
Social Networking Sites' Influence on Consumer Decision-making Within the Context of Smart Tourism

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Abstract: The spread and extensive use of interactive platforms (Web2.0) have transformed the consumers' behavior. The influence of social networking sites (SNSs) on consumers' decision-making is on the radar of a multitude of industries and tourism could not be an exception. An in-depth understanding and insights in the consumer decision-making are valuable and critical in the field of tourism and travel that are consumer-driven and technology dominated industries. This article reports on a research project whose main aim was to explore the influence of social networks on consumer decision-making within the context of smart tourism, based on the travel life cycle or customer journey model. Data were collected in July to August 2022 using an online survey and the research model was tested with 630 respondents all SNS' users within the Chinese context. Findings revealed that the greater influence of SNSs is at the second stage (i.e., on site/at destination) without overlooking the other stages (that are the stages before and after trip). The study's results also suggested a ranking of influence that SNSs have on the investigated nine digital activities (by descending order): making on-site decisions, information searching, evaluating and sharing (online reviews), on-site evaluation, recommending and advocating tourism destinations and suppliers, recollecting/remembering, experiencing destination, preparing, booking and shopping. The article is completed by making suggestions for scholars, the tourism marketers, and those working with SNSs and other smart technologies.

Keywords: Tourist Consumers, Decision-Making, Digital Activities, Social Networks, Smart Tourism, Travel Life Cycle

1. Introduction

The knowledge and understanding of factors that influence the decision-making by consumers are more important and critical in the field of tourism and travel that are consumer- and technology-driven industries [1, 2]. The technological advances resulted in a radical transformation of tourists' consumer behaviour and decision-making. New cutting-edge technologies formed a digital and interactive cyberspace and environment, fully convenient and friendly user for consumers to create relationships, to have efficient access information, to easily perform transactions, and to engage and closely interact online with tourism suppliers [3, 4]. It is therefore useful to explore the factors influencing the tourists' decision-making, a process which became more complex and challenging within the context

of a digitalized and globalized business environment.

Social media (SM) play a critical role in tourism-related industries as they have changed the way that consumers are making their decisions online [5]. Nowadays SM and social networking sites (SNSs) are a part of our everyday life and a kind of lifestyle. Their impressive adoption and extensive use are generally recognized and documented by business reports and intelligence [6, 7]. In 2019, an estimated 2.95 billion people were using SM worldwide, a number projected to increase to almost 3.43 billion in 2023 [8]. SNS penetration is constantly increasing worldwide and as of January 2020 stood at 49 percent [8]. In fact, most of SM's global growth is driven by the increasing usage of mobile smart devices [7, 9].

Statistics related to SM/SNSs illustrate the vital influence of these digital platforms in the field of tourism-related industries and highlight the importance of SM/SNSs to tourism and travel

suppliers [6, 8]. According to various reports and studies (see, for instance, [6, 9]), consumers of all age groups use SM/SNSs platforms for all digital activities through the travel life cycle/customer journey, such as: travel inspiration and information search, making travel plans and performing purchases online (based on consumers' reviews and recommendations), engaging with their peers and friends' tourist posts; sharing photos and information while traveling; and sharing experiences and reviews online (posting experience reviews and sharing travel digital content on SM after their trip). Hence, SM/SNSs have affected these consumers' activities and have fundamentally changed the tourism industry [1, 2]. SM will continue to significantly influence tourists' decision-making and tourism industry itself [7, 10, 11].

Therefore, it can be argued that SM/SNSs have really transformed the tourism-related industries, as they play a significant role in consumers' travel plans. Tourism suppliers have to better apprehend the consumers/customers and elaborate on and adapt their marketing strategy in order to evolve with the new cutting-edge technologies. Literature has explored the topic of SM/SNSs and provided some insights for understanding SM in tourism and travel, mainly how tourists are creating UGC and using SM [2, 12]. However, rare are the empirical studies focusing on the influence of SNSs on tourists' decisions through the whole tourism experience, the travel life cycle. The influence of SM on consumers' decision-making remains vague [13] and under-searched within the smart tourism framework [14]. Our study attempts to address this knowledge gap. This study investigates the role and influence of SNSs on the tourists' decision-making with the context of smart tourism, a management paradigm resulted as an outcome of cutting-edge technologies used for strategic and operational business purposes.

The study's research question is stated as follows: 'How the SNSs are influencing the decisions made by tourist consumers within the context of smart tourism?' To address this question, this paper starts with a review of literature focusing on the three component elements of the research aim and question, namely: consumer decision-making, SNSs and smart tourism paradigm. This review is followed by the development of research hypotheses and framework which was tested and validated by an empirical study within the Chinese context. The main elements and results of this empirical investigation are presented and discussed in Section 4. The study's contribution is a better knowledge about and insights on the behaviour of tourist consumers for industry practitioners, managers and marketers of tourism companies and destinations.

2. Literature Review

2.1. Consumer Decision-Making

The topic of decision-making has received considerable attention in marketing and tourism research [15]. Cohen *et al.* [16] indicate that understanding consumer decision-making is a cornerstone of marketing strategy. From a marketing perspective, literature suggests that two are the main issues

related to this research field, namely the models and the process [16, 17]. The focus of our study is on the process and the influencing factors. Developments in this research field indicate that tourist decisions follow a temporal, dynamic, successive, and multistage contingent decision process [16]. Decrop [17] stresses that decision-making is much more than a formalized multistage process. The process models suggest an evolution of plans and decisions through different stages. Therefore, the consumer decision-making process includes five stages/phases [15, 17, 19]: Need recognition, Information search, Evaluation/assessment of alternatives, Selection and Purchase decision and Post-purchase evaluation. Over this process the consumer behaviour and consumption are influenced by a series of internal and external factors [18].

Literature suggests that technology is one of the most important external influences on consumption decisions [5, 16]. Tourists use technology for many consumption-related tasks such as searching for information, buying, sharing opinions and experiences and for entertainment purposes. Therefore, effective tourism marketing requires a thorough understanding of how technology is developing and consequently shaping tourist consumer behaviour. At present, tourists are able to access travel information and share tourism experiences through a variety of technology-mediated outlets of suppliers and destinations [2, 11]. Tourists frequently rely on SM and SNSs to provide information about a supplier or destination as a decision support tool to make adequate decisions in the process of planning their holiday [20]. In this digital environment, tourists share their travel experiences, emotions, special moments, and opinions about all tourist services, all influencing the choices of other consumers. An emerging research strand evaluates how various SM are influencing tourists' consumption behavior [12].

Furthermore, the ever-growing access to and usage of mobile technologies and other smart and enabling technologies impact consumers' decision-making. This issue has attracted scholars' interest and studies are conducted with a focus on examining the impact of these technologies on tourism experiences [14]. The study by Stylos [21] demonstrates the importance of technological advancements in shaping tourist decision-making as the technological advancements play a structural role in tourist decision-making processes, with digital technologies and cyber-physical systems becoming extensions of a tourist's self. He underlines the need for new theoretical frameworks that would illustrate the role of cognitive technologies, i.e. artificial intelligence (AI) applications, in tourist decision-making, and suggesting a paradigm shift, as new forms of AI will complement human intelligence. It is therefore believed that tourism suppliers and destinations can benefit from a better understanding of how SM/SNSs are affecting the way they are perceived by consumers, and how such perceptions influence tourists' decisions.

2.2. Social Media and Social Networking Sites

SM encompass a variety of web-based tools and take many different forms. Some of the most popular tools and platforms are social networks, blogs and microblogs, media sharing sites,

and review sites [2, 22]. These Web 2.0 platforms enable consumers to create, publish, and comment on digitized content worldwide, and to develop online communities and networks [11]. Tourism SM are a heterogeneous and fast-changing virtual space consisting of technological tools and platforms that have tourism as their core value (e.g. TripAdvisor), as well as tourism-related content created by tourists and suppliers on generic sites (e.g. Facebook). The growing availability and popularity of these platforms have transformed the way people communicate, make decisions, socialize, learn, entertain themselves, interact with each other, or even do their shopping [22]. Munar [11] suggests that SM allow the commercialization of UGC that transforms SM platforms into global virtual marketplaces.

SM have penetrated all aspects of tourism and have led to fundamental changes in the way tourism experiences are planned, marketed, promoted, consumed and assessed [5]. Given the experiential nature of tourism, the information created by other consumers is even more important and influential in tourists' decision-making processes. Content and opinions shared on SM by other tourists can shape, guide and redirect initial and final decisions [22]. Clearly SM and SNSs have developed into one of the most important influences on tourism consumption behaviour, as they are used at all stages of customer journey [16, 23].

A report released by Booking.com, analysing the influence of SM on consumers' alternative accommodation choices, revealed that many of consumers' booking decisions are made in relation to how tourists perceive themselves online [24]. The global study was conducted in August 2018, surveying 21,500 people worldwide, from 30 countries (Booking.com in [24]). Tourism is one of the many industries affected by the User-Generated Content (UGC), and it has often been singled out as a deciding factor behind any tourism-related decision by consumers. SNSs are the primary channel used for disseminating UGC [1].

The influence of SM on consumer behaviour has attracted the academic research interest. A comprehensive view of role and impact of SM on the whole holiday travel planning process was presented by the study of [23]. It was found that: (i) there is a strong relationship between perceived level of influence from SM and decision-making; (ii) SM are predominantly used for experience sharing [23]. A stream of research examines the impact of these technologies on tourist decision-making and the sharing of tourism experiences [20]. Consumer-centred research approaches are also often adopted in other studies analysing tourists' behaviour and motivation on SM platforms [12]. The study by Varkaris & Neuhofer [13] explores how SM influence consumer behaviour during hotel decision-making by focusing on the 'evaluation stage'. The findings reveal (i) the change of the way consumers search hotel information, and (ii) the refined dimensions of SM and their influence on the 'evaluation stage' of the hotel decision journey.

Main points that we could point out are as follows. The impact and transformative power of SM are undeniable. SM have the potential of improving and facilitating customer experience in all stages of decision-making. The influence of

Web2.0 platforms on tourism decision-making is mainly due to a series of factors: real-time efficiency, two-way interactivity, high capacity, convenience, safety and friendly use, opinion consulting and input gathering from friends and peers [25]. All these factors provide effective support for tourists' decisions.

The domain of SM constitutes a fast-evolving research field. Nowadays, consumers' connections on and relationship to digital platforms and smart devices now transcend every aspect of the decision-making process, before, during and after the trip and holiday. Decision-making increasingly unfolds on-site, as consumers make dynamic decisions quickly with the help of social and mobile platforms. It is believed that UGC media, such as social networking, blogging, live-streaming and pictures sharing, are expected to play an even more important role in supporting tourism-related activities [26]. Smart technologies and services have been developed very fast, with a significant impact on tourism and considerable influence on consumer experiences. This is the advent of smart tourism phenomenon/paradigm [27]. Social networking and virtual world are merging and offer engaging opportunities for communication, sharing and online experiences.

Previous studies; see, for instance, [5, 13, 20], for more theoretical and empirical research in order to explore and understand the SNSs' impact on tourism related decision-making. Our study constitutes a research endeavour in this field within the context of smart tourism framework.

2.3. Smart Tourism Framework/Paradigm

Smart tourism (ST) refers to the burgeoning phenomenon of the application of ICTs for developing innovative approaches, tools and services to improve tourism [14, 28]. ST is a new framework within which to analyse the "impact that have the latest ICTs on the relationship between businesses, destinations and tourists" [29: 109]. Sotiriadis [27] suggests the following workable definition for the ST management framework: "It is a comprehensive and holistic set of approaches, methods and tools from the discipline of management that destinations and other stakeholders should adopt and implement to attain the aims and objectives of smart tourism paradigm at both macro and micro levels". The ST management framework has rapidly become a leading stream of literature [14]. Smart destinations, as new ecosystems backed by concrete geographical contexts, facilitate the co-creation of a rich, technology-based, smart tourism experience. It is believed that the key challenge is how can smart tourism destinations and suppliers make tourists co-creators and co-managers of their experiences [30].

The paper by Femenia-Serra & Neuhofer [31] suggests that four are the main dimensions building up smart tourism experiences and are derived from the technological infrastructure and a close interaction between tourists and the rest of stakeholders at smart destinations. Smart tourism experiences are data-driven, built in real time, based on context-awareness (understanding tourists' context for delivering the right information and service) and co-created (interaction among stakeholders is articulated through a technological infrastructure composed by smart technologies and services).

The tourists themselves are one centrepiece of the ST ecosystem, as it has been pointed out by Femenia-Serra *et al.* [29]. Since last decade, tourist behaviour has undergone a significant transformation because of consumers' use of ICTs for tourist purposes. Tourists have become more active, independent, informed and skilled [1, 30]. The concept of 'smart technologies' encompasses new forms of cooperation and value creation technologies [31]. These technologies provide real-time connection, create value for tourist consumers and assist them in making the right decisions through their experience [30, 32, 33]. These technologies also enable tourism destinations and suppliers to acquire better knowledge and understanding of tourists' needs and to improve their resource/asset management and performance [28, 33].

The above brief discussion indicates a need for more conceptual and empirical research in this field of ST to apprehend the tourist consumer behavior [14, 30, 33]. It is therefore important to understand how smart technologies and services are influencing consumer behaviour and shaping tourism experiences. This is the aim of our study by focusing on the influence of SNSs on consumers' decision-making.

3. Research Framework: Developing Hypotheses

As already indicated, from tourist consumer perspective, the decision to go for holiday has been recognised as multi-phased process [18]: Anticipation (planning and preparing), outgoing travel, on-site experience (at the destination), returning travel; and recollection/post evaluation. Another approach to considering this process is in terms of travel life cycle encompassing three stages [16, 33]: Pre-visit, Active phase/On-site, and Post-visit (Reflection and evaluation after the trip). This approach looks more coherent as it coincides with the customer journey model [34].

Tourist consumers are using smart technologies throughout the consumption experience or 'customer journey' influencing them in all related decisions and transactions [30, 33, 34, 35]. A study performed by Gajdosik [36] implements a two-step cluster analysis, exploring the characteristics and tourism behaviour of the smart tourist market. Tourism destinations and suppliers should create value proposition during all travel cycle stages based on personalization and experience enrichment. Hence, ST technologies are the tool/medium of achieving that aim [30]. Cohen *et al.* [16] suggest that the influence can be studied for a specific travel stage (pre-visit, on-site and post-visit) in the visitation process. Hence, this study posits that the influence/impact of SNSs in on the decision-making should be explored in terms of stages of travel cycle, namely: pre-trip, on site/at destination, and post-travel.

Pre-Trip Stage: this stage of anticipation encompasses the activities that a consumer (prospective tourist) should perform before he/she goes on a trip/holiday. It incorporates the activities undertaken prior to travel [30, 33]. Tourist consumers use smart technologies to perform online three key tasks/activities: (i) Information searching: looking for

inspiration and dreaming of, and gathering of information and evaluation of alternative options in terms of time (to leave on holiday), destinations (places) and modes of transport. (ii) Shopping: Planning and booking: making trip arrangements and conducting/carrying out his/her purchases online before the traveling; and (iii) Preparing the trip/holiday [33].

These tourism-related activities are now carried out on mobile devices and tourists are likely to utilise SNSs, as well as looking on review websites [37]. Once the purchase has been made, SNS are used for more detailed trip planning [1, 33, 35]. It is worth mentioning that at this stage of searching, comparing, and planning, tourists trust in the reviews of real experiences and recommendations by their peers SNSs [11, 30, 35, 37]. An increasing number of tourists are using 'shared knowledge of all tourists' on digital platforms, and tourists depend on UGC to get input so as to make their decision [5, 13, 30]. Hence, this study postulates the following hypothesis:

Hypothesis 1: SNSs do positively influence the pre-trip stage of travel cycle of the consumers' decision-making acting as a digital platform with adequate tools to perform the related online activities.

On site/at destination: At this stage tourists are undergoing tourism experiences and it includes the consumption of related services – sightseeing and local purchases - at the places visited. Behaviour on the site includes searching additional information required, on-site decisions and evaluation of services received [35]. Tourists use SNSs while they are on holiday or enjoying their trip with the aim to make the maximum out of their experience and share it with their friends/peers [11, 30, 38]. These technologies can help tourists to solve problems, make the trip more flexible. SNSs enhance tourists' ability to co-create and co-manage their visit experience process. Therefore, tourists use smart technologies/SNSs to perform three tasks/activities [30, 32, 33]: (i) experiencing and enjoying the locations visited; (ii) making on-site decisions (sightseeing and local purchases); and (iii) conduct on-site evaluation (posting photos and reviews).

It is believed that smart technologies can be influential in all activities on site, at destination [30, 33]. The study therefore advances the following hypothesis:

Hypothesis 2: SNSs do positively influence the on-site stage of travel cycle of the consumers' decision-making, acting as a digital platform with adequate tools/services to perform the related online activities.

Post-Travel Stage: This stage is related to the activities that tourists perform when their trip/holiday experience has been completed and they reflect on their experience [23, 39]. In this stage their experiences and related suppliers are evaluated and their assessment will influence the future consumption behaviour.

Tourists use SNSs to comment on their experiences and recommend suppliers [30, 31, 35, 37]. Consumers love sharing their holiday experiences, post a review or other digital content about the tourism suppliers and destinations. In this stage, tourists use smart technologies/SNSs to perform mainly three tasks/activities: (i) recollecting/remembering; (ii) evaluating and sharing experiences (posting online reviews); and (iii) recommending and advocating [30]. Tourists directly

present their experiences on digital platforms in various forms, and this has important reference value for tourists to make future travel plans and to influence their behaviour and at the same time have an impact on the decision-making behaviour of potential tourists [20, 21, 33].

Hence, this study suggests that SNSs can be influential in decision-making of other consumers by providing their feedback and making suggestions about their experience [30]. Therefore, the following hypothesis is postulated:

Hypothesis 3: SNSs do positively influence the post-travel stage of travel cycle of the consumers' decision-making, acting as a digital platform with adequate tools/services to perform the related online activities (experience evaluation and knowledge sharing).

The above three hypotheses constitute the basis of the research framework/model (Figure 1) with the three stages and the dependent construct (tourists' decision-making).

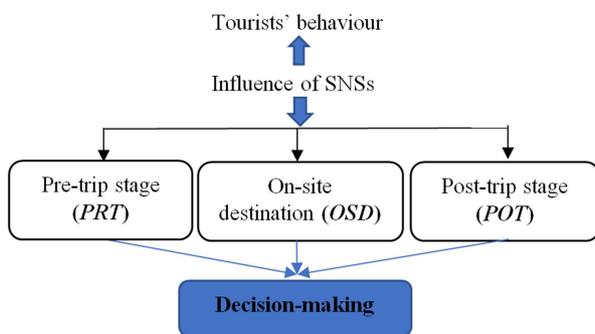


Figure 1. Research framework.

An empirical study was performed in order to test the above research model.

Table 1. Stages of travel life cycle and consumer behaviour in terms of digital activities.

Phases of trip	Activities on SNSs
PRT	Information searching
	Shopping: Planning and booking
	Preparing the trip/holidays
OSD	Experiencing and Enjoying
	On-site decisions (sightseeing, visits and local purchases)
POT	On-site evaluation (posting photos, videos and reviews)
	Recollecting: remembering
	Evaluating and sharing experiences
	Recommending and advocating

The research constructs and items were measured as follows [30, 33]. A total of 10 items were measured on a 5-point Likert scale by rating from not all important/useful (1) to very important/useful (5), and not all influence (1) to very strong influence (5). Furthermore, to sustain the originality of the measurements, the questionnaire was designed in the English language and then translated into Chinese [30, 33]. A pilot test was carried out with 25 persons to assure that the questions were clear and unambiguous.

4.3. Data Collection

This study used online questionnaire to collect data with

4. Empirical Study

4.1. Research Design

The study's aim was to investigate the influence of SNSs on consumer decision-making within the context of smart tourism, based on the model of travel life cycle. Hence, the dependent variable is the influence of SNSs on decision-making and the independent variables are the three phases of tourism experience: Pre-trip phase (PRT), On-site/in destination (OSD), and Post-trip stage (POT).

To attain this aim, a survey was conducted to empirically test the research framework within the Chinese context [30]. The selection of China is founded on the extensive use and importance of SNSs in this country. China is the world's largest social network market [40]. Chinese spend 25 hours online per week, increasingly connected via their mobile device and 70 per cent of the bookings are made online [40, 41]. China's SM landscape is more or less similar to the Western countries. The most popular SNSs are Qzone, Weibo (micro blogging), and the instant messaging apps WeChat and QQ. The latter have integrated vital SNS features such as sharing pictures [40].

4.2. Instrument Development

The online survey technique was applied. The first step was the drafting of the questionnaire, consisting of three sections: (i) One on concepts (with two items); (ii) One about the three research constructs (with six items); and (iii) One on demographics. Items were derived from literature review and the suggested research framework [30]. Table summarizes the three stages and the corresponding digital activities [33].

random sampling, using SNSs platforms (e.g. WeChat and Weibo) to share the online questionnaire links. The study selected the following SNSs that are most popular among Chinese consumers: Sina Weibo, WeChat, Douyin, Kuaishou, Bilibili, Xiaohongshu, Meituan, Baidu. A volume of 654 questionnaires were collected from SNSs users aged 18 and over during the months of July and August 2022. After screening, 24 invalid questionnaires were eliminated and 630 questionnaires were retained. Table 2 depicts the profile of interviewees.

Table 2. Sample's characteristics (n=630).

Characteristics	Frequency (n)	Percentage (%)
Gender		
Male	220	34.9
Female	410	65.1
Age group		
18 to 25	398	63.2
26 to 30	127	20.2
31 to 35	38	6.0
36 to 45	34	5.4
46 to 55	31	4.9
56 to 65	2	0.3
Educational level		
Junior high school and below	26	4.1
Senior high school	31	4.9
Vocational/College	17	2.7
Undergraduate	406	64.4
Postgraduate	150	23.8
Using SNSs for		
Less than 1 year	135	21.4
1-2 years	105	16.7
2-3 years	81	12.9
3-4 years	71	11.3
Longer than 4 years	238	37.8

SPSS Version 25.0 was used to perform statistical analyses.

4.4. Data Analysis: Results and Discussion

First, reliability and validity testing (confirmatory procedure and exploratory factor analysis) was conducted. A regression analysis was used to determine the influence of SNSs, to predict the influence of this smart technology on tourist consumers' decisions at the three stages/phases

(constructs). The study used Cronbach's alpha coefficient and composite construct reliability to check the measurement's reliability. The results are shown in Table 3. The value of Cronbach's alpha was varying between 0.734 and 0.820, higher than 0.700 which is indicating good reliability [42]. Fitting index of the measurement model: $\chi^2/df=2.265$, RMR=0.029, GFI=0.973, NFI=0.973, CFI=0.985, TLI=0.978, RMSEA=0.045, Standardized RMR=0.0284, the measurement model has a good overall goodness of fit (Hair et al., 2010). The standardization factor load of all items is between 0.527 and 0.821, the corresponding t-value is between 14.077 and 24.481. The composite reliability of constructs (PRT, OSD, POT) and decision-making were between 0.722 and 0.829, all higher than 0.700. Therefore, the measurement scale of each construct has good internal consistency [42, 43]. The average variance extraction (AVE) of all constructs was varying between 0.546 and 0.658, higher than the minimum value of 0.500. Therefore, the convergent validity of the measurements is satisfactory [43].

The results of the EFA are shown in Table 4. The principal component analysis method and the maximum variance orthogonal rotation are used to extract the three common factors with eigenvalues greater than 1, and the cumulative variance contribution rate is 70.24 per cent. The factor loading of each measurement index is between 0.669 and 0.821, which are all higher than the standard of 0.5, indicating good internal consistency and high reliability [42]. Therefore, the three measurement constructs were proven reliable and effective.

Table 3. Reliability and validity testing.

Construct	Items	Mean	Standard Deviation	Standard Loading	T-Value	Composite Reliability	Average Variance Extracted (AVE)	Cronbach's Alpha
Pre-trip stage	1 Information searching	3.70	1.079	0.735	20.874	0.829	0.658	0.820
	2 Shopping: Planning and booking	3.80	1.003	0.821	24.481			
	3 Preparing the trip/holidays	3.77	1.001	0.800	23.565			
On-site/at destination	1 Experiencing and Enjoying	3.22	1.079	0.671	17.904	0.736	0.592	0.734
	2 On-site decisions	3.18	1.089	0.737	20.159			
	3 On-site evaluation	3.23	1.040	0.672	17.936			
Post-trip stage	1 Recollecting: remembering	3.43	0.946	0.714	19.736	0.783	0.546	0.783
	2 Evaluating and sharing	3.43	1.064	0.764	21.639			
	3 Recommending and advocating	3.22	1.072	0.738	20.626			
Decision-making	1 Pre-trip	3.73	0.857	0.527	14.077	0.722	0.527	0.765
	2 On-site	3.24	0.930	0.797	21.464			
	3 Post-trip	3.23	0.884	0.677	18.536			

Table 4. Exploratory factor analysis.

Constructs Items	PRT	OSD	POT
1 Information searching	0.783		
2 Shopping: Planning and booking	0.821		
3 Preparing the trip/holidays	0.778		
1 Experiencing/enjoying destination		0.803	
2 On-site decisions (visits and local purchases)		0.767	
3 On-site evaluation (posting photos and reviews)		0.669	
1 Recollecting: remembering			0.816
2 Evaluating and sharing experiences			0.718
3 Recommending and advocating			0.702

Note: Extraction Method: Principal Component Analysis. Rotation method: Varimax with Kaiser Normalisation. Rotation converged in 5 iterations

Based on these results, the three hypotheses are supported and accepted. In order to test the research model, the study used Pearson's correlation coefficient test to determine the relationship between the constructs. The results are shown in

Table 5. The correlation coefficient (r) is between 0.566 and 0.676, $n=630$ ($p<0.01$). As all the relationships between the constructs were significant, the feasibility of the research model can be investigated.

Table 5. Pearson correlation coefficient.

	PRT	OSD	POT	Decision-making
X1: PRT	1	0.566**	0.595**	0.650**
X2: OSD	0.566**	1	0.640**	0.675**
X3: POT	0.595**	0.640**	1	0.676**
Y: Decision-making	0.650**	0.675**	0.676**	1

** The correlation is significant at level 0.01 (double tail)

Table 6. Model and Summary of regression analysis results.

Parameter test							
Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Durbin-Watson	F	Sig.
1	0.780*	0.638	.612	0.44843	1.325	106.711	0.000

Predictors: (Constant): Information searching, Shopping, Preparing; Experiencing destination, On-site decisions, On-site evaluation; Recollecting/remembering, Evaluating and sharing, Recommending and advocating. Dependent Variable: Decision-making

*R: correlation coefficient; R²: coefficient of determination; ΔR^2 : adjusted coefficient of determination

Regression model - Coefficients						
Model	Unstandardized Coefficients		Standard coefficients		t	Sig.
	B	Std. Error	Beta			
(Constant)*	.855	.087			9.792	.000
Information searching	.095	.022	.145		4.330	.000
Shopping (Planning & booking)	.069	.027	.097		2.499	.013
Preparing	.070	.026	.099		2.735	.006
Experiencing destination	.069	.021	.105		3.340	.001
On-site decision	.116	.022	.178		5.225	.000
On-site evaluation	.081	.022	.118		3.739	.000
Recollecting/remembering	.082	.025	.108		3.316	.001
Evaluating and sharing	.086	.023	.129		3.692	.000
Recommending and advocating	.074	.023	.112		3.265	.001

* Dependent Variable: Decision-making

As shown in Table 6, Durbin Watson coefficient is 1.325, which is within the required range of 1.00-2.00. The three constructs (the influence of SNSs at the three stages) were significantly correlated with the decision-making of tourist consumers. A linear regression analysis was conducted between the nine items (digital activities) of the SNSs' impact on tourists' decision-making indicating the following results: X1 ($=0.145$, $t=4.330$, $Sig=0.000$), X2 ($=0.097$, $t=2.499$, $Sig=0.013$), X3 ($=0.099$, $t=2.735$, $Sig=0.006$), X4 ($=0.105$, $t=3.340$, $Sig=0.001$), X5 ($=0.178$, $t=5.225$, $Sig=0.000$), X6 ($=0.118$, $t=3.739$, $Sig=0.000$), X7 ($=0.108$, $t=3.316$, $Sig=0.001$), X8 ($=0.129$, $t=3.692$, $Sig=0.000$), X9 ($=0.112$, $t=3.265$, $Sig=0.001$) explained a variance of 63.8% of influence. Therefore, the model works well. The same variance test gave an F value of 106.711, The t-value were all higher than 1.96. Therefore, the use of SNSs – a smart technology tool - has therefore a significant influence on tourists' decision-making at all three stages of travel life cycle.

The three hypotheses were all supported by the empirical results. According to the regression analysis's results, the use of SNSs has the most important influence in the second stage (i.e. on site/at destination). At this stage, the greater influence of SNSs on decision -making among the three main activities

that tourists use to carry out is on making on-site decisions (sightseeing, visits and local purchases). It is worth noticing that this stage (OSD) is regarded as the active experience consumption. As an interactive digital platform, SNSs play an important role in assisting tourists to design and live their actual experience. The purchases and evaluations made by consumers at this stage are also influential for other consumers to make decisions, as indicated by previous studies [23, 30, 33]. More specifically this study suggests a ranking of influence that SNSs have on the investigated nine online activities (independent variables) using the standard regression coefficients. This influence ranking is by descending order: making on-site decisions, information searching, evaluating and sharing, on-site evaluation, recommending and advocating, recollecting/remembering, experiencing destination, preparing, shopping.

The study's findings should be compared and contrasted to the extant literature; some results are conforming and others conflicting. The study by Fotis et al. [23], conducted within the context of leisure holidays, revealed that SM have an influence at all stages of travel planning. The study by Varkaris & Neuhofer [13], performed in the hotel context, found that SM have a significant influence on 'stage of

evaluation' of the consumer decision journey. The study by Gajdosik [36], indicates that the use of smart technologies was significant before and during their trip, whereas the post-trip phase was not investigated. A more recent study by Sotiriadis, Shen & Zhou [33] found that SNSs were influential in adopting a sustainable and responsible behavior by smart tourists. It was also found that the most determining stages are the two first, before and during the experience consumption [33]. The findings by the study Shen et al. [30] indicated that the influence of smart technologies is significant at all three phases, the stronger influence being at the first two stages (pre-trip and on-site).

This study indicates that the influence of SNSs is significant at all three stages. Findings revealed that SNSs (a smart tourism technology) are influential in all digital activities of decision-making by tourists, as suggested by previous studies [30, 33, 36]. Therefore, these smart technology tools and related services should be seriously considered by tourism suppliers and destinations by paying more attention to their potential and effect. They should take advantage of their full potential for marketing and other business purposes by incorporating them into their action plans, use them adequately to communicate and interact with consumers, provide information, customer relationships to name a few.

5. Conclusions, Implications and Limitations

5.1. Conclusion

Extant literature and business intelligence indicate that smart technologies play a key role in the consumer behavior of tourists and in business functions and processes of tourism suppliers and destinations. Tourist consumers are leading a big transformation to embrace new cutting-edge technologies and new forms and types of tourism. Tourism-related businesses should be able to adapt and embrace the evolving transformation and new trends in the market, actively and proactively listen to the requirements of consumers and be open to welcome and incorporate the smart technologies into their operations. These are the key factors to cope with a fast-evolving market and increase the probabilities of successful future.

Within the smart tourism ecosystem, markets are driven by two main forces, the consumers and cutting-edge technologies and related services. Smart technologies are used by tourists consumers in a large extent. The smart infrastructure and Web-based interactive platforms and smart tools have enabled tourist consumers to collect information, make decisions, perform digital activities and share their experiences in fast, convenient and effective manner. All this social intelligence/knowledge and shared knowledge on SNSs is considered as influential on the decision-making of consumers and potential tourists. Against this background, our study's purpose was to investigate the influence of SNSs on tourists' decision-making within the Chinese context.

Firstly, a research model was suggested to explore the

influence of SNSs on tourists' decision-making. This influence approached and analyzed in terms of stages of travel life cycle/customer journey. Secondly, the proposed model was empirically tested within the Chinese context. The results support all three research hypotheses advanced by this study. Results revealed that SNSs have an influence on consumer behavior. The stronger influence was at the second phase (on-site/at destination), without overlooking the influence on other activities. Moreover, results indicated a ranking of the nine investigated digital activities in order of influence. It is therefore believed that these findings make a knowledge contribution and are valuable and useful to industry practitioners.

5.2. Implications

Our study is valuable from a theoretical perspective because it extends our knowledge in the field influence of smart technologies on the tourists' behavior. Our research extends prior literature on SM and smart technologies by identifying the specific influence on three stages of tourism experience/customer journey. This is the first study considering and investigating the influence of SNSs on tourists' decision-making in an integrated and comprehensive way analyzing the process in terms of digital activities and identifying and suggesting a ranking of influence. It makes a theoretical contribution in that (i) it provides better apprehension of consumer' behavior in the smart tourism ecosystem; (ii) it extends the field of application of the 'travel cycle life' model in a comprehensive manner; and (iii) it analyses the digital activities on SNSs in a precise and specific way and indicates on which one the use of SNSs is the most influential. The proposed model consisted of SNS-based activities covering the whole tourism experience from the information search to recommending and advocating. This approach constitutes a comprehensive investigation of the influence of SNSs on tourists' decision-making through the whole tourism experience. This study argues that the influence of technological tools and related services should be considered and explored in an integrated manner. That is the only way to acquire a better understanding of their influence on various digital activities and, then use this knowledge for marketing purposes.

Marketing implications: As tourism experiences in the smart ecosystem are data-driven, context-aware, co-created and real-time, it is critical to adopt and implement the suitable marketing approaches, to craft the appropriate strategies and to use the right technologies. Tourism suppliers and destinations must embrace the SNSs and apply the right practices in their marketing strategies. Their effective and efficient implementation/utilization will enhance the offering of adequate and useful information to consumers and a greater interaction and engagement with them, a contextual marketing strategy.

The advent of smart technologies is influencing the whole consumption experience, taking the component elements and dimensions (value propositions, co-creation, customization, and contextualization) to another level, enabling consumers to achieve an extensive self-support. At the same time, this

critical influence provides a huge potential to suppliers to better serve their strategic and operational aims and design and support the suitable marketing strategies. Therefore, it is crucial for tourism suppliers and destinations to fully understand the technology-driven expectations of contemporary and future tourists. These tourists have higher requirements in terms of experience quality and smart technologies are tools that can contribute to meeting tourists' expectations, if they are properly designed and used. Smart technologies and interactive digital platforms such as the SNSs offer efficient interaction, agility in response, higher customization. The main issue is to utilize the right SNS at the right time, within the adequate context and setting.

Smart technologies constitute a valuable marketing tool offering a considerable potential. It is evident that their influence starts well ahead/prior to the actual visit on site. Therefore, the study's findings are useful for the marketing communications, which should convey consistently the right message, because they must build up the adequate expectations. This study argues that the adequate use of SNSs can contribute to a high-quality experience that create benefits for all actors in the smart tourism management framework.

5.3. Limitations and Suggestions for Research

However, our study has some limitations that should be acknowledged. First limitation is the sampling due to special circumstances caused by the Covid-19 pandemic. This study used a convenience sampling, the main drawback of any online survey. Moreover, the sample is mainly/predominantly composed of young persons and students (around 50 percent) which causes an issue of representativeness. This constitutes a barrier to generalize the findings. Another limitation is the context of the empirical investigation. China is definitively the biggest market in terms of SM/SNSs and of usage and time spent on. However, the country has some particularities. Future research endeavours should investigate the suggested research model in other countries, or in smaller scope, such as a specific smart city or destination. Researchers could explore the similarities and differences between other study areas, settings and contexts. As tourists make dynamic decisions with help of smart technologies, future research projects could focus on specific live-streaming and picture sharing SNSs (e.g. YouTube and Instagram) to understand their impact on consumers' decision-making. Another interesting research pathway is the comparative analysis of the influence of other smart technologies, such as virtual reality, augmented reality and AI. It would be very interesting to analyse the distinct impact as well as the combined influence of these smart technologies..

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