places in Spain that, without being a coastal destination, attracted a greater number of tourists. These magnificent possibilities and the recent attempts to show this differential tourism using the need for digital well-being as a distinctive element make the possibilities of this community to become a leader in this tourism infinite. Practices have already been carried out that have shown that this type of tourism works perfectly and favors the health and well-being of the people who visit this community (Rico, 2005).

7. Conclusion

As we have already been able to analyze throughout this article, the Spanish Constitution develops the regional sentiment that did not exist before in Castilla y León. That feeling endows this space with uniqueness and presents it as a place of great possibilities in many ways where communication is very important to be able to coordinate the different actions in favor of this community.

Castilla y León has a great historical and cultural heritage and a complicated orography with mountains, which keeps more than a third of its territory in digital and Internet shadow. That makes it the perfect space for the development of another type of tourism, one that is highly demanded in this hyperconnected world that combines rest-health-disconnection. This tourism is presented as an ideal opportunity for development within Castilla y León where we can find great possibilities of digital disconnection together with a strengthening of mental health spaces that are demanded by society.

The great changes in humanity have always been a fragmentation between the previous and the following. There is no doubt that the COVID-19 pandemic has been a moment of important change and social relations are being reviewed in all sectors of the population to find a way to prepare for future pandemics. It is in this field where the fourth industrial revolution is coming and it is something which is very necessary since it meets the urgent need for a transhumanization that is being demanded socially, not only as a search for human improvement but as a response to a society that seeks the need of avoiding physical contacts as a form of prophylaxis, The fourth revolution is beginning and we can glimpse, with everything analyzed, the great possibilities that it offers us.

In the field of education, everything related to 5G, the internet of things or Artificial Intelligence will finally allow for the individualization of learning and consolidate the learning of skills and abilities that are so much in demand today. It is at this point where this pandemic has forced us to delve deeper into the changes favored by this revolution and all educational levels have perceived the benefits of a system where digitization acquires a greater role. But this digitization present in the fourth industrial revolution is also perceived as an element of addiction among many of the different generations that live together in society today. This has also been supported by the big technology companies that have turned this digitization, in many cases, into the only engine for business development today. You can no longer go to the bank to make your inquiries in a physical way since the digital revolution and that is causing big problems among people who are not used to, or do not want this digitization (the best example can be found in the campaign “I am old but not dumb” who wanted society to help older people who do not have the same facility with digitization.

That is why the connection that this fourth industrial revolution carries has become an element of possibility or of problems due to its excessive use. Combining these two aspects is the key for today’s society and this leads to the challenge of being able to disconnect at certain times as we have seen during the pandemic.

This challenge, which is a problem, can become an opportunity to develop Digital Well-Being in inland or rural tourism in which Castilla y León is the leader. As we have analyzed previously, this community is

the champion of a very characteristic tourism that, if it understands how to take advantage of it, can become the guide that many other communities can follow, since this type of digital wellness tourism is and will be more and more demanded by the different sectors of the digital society. There are already experiences in the Community of Castilla y León of examples of this digital wellness tourism that are becoming authentic references within the sector and that are anticipated as the model to be developed, but for this there must be good communication that enhances the existence of that type of tourism to bring it closer to those consumers who seek to understand the possibility of communing the digital with disconnection as an element of promoting their health and developing spaces for mental relaxation. The Castilian-Leonese spaces are ideal for this new tourism and are clearly anticipated as preferential places to continue having differential tourist experiences.

All this new role that Castilla y León is already exercising and that it is going to spearhead would be of no use if there were no communication of what has been done. It is at this point where we can emphasize another of the characteristic elements of this community, since the local and regional media, so developed in recent years, play an important role in this process as authentic transmitters of the entire experience. The new digital wellness tourism must be able to reach the consumer, so communication is essential. That is why the communication model wisely developed in this community in recent years is key to promoting this new tourism model in this community.

What is local becomes a fundamental part of information and fulfills the necessary disseminating role that these new experiences need so that they can continue in this hyperconnected world. It is important that most of these types of spaces that have already developed this new type of digital wellness tourism are small spaces that feel supported by local and regional media. That is why the large tourism models that are presented in large media outlets have not yet managed to adapt this new tourism model, which is going to become one of the characteristics of the new leisure models.

Experiences such as those developed in Castilla y León with its development model in this new field of tourism are going to be like a flame in the forest that spreads to all places and presents this community as a tourist reference for this new model of the tourism business which fulfills not only an economic role but also a social role.

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