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Could Smart Tourists Be Sustainable and Responsible as Well? The Contribution of Social Networking Sites to Improving Their Sustainable and Responsible Behavior

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Abstract: A key strategic aim of tourism destinations within the smart tourism paradigm is to achieve efficient, responsible and sustainable use of tourism resources. This aim can be achieved by promoting the appropriate practices and making tourists co-managers, co-designers and co-creators of tourism experiences. This paper argues that smart tourism destinations should manage their resources in a sustainable way and that smart technologies can make their contribution. Could a smart technology such as social media/social networking sites make a contribution to sustainable tourism within the smart tourism paradigm? To address this research question, a project was carried out to explore the perceptions and attitudes of Chinese tourist consumers about the contribution of social networking sites to adopting a sustainable and responsible behavior within the context of a smart tourism framework. First a research framework encompassing three hypotheses related to the influence of social networking sites at the three main stages of the travel cycle/tourist journey was designed. An exploratory quantitative research was then carried out using the online survey technique. The study's findings indicate that the use of social networking sites influences the smart tourists at all three stages on adoption of sustainable and responsible behavior, the most significant influence is at the first two stages. The article is completed by discussing the related conclusions and management implications in the smart tourism management framework.

Keywords: smart tourism; social networking sites; tourist consumer behavior; smart tourists; travel cycle; tourist experience; responsible behavior; China

1. Introduction: Overtourism, Tourists' Behavior and Smart Tourism Framework

Over the last decades we have witnessed a significant growth of tourism affecting numerous destinations (cities, coastal areas and tourist attractions) all over the world with a series of negative impacts on their sustainability and on the wellbeing of local communities [1]. Destinations are faced with an invasion of tourists causing pressures that have been labeled “overtourism”, which is a significant development in the evolution of global tourism [2]. UNWTO (United Nations World Tourism Organization) [1] describes overtourism as the impact of tourism on a destination, or parts thereof, that excessively influences the perceived quality of life of citizens and/or quality of visitors' experiences in a negative way.

All networks, infrastructures and other services that were primarily created for use by local populations/residents suffer under increasing influx of tourists looking for tourism activities that are intertwined with local life [3]. Such developments have led to increasing pressures on local stakeholders to deal with tourism growth in multiple high profile destinations (e.g., Amsterdam, Barcelona, Venice)

and congested attractions (e.g., Mont Saint Michel, France; the Forbidden City, Beijing). Media are reporting of attempts to control visitation by limiting tourist inflows [4]. However, quick fix solutions such as cynically proclaiming that tourists should not visit popular destinations and/or drastically increasing entrance fees are not the most appropriate and efficient [2,4].

The phenomenon of overtourism attracted the interest of the tourism industry, stakeholders and academia [5]. In spite of its popularity, the term “overtourism” is overused/abused and not clearly and fully conceptualized [3,4]. A study by Koens et al. [3] highlights that the concept of overtourism describes a multidimensional, highly complex and opaque phenomenon, which can be oversimplified by local stakeholders. The debate on overtourism is essentially about managing negative tourism impacts of tourism overgrowth. It is believed that the management of tourism flows in cities and other destinations to the benefit of visitors and residents alike is a fundamental issue for the tourism industry [5]. The imperative of tackling overtourism goes along with the strategic aim of sustainable development and management of tourism at the destination level. All stakeholders—the public sector (bodies, agencies and organizations), private sector and communities—need to be involved. Further, tourists themselves must be considered in the matrix of evolution and change in order to tackle or avoid overtourism [2]. It is critical to analyze and influence the tourists’ behavior, as well as to understand the perception of residents’ attitude towards tourism, in order to implement successful sustainable tourism strategies and to manage visitor’s growth in destinations [1,5].

Academic research indicates that overtourism is a multidimensional issue and should be tackled accordingly [1–3]. Studies have been performed to explore the related issues and suggest suitable approaches and strategies to curbing or preventing problems of overtourism. The main recommendations/suggestions are outlined hereafter and classified into two main fields [1,2,5]. The first field is the hosting area/destination. Various approaches to tourism management should go beyond limits on the number of visitors. The first, supported by the UNWTO, focuses on increasing tourist capacity in hosting areas. Capacity can be increased through, amongst others, the use of smart/hi-tech solutions [1] or by increasing acceptance in the local community and stimulating entrepreneurship [2,6]. Other approaches focus on the need to diversify forms of tourism and the building of proper relations between the interested parties involved in tourism. Another suggestion by Benner [5] is to elaborate a strategic vision for sustainable tourism development, and then adopt multidimensional strategies that build on a vision of qualitative tourism development shared by various partnerships of stakeholders. All dimensions—policies, organization, institutions, and behavior of stakeholders and tourists—of planning, developing and managing tourism activity in a sustainable manner—should be considered and addressed properly [5].

The second field is the tourist consumer behavior. Tourists’ behavior is an issue of critical importance as tourists are one of the main actors of the tourism system. Most of the negative impacts of tourism are resulting from inappropriate behavior of tourists, who do not behave in an environmentally friendly way [7]. Therefore, destinations should implement strategies and tactics aiming at making tourists behave in a more environmentally friendly way. A variety of regulations and formal restrictions on hosting of tourists can be put in place by local authorities (measures for visitor management) [8,9]. However, overtourism cannot be solved by limiting tourist numbers; the behavior of visitors, the length of their stay, the volume of tourists and the type of tourism are in fact equally important to the number of tourists [4,7,9].

In general, consumers engage in holidays/trip behavior which has negative environmental consequences, albeit unintentionally [7]. Tourists have a positive attitude but the actual behavior is not matching; there is an attitude–behavior gap. Hence, there is a need to apprehend their behavior with the aim of motivating tourists to minimize the negative environmental impacts of their activities and to reducing environmentally unsustainable tourism behaviors. Approaches should be developed to promote the change of tourists’ behavior. Specific environmentally sustainable tourist behaviors have distinctly different drivers. Consequently, interventions designed to make tourists behave in a more environmentally friendly way need to be specific to the behavior targeted for modification [10].

This paper attempts to bring together requirements for sustainable tourism management (as well as the imperative to address overtourism) with cutting-edge technologies and the needs/expectations of tourists. This pairing of interests is achieved by considering the ways tourists in crowded settings manage to have a qualitative tourism experience and considering the wellbeing of local populations. This symbiosis of requirements should be the strategic aim of sustainable management within the context of a smart tourism framework. The strategic aim of a smart tourism framework is to achieve a balance between the wellbeing of both tourists and those who live in the hosting areas—a sustainable management that is mutually beneficial, creating more positive outcomes and limiting the effects of tourists on the destinations they visit [2]. It is the argument of this paper that tourism destinations should implement appropriate tactics to motivate effective, responsible and smart tourist behavior. In other terms, smart tourism technologies can contribute to making tourists more responsible and to addressing some of the effects of overtourism.

Smart tourism (ST) refers to the application of information and communication technologies (ICTs) for developing innovative tools and approaches to improve tourism [11]. The concept of ST has emerged as a result of the rise of ICTs and the need for sustainability [12]. Scholars suggest that ST is an ecosystem creating benefits for the whole system and for each individual. The principles of ST are enhancing tourism experiences, improving the efficiency of resource management and maximizing destination competitiveness with an emphasis on sustainable aspects [13,14]. The most comprehensive and robust definition of ST has been suggested by Gretzel et al. [15]: “A tourism supported by integrated efforts at a destination to collect and aggregate/harness data derived from physical infrastructure, social connections, government/organizational sources and human bodies/minds in combination with the use of advanced technologies to transform that data into on-site experiences and business value-propositions with a clear focus on efficiency, sustainability and experience enrichment” (p. 181).

It is generally recognized that the tourists—a crucial element and key actors of the ST ecosystem—are rather neglected by academic research [13,16,17]. Our study constitutes a contribution to addressing this research gap. The strategic goal of every smart tourism destination (STD) should be to enhance smart tourists to change their attitude (not only being smart . . .) and adopt a more responsible behavior. Sustainable management within the ST paradigm requires and involves smart and responsible tourists who are caring and behaving properly. It is the argument of this paper that STD should enhance smart tourists to become co-creators of sustainable tourism experiences and co-managers of tourism resources in the sustainable management of tourism assets and resources at the destination. The underlying idea of our study is that the strategic aim is not about how to better manage tourists; it is rather how can STDs make tourists co-managers, co-designers and co-creators of tourism experiences.

The main research question of our study is: could social networking sites (SNSs) make a contribution to responsible and sustainable tourism within the ST paradigm? To address this research question, this paper argues that STDs should manage their resources in a sustainable way and that smart technologies can make their contribution. Therefore, the paper’s aim is twofold, namely (i) to suggest a framework of sustainable and responsible behavior by smart tourists, and (ii) to empirically investigate the suggested framework within the Chinese context by exploring the perceptions of Chinese tourist consumers about the contribution of SNSs to sustainable behavior. Our study focuses on the adoption and uses of SNSs by smart tourists during the three stages of travel cycle: before, during and after their experience.

The paper is structured as follows. First, it reviews the extant literature by outlining the key aspects of smart tourists, discussing the critical elements of a sustainable and responsible behavior, the key issues in the field of SNSs and their impact on tourists’ behavior. Then, it presents a discussion resulting in the framework of suggested behavior within the ST paradigm. This is followed by the study aiming at empirically testing and validating the suggested framework within the Chinese context. The study’s findings are then presented and discussed. Finally, the main conclusions, the theoretical

contributions and managerial implications are discussed, together with the study limitations and suggestions for future research.

2. Literature Review

Academic research has been interested in the environmentally responsible behavior of tourists [7,10], as well as in the uses of social media (SM) by tourists [18,19]. Lately, scholars have also been interested in the field ST management framework, and have explored the related dimensions, issues and aspects [13,16]. This section focuses on sustainable and responsible behavior by tourists, the concept of smart tourists and the influence of SM/SNSs on tourist consumer behavior. The discussion leads up to the suggested a framework for the adoption of responsible behavior by smart tourists.

2.1. Sustainable and Responsible Tourist Behaviour

The literature suggests that we have witnessed a growing consumer concern for the environment. The “sustainable”, “green”, “environmentally friendly” or “responsible” tourist is mindful of the environment and supportive of environmental causes [20,21]. One of the main points revealed by related academic research is that there is now widespread concern about the issues of sustainability across different segments of demand [22,23]. That is the reason why Juvan and Dolnicar [24] contend that tourists may represent the most promising target when attempting to increase the environmental sustainability of tourism. Tourists can help to reduce tourism’s negative impact by making environmentally friendly tourism decisions and behaving in an environmentally sustainable manner while at the destination. STDs could set the management framework/paradigm and ST technologies could provide the adequate tools.

Tourists having environmental concerns and behavior were described and defined in various ways. Authors use various terms and propose different definitions/descriptions for environmentally sustainable tourists, as outlined below with reference to selected studies. Sustainable tourists are tourists “who care about maintaining and protecting the natural environment at the travel destination” [25] (p. 212). According to Lee et al. [26], a sustainable tourist is a tourist “who respects the local culture, conserves the natural environment, and reduces interference of the local environment” (p. 457), while an environmentally friendly tourist is a tourist who “takes action to reduce the damage of a specific destination” (p. 457). An environmentally responsible tourist is a tourist who “helps limit or avoid damage to the ecological environment” [27] (p. 323).

Studies have also analyzed the motivational and influencing factors involved in the consumption behavior of sustainable or responsible tourists (see, for instance, [21,28–31]). The aim and main findings of the three most recent studies are outlined hereafter. A study by Buffa [21] suggests that young people have an interest in certain dimensions of sustainability and this interest has an influence on their decision-making processes, motivations and behaviors. A study by Mehmetoglu [30] focuses on the understanding of the factors influencing an individual’s environmental behavior. His study examines how a set of social psychological and socio-demographic factors influences a sample of the Norwegian population’s willingness to behave in an environmentally friendly manner. It was found that income, gender, political orientation, personal values, environmental concerns and personal norms influence their willingness to behave in such a manner in a holiday setting.

Miller et al. [31] suggest a new concept, “tourist social responsibility”, with high relevance to furthering tourism’s sustainability. Their study puts the emphasis on sustainable urban tourism destinations and explores five major antecedents to pro-environmental behavior, namely: habitual behavior, environmental attitudes, facilities available, a need to take a break from environmental duties and the sense of tourist social responsibility. It examines the pro-environmental behaviors of tourists to Melbourne, Australia in four major categories/areas: recycling, green transport use, sustainable energy/material use (lighting/water usage) and green food consumption. It was found that existing habits strongly influence all four urban pro-environmental behaviors. Available facilities are the second

most important antecedent. Overall, urban tourists' pro-environment behavior drivers differ markedly from those of residents or ecotourists [31].

The UNWTO Global Code of Ethics for Tourism is a fundamental frame of reference for sustainable and responsible tourism [32]. In a more practical approach, a brochure was prepared by the World Committee on Tourism Ethics with the aim to facilitate the understanding of the principles of the Global Code of Ethics for Tourism by tourists and help guide them in making their behavior ever more responsible and sustainable. The specific practical tips are depicted in Table 1.

Table 1. Responsible tourists: practical tips.

Field/Area	Tips for Appropriate Behavior
Honor the Hosts and the Common heritage	<ul style="list-style-type: none"> • Connect with the local community/population. • Experience and respect all that makes an international destination different and unique.
Protect the Planet	<ul style="list-style-type: none"> • Reduce the environmental impact by being a guardian of natural resources. • Reduce water and energy consumption.
Support the Local economy	<ul style="list-style-type: none"> • Buy locally-made handcrafts and products. • Respect the livelihoods of local artisans by paying a fair price and hire local guides with in-depth knowledge.
Be an Informed Tourist	<ul style="list-style-type: none"> • Take appropriate health and safety precautions. • Choose tourism operators with environmental policies and community projects in place.
Be a Respectful Tourist	<ul style="list-style-type: none"> • Observe national laws and regulations. • Respect human rights and protect children. • Provide honest reviews and promote positive experiences.

Source: retrieved from UNWTO [32].

Focusing on the actual consumption behavior, academic literature provides empirical evidence about the characteristics of responsible behavior. These tourists have positive attitudes towards the environment and sustainable tourism, and act accordingly [2,33]. The sustainable and responsible tourist behavior has several dimensions [26]. Our study capitalizes on extant literature and argues that (i) the definition suggested by Lee et al. [26] is the most comprehensive; and (ii) sustainable tourist behavior is the tourists' behavior which does not negatively impact the natural environment and/or may even benefit the environment both globally and at the destination.

There is an imperative for responsible and sustainable tourist behavior within the STD context. Tourist consumers have a role to play in creating more positive outcomes and limiting the effects of tourists on the destinations they visit. Hence, STD should guide and assist smart tourists to become co-creators of responsible tourism experiences and sustainable co-managers of tourism resources at the destination. The ultimate goal should be making tourists more responsible to reduce some of the effects of their activities. Tourists' role and experiences mediated by ICTs are decisive in STDs, and consequently they have to be properly managed in order to attain destination aims. The strategic goal of every STD should be to enhance tourists to change their attitude and adopt a more responsible

and sustainable behavior (not only being smart . . .). Consumers use websites, SNSs, mobile phone apps and other digital media for multiple reasons and purposes [9,34]. The ST technologies are the tool/medium of achieving that aim.

The consumption behavior of tourists is known as a travel cycle/tourist journey and has several stages (e.g., information search, planning, booking, visiting and post-consumption evaluation) [35]. According to Kotler et al. [36], no matter whether a purchase is conducted online or offline, consumers will go through some stages in the purchase decision-making process. Tourist purchase decision-making is a sequential process which starts when tourists feel the desire or need for tourism, and which is followed by an information search, an evaluation of that information and finally the purchase decision. The consumption process continues after the purchase, when tourists prepare the trip, and when they experience the destination until they are back home and evaluate their tourism experience. Morrison [9] shares the same opinion, stressing that consumers go through several different stages including planning travel to the destination, while experiencing the destination and after returning home from the destination. Gajdosik [37] indicates that all stages are important in terms of smart technologies.

2.2. Smart Tourists

Since the last decade, tourist behavior has undergone a significant transformation because of consumers' use of ICTs for tourist purposes. The advances in ICTs have evolved very quickly with the rapid emergence of user-generated content (UGC) and social media (SM) [18,19], the rise of smartphones [38–40], context and location-aware services [41] and their impact of on experiences [42,43]. Tourists have become more active, independent, informed and skilled, and have discovered new ways of planning, interacting, evaluating, sharing and recommending. The implications of these changes have shaped a digital tourist [18,34,42]. These cutting-edge technologies, the expansion of the Internet of Things (IoT), ubiquitous connectedness, the big data analytics and the widespread adoption of mobile devices have introduced new factors, such as real-time interaction and ubiquitous connectedness [43,44], new types of technology-mediated social connections or superior levels of context-awareness [38,41].

Based on identified technology-related factors influencing the tourist in the ST context, a study by Femenia-Serra et al. [17] defines the smart tourist as: “The tourist who, by being open to sharing his or her data and making use of smart technologies, interacts dynamically with other stakeholders, co-creating in this way an enhanced and personalized smart experience. This tourist is open to innovations, social and pro-active and finds his or her natural environment in the smart tourism ecosystem and the smart destination.” (p. 125). The same authors indicate that (i) the role of smart tourists is crucial; (ii) their behaviors answer to more profound motivations and values, socioeconomic/psychographic traits, life cycle stage and other variables that need to be addressed in detail; and (iii) the smart tourists' behaviors have become a driving force for the development of STDs. They also call for a broader empirical research to strengthen the validity of their proposed smart tourist conceptualization to further comprehend tourists in the smart paradigm [17].

It is our opinion that the term “smart tourists” is a concept on its making, not just a buzzword. Nowadays tourists have at their service all digital tools provided by ICTs to make every aspect of their life smarter and contribute to the wellbeing of the places they are visiting. ICTs depend on their perception and the use people are making of them, as with any other technology.

This paper argues that the ST paradigm needs smart tourists who behave in a sustainable way; that is, a smart tourist, as the centerpiece of the system, should be simultaneously responsible for and contributing to the sustainable management of tourism at the destination level. In this vein, our study adopts and elaborates on these theoretical backgrounds to investigate and further understand the behavior and contribution of smart tourists with a particular focus on the perceptions and uses of a specific smart technology, namely the SM and SNSs.

2.3. Social Media and Social Networking Sites and Their Impact on Tourist Consumer Behavior

SM/SNSs have created a new, fully interactive, digital environment [18,19,43]. Technology-savvy, experienced and demanding tourists, having their aspirations and requirements for customized and sustainable experiences, could be co-creators of experiences and co-managers of tourism assets/resources [2,45,46]. This subsection outlines the key aspects related to SM/SNSs and their impact on tourist consumer behavior within the smart tourism paradigm.

2.3.1. SM and SNSs

SM provides a platform for social networking, allowing direct interaction and communication with other users. Although SM is represented in a variety of forms, the most popular ones are SNSs (e.g., Twitter, WeChat). SNSs are online communities of people who share interests and activities; they are virtual communities that enable their members to connect and interact with other users on a particular subject and share knowledge and experiences [47]. SM, with its advantages of openness, interactivity, easy access and cost-efficiency, have changed people's daily lives dramatically [48,49]. The popularity of SNSs can be proven by the number of individuals using them. In 2018, an estimated 2.65 billion people were using SM worldwide, a number projected to increase to almost 3.1 billion in 2021 [50]. In 2019, the global social penetration rate reached 45 percent, with East Asia and North America both having the highest penetration rate at 70 percent, followed by Northern Europe at 67 percent [51]. Continued interest in SNS use can be explained by the social and affective benefits users receive from SNSs [47].

SNSs and mobile technology have changed the way people travel, and plays an important role especially in tourism decision-making. These digital tools have become powerful social platforms for online communications, allowing consumers to interact and share their views, as well as collaborate and contribute to developing, extending, evaluating and commenting on tourism experiences [19,38,52–54]. These developments have a considerable impact on consumer behavior and present a host of new challenges as well as opportunities for tourism destinations and suppliers [42,55].

2.3.2. The Impact of SM/SNSs on Tourist Behavior

Since the last decade, an increasing number of people are willing to share their views as consumers and voice their consumption experiences online due to the evolution of SNS platforms [52]. Many tourists have become active participants in co-creating values for the products/services they purchase through their sharing and socializing activities on various SNSs. The latter have undoubtedly transformed tourists from passive consumers to active co-producers of experiences engaging in online reviews, evaluations and recommendations. When using SM/SNSs, tourists become co-designers, co-producers, co-marketers and co-consumers of tourism experiences [19,56,57]. Well-informed, experienced and demanding tourists having their requirements for customized and sustainable experiences could be co-creators of experiences and co-managers of tourism assets/resources.

These changes can be explained in perspective of smart tourism [15,52]. SNS use has emerged as a trend in ST research, attracting the interest of scholars [43,52,58,59]. Some studies attempt to reveal the role and impact of SM/SNSs on aspects of consumer behavior during the tourism experience/travel cycle, that is, before, during and after the trip [56]. Hereafter is an outline of the most recent and valuable, in our humble opinion, studies carried out in this field.

A study by Fotis [56] reveals that SM are used during all stages of the holiday-related decision-making processes. The commercialization of UGC has transformed SNS platforms into global virtual marketplaces. Munar [18] points out that SM/SNSs allow novel forms of value creation. The management and exploitation of this digital capital change power relations, alter value chains and transform tourism encounters and relationships. Tourists who share their experiences on SNSs do it in order to help other tourists in their decisions, create content for websites they like, strengthen social

connections and obtain recognition [52,60]. In the case of more tech-savvy tourists, these also wish to co-live and co-create their experiences with other people through these platforms [45].

The use of ST technologies such as travel-related websites, SNSs and smartphones in tourism experiences has been pervasive and growing [13]. Scholars have shown support for the potential and benefit of smart tourists to interact and co-create experiences involving other stakeholders, paying particular attention to SM/SNSs as the preferred channel. A study by Chung et al. [52] provides an understanding of the relationship between SNS use and satisfaction with tourism experiences by exploring the effect of psychological factors caused by SNS use on tourists' experience. More specifically, it investigates the mediating effects of perceived social support, positive emotions, and commitment. Tourists using SNSs can perceive social support from both friends and other network members, and obtain positive emotions triggering from maintaining relationships with family members and close friends or sharing opinions and ideas with people with similar interests. It was found that SNS use positively affects satisfaction with tourism experiences by mediating positive emotions and commitment and perceived social support, and commitment also positively influences satisfaction with tourism experiences by mediating positive emotions.

A study by Huang et al. [61] examines the mechanism of how tourists use smart technologies to enhance tourism satisfaction. It was found that the attributes of ST technologies promote both explorative and exploitative use, while user's security and privacy concerns have a negative effect. In addition, explorative use has a strong influence on overall tourism experience satisfaction, and exploitative use mainly enhances the transaction satisfaction. A study by Ho and Gebsumbut [62] aimed to explore how the communication elements of SNSs, as a part of ST technologies, enhance tourists' motivation and usage intentions. The findings indicate that the information-seeking motive, entertainment motive, relationship maintenance motive and Internet self-efficacy positively influence the intention to use SNSs for trips.

Based on the above discussion, our study argues that SNS platforms have the potential to enable new kinds of tourism interaction, which improve and extend the physical tourism experience in various ways within the ST context. Therefore, SNSs could contribute to improving sustainable and responsible behavior of tourists, if appropriately used.

Smart tourism (ST) refers to the application of information and communication technologies (ICTs) for developing innovative tools and approaches to improve tourism [11]. The concept of ST has emerged as a result of the rise of ICTs and the need for sustainability [12]. Scholars suggest that ST is an ecosystem creating benefits for the whole system and for each individual. According to the definition by Gretzel et al. [15], one of the principles of STD is the improvement of the efficiency of resource management with an emphasis on sustainability. This opinion is shared by other scholars [13,14]. There is a close link and pairing between STD and sustainable tourism management in the sense that one of the key goals of every STD is to encourage smart tourists to adopt a more responsible behavior. Sustainable management within the ST paradigm requires and involves smart and responsible tourists who are caring and behaving in an environmentally friendly manner [2]. It is the argument of this paper that STD should encourage smart tourists to become co-creators of sustainable tourism experiences and co-managers of tourism resources in the sustainable management of tourism assets and resources at the destination. The ultimate goal should be to make tourists more responsible to reduce some of the effects of their activities.

Therefore, our study suggests a framework for smart tourists' behavior in conjunction with a sustainable and responsible behavior with a specific focus on the appropriate uses of SNSs.

3. Materials and Methods

3.1. Suggested Framework for Sustainable and Responsible Behavior by Smart Tourists

As already indicated, tourists are using smart technologies and SNSs at all stages of their experience, beginning with dreaming and ending with recollecting [9,35]. It is worth noticing that

our study emphasizes that the focus should be on the tourists' preparation and the building of their on-site skills. Elaborating on the previous discussion and incorporating the suggestions by recently published studies, e.g., [2], we could formulate the following framework of sustainable behavior by smart tourists in temporal terms/stages of the travel cycle: before consumption (planning and booking), during (experiencing the destination, on-site) and post-consumption experience (recalling, evaluating, sharing).

Tourists who are supposed to be smart and have a simultaneously responsible and sustainable behavior should be respectful to and willing to explore the destination/place, but also have to adopt the hosts' (local communities) point of view. Consequently, they have to adopt the appropriate attitude and take the following actions:

- (1) **Prior to the Trip—Responsible and Sustainable Preparation:** Being smart and sustainable tourists is facilitated by serious preparation for the trip, mainly reading about and familiarizing themselves with the destination [2,20]. It is about self-education, studying the history of the area and getting to know the destination, as well as getting informed about the customs and practices of the visited country in order to enjoy the travel as much as possible and to avoid accidentally being disrespectful [63]. The getting-ready concept is congruent with the idea of being an intelligent tourist [64]. Tourists need to build an understanding of sites and locations to maximize personal enjoyment while anticipating that there will be a need for respecting local communities and resources [20,65];
- (2) **Travelling and On-site—Sustainable and Responsible Travelers and Guests:** Sustainable and responsible tourists and guests look for positive interaction and immersion [21,66]. Getting there, getting around and leaving the destinations are key phases of the tourists' mobility efforts. The literature points out the value of using the existing smart systems to facilitate easy movement [14,67,68]. By facilitating a positive tourist experience, the responsible and smart tourists reduce their own frustration. This positive state of mind helps them have more cordial interactions with others. Applying this emotional self-monitoring represents a pathway to be civil to others and having good daily interactions [2]. They invest an effort to learn while they are on holidays/visit rather than just seeing the sights. They also immerse themselves in the new culture, looking for rewarding experiences, are considerate of their surroundings, behave as guests in their homeland and try to ensure a positive experience for themselves and for the local populations and lands [21,69]. The immediate savoring and the longer-term enjoyment is facilitated by the tourists immersing themselves in the activities of the site and maximizing their interactions with all those around them; this is the broad sense of co-creation [70]. The savoring and co-creation concepts can be linked to the benefits of slow and responsible tourism, an approach which stresses living more like a local, appreciating the local life and providing local economic benefits by behaving in a sustainable manner [2,71,72].
- (3) **Post-Consumption—Back Home:** When tourists are on their way back from the destination or have returned home, they usually take two actions: (i) evaluate the tourism experience against their expectations and (ii) share and exchange their tourism experience [9,35,73]. Tourists derive great enjoyment from this last stage of the travel cycle/tourist journey, but last in this case is not the least important. Based just upon the huge number of travel blogs and holiday photographs posted on SNSs, many consumers like to remember and share their tourism experiences [73,74]. With the advent of SNSs, it has become much more convenient for consumers to write about their pleasant and bad tourism experiences, particularly on virtual community platforms. A virtual tourism community makes it easier for individuals to obtain information, maintain connections, develop relationships and eventually make tourism-related decisions [36]. In addition to the review sites, virtual communities are gradually becoming incredibly influential in tourism, as consumers increasingly trust their peers better than marketing messages [9,35,55].

Table 2 summarizes the above suggestions and forms up a framework for sustainable and responsible behavior by smart tourists. This framework focuses on specific dimensions of sustainability and responsible behavior.

Table 2. Sustainable and responsible behavior by smart tourists.

Stage of Travel Cycle	Consumer Behavior in Terms of Actions	Sustainable and Responsible Tourists: Set of Anticipatory Activities and Actual Behaviors
Pre-consumption	Searching and planning	Building an understanding, self-educating, getting ready:
	Expectations	- Read about the history of the area and get to know the destination;
	Buying (shopping and booking)	- Get informed about the customs and practices of the country in order to enjoy the travel as much as possible.
	Anticipation	
	Preparation	
Consumption (on-site)	Experiencing	Travelling, visiting and enjoying:
	Enjoying	- Make an effort to learn while engaging in tourism rather than just seeing the sights;
	Searching	- Get insights of the local culture, social context and nutritional habits;
	Short-term decisions	- Immerse themselves in the new culture;
	On-site purchase	- Look for rewarding experiences;
	On-site evaluation	- Be considerate of their surroundings;
Post-consumption (back home)	Evaluation, remembering and sharing their experiences, mainly posting reviews and recommendations on social networking sites (SNSs)	- Try to ensure a positive experience for themselves and the local populations and lands.
		Recollecting, sharing and recommending:
		- Share their experience;
		- Make suggestions and recommendations;
		- Influence other tourists to behave in responsible and sustainable manner;
		- Loyalty building and Advocating.

Sources: Authors' own elaboration and suggestion, based on [2,9,21–23,32,64].

In sum, smart tourists having a responsible behavior share the positive and negative aspects of their experience, make suggestions and recommendations and do their best to influence other tourists to behave in a sustainable and responsible manner. By being a responsible tourist and sustainable guest, a smart technology user could contribute to substantially reduce the environmental and social impacts of tourism [2]. In all three stages, studies reveal that tourists are influenced by and have the abilities and skills to make smart use of technology [13]. By doing so, tourists should manage their time and reduce their impacts. Online live streams of queues, indicative graphics of the peak visit times at sites, mobile guides and recommender systems and access to the services of a STD can shape the tourists' day-to-day activity planning. In this regard, the use of mobile phone technology is a very useful tool, and an excellent and very efficient channel to make a contribution is the SNSs.

The next step is to postulate the research hypotheses based on the suggested framework.

Research Framework and Hypotheses

This study argues that a STD should be at the same time sustainable and environmentally friendly; this is the ultimate goal. The behavior of smart tourists could and should be changed if they are keen to make a contribution in terms of sustainability by adopting a responsible and sustainable behavior (RSB). An efficient tool is the SNSs; therefore, how should they use this ST technology to perform the task? Our study advances the following research hypotheses.

Smart tourists should perform a set of anticipatory activities before they visit a destination, i.e., self-education, building an understanding and getting ready for their trip. They should read about the history of the area and get to know the destination, and get informed about the customs and practices of the country in order to enjoy the travel as much as possible and to avoid being disrespectful. SNSs

should be used properly with the aim of self-educating, building an understanding and getting ready for the trip/holidays.

It can be claimed that this ST technology can be influential in adopting a sustainable and responsible behavior in performing a set of anticipatory acts [1,2,32,37,52]. Hence, this study states the following hypothesis:

Hypothesis 1. *The SNSs positively influence the before-consumption (BC) stage of the travel cycle by providing updated and reliable information aiming at adopting a sustainable and responsible behavior (SRB).*

Likewise, smart tourists should adopt a sustainable and responsible behavior with the aim of assisting STDs to achieve their aim and to make a contribution by minimizing the impacts of their activities on the destination they visit. Therefore, smart tourists should use SNSs adequately with the aim of learning and not just seeing; get insights of the local culture and social context; immerse themselves in the new culture; look for rewarding experiences; behave as guests and respect their hosts; and try to ensure a mutually beneficial experience for themselves and for the local communities [1,2,32].

It can be claimed that this ST technology can be influential in experiencing, enjoying, searching and making short-term decisions, on-site buying and on-site evaluation in a sustainable and responsible manner. Hence, this study advances the following hypothesis:

Hypothesis 2. *The SNSs positively influence the during-consumption/on-site (DC) stage of the travel cycle by properly assisting smart tourists in travelling, visiting and enjoying the destination in a sustainable manner.*

Smart tourists also have to adopt a sustainable and responsible behavior with the aim to help STD in addressing problems and issues of environmental degradation, changing negative aspects and improving their environmental performance. They should help other tourists to adopt the following behaviors: evaluating and sharing their experience (positive and negative aspects), making suggestions and recommendations, influencing other tourists to behave in similar responsible manner and advocating for good practices [1,2,32,37].

It could be argued that SNSs can be influential in assisting smart tourists and STDs in identifying and addressing environmental issues and minimizing the impact of their acts. Thus, this study posits the following hypothesis:

Hypothesis 3. *The SNSs positively influence the post-consumption experience (PC) stage of the travel cycle by providing adequate tools and services to smart tourists to evaluate their experience and share it with their peers and friends, mainly posting reviews, photos and recommendations on SNSs, with the aim of advocating for good practices and influencing other tourists to behave in a similar responsible manner.*

The research framework/model is composed based on the above three hypotheses (Figure 1). In the research framework, the rule of arrows direction is from predictor construct to dependent construct.

In order to test the above three hypotheses, an empirical study has been carried out to explore the perception about and uses of SNSs by Chinese tourists in making a contribution to sustainable and responsible behavior.

3.2. Empirical Study: Research Design and Methodology

As already highlighted, the study's aim was to explore the contribution of SNSs to improving the sustainable and responsible behavior of smart tourists. The dependent variable is the Sustainable and Responsible Behavior (SRB). The independent variables are the influence of SNSs at the three stages of the travel life cycle (before-, during- and post-consumption).

To achieve this aim, three hypotheses were postulated and a survey was conducted to empirically test and validate the suggested framework within the Chinese context.

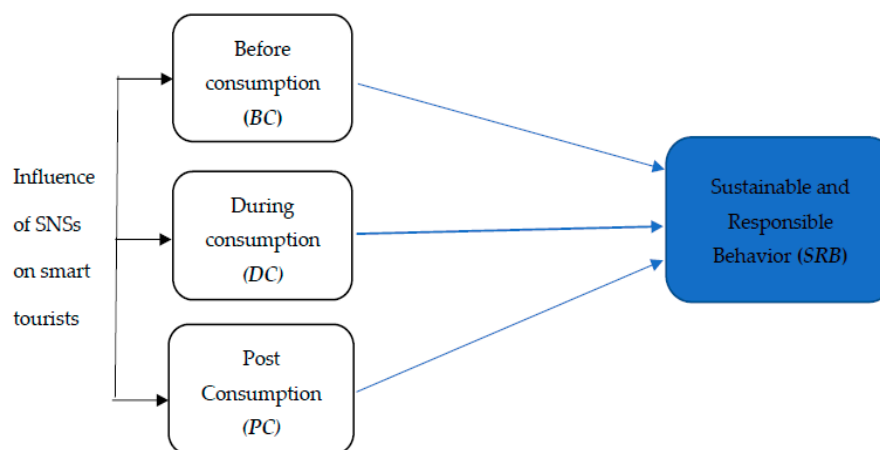


Figure 1. Research model/framework.

This study opted to explore this issue by investigating the perceptions and attitudes of Chinese tourist consumers about this issue. Why China? The Chinese tourism market is the biggest in the world in terms of domestic and outbound tourism flows. Business reports (see, for instance, [75]) highlight that Chinese outbound tourism has become the biggest tourist market in the world in terms of trips and expenditures. In 2017, Chinese outbound tourists took approximately 131 million trips. The considerable increase of Chinese outbound and domestic tourists has drawn much attention to the tourism industry. Thus, the outbound and domestic tourism market is growing, tourist expenditures are increasing, and tourists' preferences and behaviors are evolving. Digital platforms have also been massively adopted by Chinese tourists in the three stages of the travel cycle. On the other hand, in contemporary China, ST is used in destination construction and attraction management for several purposes [12,76]. Chinese tourists are more inclined to use digital channels (mobile apps and SNSs) to gather information and make bookings for tourism services and activities [75]. China has the world's largest and most active number of SM users, and the most Internet users, at 634 million (45 percent internet penetration rate, 50 percent of the world's online users). Chinese spend 25 h online per week, increasingly connected via their mobile devices, and 70 percent of the bookings are made online [73–75]. Therefore, this study has opted for China as the most appropriate area to conduct the empirical study.

3.2.1. Instrument Development

An exploratory quantitative research was carried out, using the technique of online survey. The first step was to elaborate the research instrument (questionnaire, see Supplementary Materials), which encompassed five sections: (i) one section on demographics (with seven questions); (ii) two sections on concepts/terms (with two questions) and the perception about and uses of SNSs during the travel life cycle (with five questions); (iii) three sections about the research constructs. The research constructs and items were measured as follows. A total of 14 items were measured on a 5-point Likert scale by rating from not all important/useful (1) to very important/useful (5), and no influence at all (1) to very strong influence (5). Items used to measure the consumers' perceptions were derived from the literature review and the suggested framework of SRB by smart tourist. Furthermore, to sustain the originality of the measurements, the questionnaire was designed in the English language and then translated into Chinese. The translated questionnaire was checked by two scholars who have experience in empirical research in order to verify the mutual understanding between the English and Chinese languages. A pilot test was performed with 20 persons to assure that the questions were clear and unambiguous. Following the pilot test, the questions were revised and improved.

3.2.2. Data Collection

The study collected data using an online survey research. All respondents were selected by using a random sampling method. Sampling procedures started with posting links to the online questionnaire on popular forums and SNSs among Chinese consumers for two weeks. All respondents were informed about the general purpose of the study in advance and assured that their answers are voluntary and anonymous. Given this sampling strategy is free and enables scholars to target and investigate this specific online population using SNSs, this sample could be regarded as suitable for the research's aim. The SNSs investigated were the most popular among Chinese consumers, namely: Sina Weibo, WeChat, QQ/Qzone, Xiecheng, Douyin, Tieba, Zhihu and Xiaohongshu.

In total we have collected 504 questionnaires from SNSs users aged 18 years or older during the period from December 2019 to January 2020. Such a sample size for this kind of study is considered as suitable size, providing reliability and validity [77]. The collection of data was followed by a statistical analysis on SPSS Version 25.0 (descriptive and regression analysis). Table 3 shows a summary of the respondents' profile.

Table 3. Respondents' profile ($n = 504$).

Characteristics	Frequency (n)	Percentage (%)
Gender		
Male	179	35.5
Female	325	64.5
Age group		
18 to 25	339	67.3
26 to 30	104	20.5
31 to 35	27	5.4
36 to 45	21	4.2
46 to 55	13	2.6
56 to 65	0	0
65+	0	0
Educational level		
High school	21	4.1
Undergraduate student	347	68.9
Postgraduate student	115	22.9
Other	21	4.1
Occupation		
Student	262	52.0
Admin/Office employee	96	19.1
Artisan/Technician	36	7.1
Services	37	7.2
Civil servant	21	4.2
Businessman	23	4.6
Other	29	5.8
Tourism experiences (in numbers)		
1 to 3	97	19.3
4 to 6	172	34.1
7 to 10	131	26.0
11 to 20	76	15.1
21+	28	5.5
Using SNSs for:		
1 to 11 months	132	26.2
1 year	76	15.1
2 years	66	13.1
3 years	48	9.5
Longer than 3 years	182	36.1

The results are presented and discussed in the following section.

4. Data Analysis: Results and Discussion

A regression analysis is a popular means to undertake a correlational analysis [78]. This analysis was used to determine the role of the three stages/phases (constructs) in predicting the adoption of SRB by smart tourists. SPSS 25.0 was used to conduct a confirmatory procedure to examine the interrelationships in the measure and an exploratory factor analysis (EFA). All of the items of each construct had to be inter-correlated and tested for factor analysis.

Reliability and Validity Testing

A Cronbach's alpha coefficient and the composite construct reliability were used to check the measuring reliability. Table 4 presents the results, revealing that the Cronbach's alpha of the constructs varies between 0.806 to 0.892, which is higher than 0.700. At the same time, the composite reliability of the constructs was from 0.8176 to 0.8928, which was higher than the threshold for indicating reliability as suggested by [78]. Therefore, the measurement scale of each construct can be considered as having adequate internal consistency [77,78].

Table 4. Reliability and validity testing.

Construct	Items	Mean	Standard Deviation	Standard Loading	t-Test	Composite Reliability	Average Variance Extracted (AVE)	Cronbach's Alpha
Before-consumption	1.1 Understand	3.45	0.944	0.819	−1.684	0.8334	0.6253	0.828
	1.2 Self-educate	3.64	0.948	0.795	−6.218			
	1.3 Get ready	4.06	0.843	0.757	9.257			
During-consumption	2.1 Learn	3.67	0.944	0.804	−1.269	0.8928	0.6253	0.892
	2.2 Immerse	3.58	0.961	0.819	−3.193			
	2.3 Rewarding experience	3.93	0.851	0.725	5.450			
	2.4 Mutually beneficial experience	3.78	0.912	0.784	1.521			
	2.5 Behave properly as guests	3.66	0.921	0.818	−1.397			
Post-consumption	3.1 Evaluate/share experience	3.84	0.806	0.735	5.218	0.8672	0.5667	0.876
	3.2 Influence other consumers	3.69	0.820	0.746	−2.195			
	3.3 Participate in viral communities	3.56	0.905	0.788	−4.050			
	3.4 Make suggestions	3.70	0.971	0.723	1.054			
	3.5 Advocate	3.48	0.941	0.770	1.073			
Sustainable and responsible behavior	4.1 Before-consumption	4.04	0.781	0.740	4.128	0.8176	0.6001	0.806
	4.2 During-consumption	3.90	0.656	0.844	−0.109			
	4.3 Post-consumption	3.78	0.733	0.735	−3.624			

The convergent validity was tested by assessing the contribution of measurement items to constructs. The convergent validity was found to be suitable, as all of the items' factor loadings were higher than 0.725 and were significant at 0.001. The average variance extracted (AVE) of all constructs varied between 0.566 and 0.625, higher than the minimum value of 0.500. The results indicate that a big portion of the variance was explained by the constructs [78]. Therefore, there is enough convergent validity of the measurements.

The results of the EFA are presented in Table 5. The factor load of each measurement index is between 0.620 and 0.823, all of which were higher than the standard of 0.5, with good internal consistency and high reliability [78]. Therefore, the three measurement constructs were proven reliable and valid.

Based on these results, the three hypotheses are supported and can be accepted. In order to test the research model, the relationship between the constructs must be significant. The Pearson product–moment correlation coefficient (r) reveals the strength and the direction of the relationships. The Pearson product–moment correlation was performed to determine the inter-relationships between the constructs (see Table 6). As can be seen, there is a significantly positive correlation between the constructs. The Pearson product–moment correlation coefficient (r) was between 0.594 and 0.871, $n = 504$ ($p \leq 0.01$), with a strong correlation (large effect size). The significance of the data was supported as $r = 0.728$ and $n = 504$ ($p \leq 0.01$). As all the relationships between the factors were significant, the feasibility/possibility of the RSB model can be explored.

Table 5. Exploratory factor analysis.

Items	Constructs	BC	DC	PC
1.1 Understand		0.777		
1.2 Self-educate		0.759		
1.3 Get ready		0.675		
2.1 Learn			0.784	
2.2 Immerse			0.813	
2.3 Rewarding experience			0.620	
2.4 Mutually beneficial experience			0.771	
2.5 Behave properly as guests			0.778	
3.1 Evaluate/share experience				0.642
3.2 Influence others				0.719
3.3 Participate in viral communities				0.823
3.4 Make suggestions				0.654
3.5 Advocate				0.780

Extraction method: principal component analysis. Rotation method: Varimax with Kaiser normalization. Rotation converged in 5 iterations.

Table 6. Pearson correlation coefficient.

	BC	DC	PC	RSB
X1: BC	1	0.856 **	0.813 **	0.594 **
X2: DC	0.856 **	1	0.871 **	0.619 **
X3: PC	0.813 **	0.871 **	1	0.609 **
Y: SRB	0.594 **	0.619 **	0.609 **	1

** Correlation is significant at the 0.01 level/Sig. (2-tailed). SRB: sustainable and responsible behavior.

The statistical value of the Durbin–Watson coefficient was 1.552, which was within the required range of 1.00–2.00. The three factors (the influence of SNSs on the three stages/phases of travel cycle) were significantly correlated with the smart tourists' adoption of SRB. A simple linear regression was conducted between the influence of SNSs at the three stages on smart tourists' SRB, X1 (= 0.323, $t = 5.191$, Sig. = 0.000), X2 (= 0.285, $t = 3.855$, Sig. = 0.000), X3 (= 0.150, $t = 2.291$, Sig. = 0.022), which explained the variance of 51.9% of influence. The model fits well. According to the results shown in Table 7, the dependent variable (SRB) is affected and determined by all three stages of the travel cycle; the most influential are BC (before-consumption) and DC (during-consumption experience); at these two stages the influence of SNSs on adopting a sustainable and responsible behavior is strong, while at the PC (post-consumption) stage this influence is also significant but weaker. The corresponding Sig. value of F is 0.000, which has a significant influence.

The above results support the research model/framework that posits that scores on the three stages/phases of the travel cycle can serve in the prediction model. The smart technology tools of SNSs are influential in adopting a sustainable and responsible behavior at all three stages of the travel cycle/tourist experience.

This study has suggested a research model to investigate the influence of a smart technology (the SNSs) on tourist consumers to adopt a sustainable and responsible behavior. This influence has been approached and analyzed in terms of travel cycle stages—that is, before, during and after the tourist experience/journey. It was supposed that tourists should perform a series of expected acts using SNSs through the whole travel cycle. Based on the concept of the travel cycle/tourist journey, our study postulated three hypotheses related to the positive influence that SNSs could have on smart tourists at the three stages of the tourism consumption experience. Then, it analyzed the relationship between them and the sustainable and responsible behavior of smart tourists. All three hypotheses

were supported by the findings. The relationships were significantly positively related, indicating that the SRB of smart tourists could be influenced by SNSs.

There is only one similar study to which we could compare and contrast this study's findings. A study by Gajdosik [37] indicated that the use of smart technologies is significant before (searching and booking) and during (activities during the stay in the destination) the tourists' journey. Our study's findings indicate that all three stages (and the post-consumption experience) are equally significant. Furthermore, it was found that all stages are significant, confirming that this ST technology could be influential in adopting a sustainable and responsible behavior by smart tourists, beneficial to the appropriate management of tourism destinations, as suggested by previous studies [2,9,23,31,37,52]. By having a responsible behavior, smart tourists as the main actors of the ST paradigm could make a significant contribution to sustainable management of tourism resources and assets.

Table 7. Model and summary of the regression analysis results.

	<i>R</i> *	<i>R</i> ² *	ΔR^2 *	Std. Error of the Estimate	Durbin–Watson
Model	0.720 ^a	0.519	0.516	0.626	1.552

Predictors (independent variables): *PC*, *BC*, *DC*, (Dependent Variable: *RSB*). * *R*, correlation coefficient; *R*², coefficient of determination; ΔR^2 , adjusted coefficient of determination.

Model	Unstandardized Coefficients			Standard Regression Coefficient		<i>t</i>	Sig.
	<i>B</i>	SEB (Standard Error of <i>B</i>)		β			
1	(Constant)	0.162	0.147			1.105	0.270
	BC	0.369	0.071	0.323		5.191	0.000
	DC	0.334	0.087	0.285		3.855	0.000
	PC	0.185	0.081	0.150		2.291	0.022

Dependent variable: *SRB*.

5. Conclusions, Implications and Future Research

Nowadays, tourism destinations and suppliers/businesses are facing a series of challenges, many of which originate from consumers' new requirements and cutting-edge/smart technologies. Markets are consumer- and technology-driven. Consumers use smart technologies, such as digital platforms, mobile devices and SNSs, in a wide spectrum of tourism contexts. The combination of mobile devices, Big Data and AI is set to revolutionize the consumer experience. It is believed that smart technologies have the potential and provide opportunities to influence the behavior of tourists. Against this background, the purpose of this study was to explore the influence and contribution of SNSs on tourist consumers to adopt a sustainable and responsible behavior within the context of ST.

5.1. Main Conclusions: Theoretical Contribution and Managerial Implications

Firstly, this study has suggested a research framework to address the study's aim. Based on the related extant literature, this study postulated three stages of the tourism experience/travel cycle—before-consumption (BC), during-consumption experience (DC) and post-consumption (PC)—at which smart tourists could be influenced by the use of SNSs to adopt a sustainable and responsible behavior (SRB). Secondly, the suggested research model was tested and empirically investigated in the Chinese context, exploring the perceptions and opinions of Chinese smart tourists about the determining influence of SNSs. The results support the development of a model of adopting SRB with all three stages influencing the consumers' willingness to do so.

The study's results support the development of a research framework of SNSs' influence on the SRB of tourist consumers. It was found that the most significant influence was at the two first stages, before and during the experience of consumption, without underestimating the importance of the third phase (post-consumption). The study's findings are valuable in the sense that they: (i) make a theoretical contribution to the field of smart tourism and (ii) have management implications.

Firstly, this study contributes to the body of knowledge from a theoretical perspective. It constitutes the first conceptual approach and empirical research into the tourists' responsible behavior, as it allows us to better comprehend tourists in the smart paradigm. It makes a theoretical contribution in that it addresses the existing knowledge gap by suggesting the appropriate uses of a smart technology (SNSs) in adopting a more sustainable and responsible behavior. The suggested framework encompasses the three stages/phases of travel cycle/tourist journey and provides a comprehensive approach to adequate behavior by smart tourists willing to make a contribution to sustainable management of a tourism destination's resources. The study supports the incorporation of all three stages influencing the consumers' behavior in the context of a SM paradigm, contributing to the body of knowledge.

Secondly, it is believed that the study's findings provide management implications for industry practitioners. Currently, tourist consumers have at their disposal a range of smart tools for tourism purposes at all stages of their consumption experience. Some of these tools are more efficient and effective in guiding, assisting and engaging tourists. Management organizations of STDs could and should use the interactive channels/platforms for this purpose; and SNSs are the most appropriate and influential channels due to their features and functions. Therefore, management organizations of STDs should adopt the appropriate approach (interactive communication/engaging discussions) and implement the appropriate strategies to liaise with their smart visitors to make them co-designers of sustainable experiences and responsible co-managers of tourism assets. It is worth noticing that smart technologies and SNSs are not a panacea. This article simply suggests that the collaboration and engagement with smart tourists, and communication of sustainable tourism management practices are more effective when interactive channels, such as SNSs, are adopted adequately and used properly.

The study's findings are also of practical importance to managers and marketers of smart tourism suppliers, in the sense that they indicate the appropriate interaction and engagement with and support for their guests/customers. In this regard, the marketing communications should have the following features: (i) they must be integrated and suitable well ahead of the actual tourist experience, forming the adequate expectations (avoiding creating high expectations); (ii) aiming at creating the correct responsible mindset and positive psychology; (iii) rendering their customers responsible and sustainable guests having a role in minimizing their negative impact and in positively influencing the sustainable management of assets; and (iv) making clear that responsible and sustainable behavior and management involve experiences of higher quality, which are mutually beneficial to hosts and guests.

The smart technologies, if properly used, are the appropriate platforms to co-design, co-manage and co-market responsible and sustainable experiences having a positive impact on local/hosting communities. This study does not argue that SNSs alone contribute to responsible and sustainable tourism management; nevertheless, they could act as catalysts to empower tourists and locals to shake the tourism industry to manage the tourism resources and assets them in a smart, sustainable and responsible manner. The SNSs have a role to play in achieving this aim.

Smart tourists should not be merely users of smart technologies for their enjoyment and sake. They should also have a sustainable and responsible behavior, by performing a set of precise acts through the whole travel cycle/tourist journey. By adopting such a behavior and properly using the smart technologies, they could contribute to the more sustainable management of tourism resources and to better tourist experience opportunities that are mutually beneficial to them and to the wellbeing of local populations, and ultimately support the overall competitive sustainability of tourism destinations and businesses, which is the strategic aim of the ST paradigm/framework.

5.2. Study's Limitations and Suggestions for Future Research

This study contributes to our knowledge of ST in general and smart tourists in particular by exploring the appropriate uses of SNS platforms. Nevertheless, it entails some limitations that must be acknowledged. Firstly, as for the research design, this study was limited to one smart technology, the SNS platforms. These are the most popular and extensively used by tourists; however, they are just one of the smart technology tools. The development and testing of the influence of smart technology on

the responsible and sustainable behavior of smart tourists was limited to SNSs; it could be reinforced by investigating more smart technologies. Thus, the study's results could be generalized.

Secondly, the context of empirical investigation: the research framework was empirically tested in the Chinese context. China is the biggest market in terms of SNSs usage and of domestic and outbound tourism; however, the country has some specificities and particularities. The SNSs investigated were the most popular among Chinese consumers, namely: Sina Weibo, WeChat, QQ/Qzone, Xiecheng, Douyin, Tieba, Zhihu and Xiaohongshu. These SN platforms were studied as a set, without exploring the differences between them. Comparative analysis should investigate the similarities and differences in the perception and usage of these SNSs and other SN platforms popular in other countries (Facebook, Twitter, etc.). Other empirical studies could be conducted in other countries/contexts. Further studies may also adopt and use the same measurement scale but in other countries, to allow a comparative analysis and make more robust the findings of the present study. Comparison with other contexts should be considered to explore and identify similarities and differences.

Thirdly, the sampling techniques (non-probability): these techniques may make the results vulnerable. The profile of the respondents/sample does not allow generalizing the study's findings. More than the half of the respondents (52 percent) are students, which are actually the current and future smart tourists; nevertheless, they constitute only a sub-group of the population. Another interesting avenue for future research would be to focus on the constructs and incorporate and assess some additional variables, such mediating factors (e.g., engagement, communication, interaction, support), with the aim to improve our understanding about the smart tourists' behavioral intentions. These suggestions constitute interesting avenues for future research and empirical investigations in tourism, travel and hospitality contexts.

Supplementary Materials: The following are available online at <http://www.mdpi.com/2071-1050/12/4/1470/s1>, Research Instrument – Questionnaire.

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