

Article

Residents' Quality of Life in Smart Tourism Destinations: A Theoretical Approach

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Abstract: The objective of this research is to propose a theoretical model based on studies on residents' quality of life in smart tourism destinations. Smart tourism destinations are territories based on information and communication technologies (ICT), which improve travelers' tourist experiences as well as affect the quality of life of residents. To know the context of the relationships between tourism and quality of life, main studies and theories regarding these two phenomena are analyzed. Likewise, the relationship between smart places and quality of life is also studied. Therefore, a theoretical model on residents' quality of life in smart tourism destinations is proposed based on a systematized analysis of the literature. From the theoretical model, it is perceived that residents' overall life satisfaction results from the relationship between perceived tourism impacts and satisfaction with specific life factors, and they are measured by qualitative indicators. Also, it is identified that the quality of life of residents is clearly influenced by the impacts of tourism and ICTs. In addition, it is understood that the residents' overall life satisfaction corroborates for the further development of the smart tourism destination. Finally, we understand that the knowledge of residents' perception and satisfaction of their quality of life contribute to formulation and implementation of urban and tourism development policies in smart tourism destinations.

Keywords: residents; quality of life; impacts of tourism; smart tourism destinations; information and communication technologies

1. Introduction

The close relationship between perceived tourism impacts and the quality of life of residents is increasingly relevant in tourism research [1,2], as well as the relationship between the quality of life and support for tourism development by the population [3,4]. In this sense, numerous studies show that the quality of life of residents of tourist destinations is affected either positively or negatively by the impacts of tourism (economic, sociocultural, and environmental dimensions) [5,6].

Quality of life (QOL) refers to the general well-being of people's lives and is fundamentally structured through the concepts of objective and subjective well-being [7]. Objective well-being is measured by means of quantitative indicators of quality of life [8,9], while subjective well-being is measured by means of subjective indicators [1,10].

Several tourism researches have focused on the analysis of subjective well-being, studying what residents perceive of the impacts of tourism and its influence on quality of life through specific life'

factors and sub-factors, which in turn affects overall life satisfaction [3]. On the other hand, the general satisfaction of life would be reflected in attitudes towards tourism or the development of tourism [2,6]. Currently, despite the interest on studies in quality of life of residents in tourist areas, they have not yet been carried out in smart tourism destinations research.

In the same way as in smart cities, there is often an increase in the quality of life of the local community according to various studies, in smart tourism destinations a similar effect would occur too [11–14]. However, research on residents' quality of life in the context of smart places is still at an early stage. Likewise, there is no clear knowledge of the elements and indicators of quality of life in smart tourism destinations.

Based on the above premises, this study proposes two main research questions: (i) How to measure the quality of life of residents in smart tourism destinations? (ii) Do information and communication technologies (ICT) increase the quality of life of residents in smart tourism destinations?

Our main objective is to propose a theoretical model on the quality of life of residents in smart tourism destinations, based on the subjective well-being approach. This model arises from a systematized review of literature, in order to structure the main conceptual contributions of quality of life in categories in the context of tourism and smart places (cities and destinations). Moreover, this study aims to (i) explain the subjective factors of quality of life, (ii) point out the impacts of tourism and its relationship with quality of life, and (iii) reflect on the quality of life in smart tourism destinations.

This document is structured in five sections, which begins with this introduction. The second section deals with the residents' quality of life in destinations, impacts of tourism on the quality of life of residents, as well as the phenomenon of smart cities and smart tourism destinations. Next, the systematized review method used in this study is explained in the methodology section. In the fourth section, a theoretical model of the quality of life in smart tourism destinations is proposed. Finally, the research questions are answered, and future lines of research are proposed in the conclusions.

2. Theoretical Context

2.1. *The Quality of Life of Residents in Destinations*

Quality of life is a complex, multidimensional, and transdisciplinary concept [15], which since the 1960s has been widely debated by different disciplines from both the field of health sciences, and economic and social sciences.

Among the various concepts on quality of life, we highlight that of Cummins [16] (p. 700), which defines quality of life as a construct that "is multidimensional and influenced by personal and environmental factors and their interactions, has the same components for all people, has both objective and subjective components, and is enhanced by self-determination, resources, purpose in life, and a sense of belonging". Following that line of thought, Felce and Perry [17] (p. 54) define quality of life as "a combination of both life conditions and satisfaction" but taking into account "personal values".

In the context of tourist destinations, the quality of life of the local community has had a great emphasis in the literature since the 2000s, being associated with the individual or collective satisfaction of residents [10] who are affected by the positive and negative impacts of tourist activity [3,18], and whose quality of life is possible to evaluate through indicators of objective and subjective well-being [2,18,19].

Objective well-being represents the real circumstances of life. This well-being is measured by quantitative and extrinsic indicators (e.g., economic, social, environmental, and health indicators) [9,10,18], such as gross domestic product (GDP), share of the tourism industry in GDP, unemployment rate, poverty rate, level of education, life expectancy, family income, number of hospital beds per 1000 inhabitants, square meters of green areas (parks) or recreational facilities per thousand inhabitants, public security, number of hotel beds, etc.

On the other hand, subjective well-being refers to the personal feelings and perceptions of life, which are constituted as qualitative and intrinsic indicators. These indicators are related to positive

affection, negative affection, and life satisfaction [20]. Positive and negative affection refer to the affective component (emotions, feelings), while life satisfaction is linked to the cognitive aspect (perception, judgment) that a person has regarding life [15,20].

It is noted that much of the research on quality of life in destinations, focuses on the assessment of the subjective well-being of residents [2,8,10,18] or tourists [21,22]. In that sense, from the Bottom-up Spillover Theory [2,4,23–27], the quality of life or overall life satisfaction of the local community is determined by the level of their satisfaction with the specific factors of life (e.g., family, work, community life, safety, health, public services, social networks, cultural and leisure life, etc.) which, in turn are affected by the effects of tourism development [1,3]. Table 1 shows the main specific factors of life with their possible descriptions, which are identified in studies of quality of life in tourism.

Table 1. Residents' satisfaction with life-specific factors.

Factors	Description	References
Material well-being	Sense of well-being that is related to economic factors (e.g., cost of living, income, employment)	Eslami, Khalifah, Mardani, Streimikiene, and Han, 2019 [24]; Khizindar, 2012 [28]; Kim, Uysal and Sirgy, 2013 [1]; Tokarchuk, Gabriele, and Maurer, 2017 [26]; Woo, Kim, and Uysal, 2015 [3]; Woo, Uysal and Sirgy, 2018 [2]
Community well-being	Sense of well-being that is related to social factors (e.g., relationships with people, destination facilities)	Andereck and Nyaupane, 2011 [10]; Khizindar, 2012 [28]; Kim, Uysal and Sirgy, 2013 [1]; Liang and Hui, 2016 [29]; Suntikul et al., 2016 [30]; Tokarchuk, Gabriele, and Maurer, 2017 [26]; Woo, Kim, and Uysal, 2015 [3]; Woo, Uysal and Sirgy, 2018 [2]
Emotional well-being/recreation amenities/recreation facilities	Sense of well-being that is related to cultural and leisure factors (e.g., free time, leisure, cultural life)	Andereck and Nyaupane, 2011 [10]; Eslami et al., 2018 [23]; Khizindar, 2012 [28]; Kim, Uysal and Sirgy, 2013 [1]; Suntikul et al., 2016 [30]; Tokarchuk, Gabriele, and Maurer, 2017 [26]; Woo, Kim, and Uysal, 2015 [3]; Woo, Uysal and Sirgy, 2018 [2]
Health and safety	Sense of well-being health and safety	Khizindar, 2012 [28]; Kim, Uysal and Sirgy, 2013 [1]; Tokarchuk, Gabriele, and Maurer, 2017 [26]; Woo, Kim, and Uysal, 2015 [3]; Woo, Uysal and Sirgy, 2018 [2]
Community services/public facilities/urban issues	Sense of well-being with urban services (e.g., transport, garbage control, traffic control)	Andereck and Nyaupane, 2011 [10]; Carneiro, Eusébio, and Caldeira, 2018 [31]; Jordan, Lesar, and Spencer, 2019 [32]; Liang and Hui, 2016 [29]; Martín, Moreira, and Román, 2019 [33]; Matarrita-Cascante, 2010 [34]; Nunkoo and Ramkissoon, 2011 [35]; Suntikul et al., 2016 [30]; Yu, Cole, and Chancellor, 2016 [27]
Way of life	Sense of well-being with personal lifestyle (e.g., respect tourists have to residents' lifestyle, preservation of residents' lifestyle)	Andereck and Nyaupane, 2011 [10]; Jordan, Lesar, and Spencer, 2019 [32]; Liang and Hui, 2016 [29]; Suntikul et al., 2016 [30]
Community pride or community awareness	Sense of well-being that is related to the image of the community, pride, awareness of natural and cultural heritage, etc.	Andereck and Nyaupane, 2011 [10]; Jordan, Lesar, and Spencer, 2019 [32]; Liang and Hui, 2016 [29]; Suntikul et al., 2016 [30]

As Schalock [36] (p. 205) asserts, “the term “quality of life factors” refers to the set of factors that make up personal well-being”. On the other hand, the effects of tourism development can be understood as the impacts of tourism perceived by residents [1,3,7,18,37]. Based on the Bottom-up Spillover Theory [38], it is understood that the quality of life or overall life satisfaction of residents

would be related to perceived tourism impacts and satisfaction on specific life factors. The case of the increase of the cultural agenda of the city due to the development of tourism, for example, would correspond to a positive impact of tourism that would affect the sense of well-being of the cultural and leisure life of the residents, which in turn would affect overall life satisfaction.

In addition, it is also perceived that some authors group specific life factors into two dimensions: material well-being and non-material well-being [1–3]. Material well-being refers to the sense of well-being with the economic dimension (e.g., well-being of employment and income, and well-being of costs of living), while non-material well-being refers to the sense of well-being with sociocultural and environmental dimensions (e.g., community well-being, emotional well-being, and health and safety well-being, well-being of community services, well-being with lifestyle, etc.).

The combination of objective and subjective indicators of the quality of life of residents [18,19] can help planners and managers of tourist destinations in the development and implementation of effective and sustainable policies [37,39]. As the quality of life of the local community in tourist destinations improves, the greater the support of residents towards the development of tourism [4,18,40–42].

Despite attempts to measure and standardize quality of life, residents' perceptions and attitudes towards tourism and their relationship to quality of life can be varied, depending on the level of development of tourism [1,18], from the process of sharing the benefits of tourism [7,10], of sociodemographic characteristics [3], and from the distance from the community to the tourist area [3,43].

2.2. Impacts of Tourism on the Quality of Life of Residents

Tourism is a socio-economic activity that, according to Uysal, Sirgy, Woo, and Kim [18], depends on the infrastructure and resources of the community to be able to develop, which generates impacts that affect the quality of life of residents [7,34,43–47], and the well-being of tourists and other agents involved in destinations [2,8,18,37].

In their research on the impacts of tourism on the quality of life of residents, Kim, Uysal, and Sirgy [1] point out that: “[. . .] (1) residents' perception of tourism impact affects their sense of well-being in various life domains (material, community, emotional, and health/safety well-being), (2) residents' sense of well-being in those life domains affects their life satisfaction in general, and (3) the relationship between residents' perception of tourism impact and their sense of well-being in those life domains is moderated by tourism development stages” (p. 529).

Following this line of thought, Woo, Uysal, and Sirgy [2] reinforce that the residents' overall life satisfaction derives from the satisfaction with specific factors of life (e.g., family, leisure, public facilities, health and security, etc.) and “their satisfaction with particular life domains, in turn, is also affected by their perception of tourism impact on the community at large” (p. 264).

It should be noted that much of the research that analyzes the impacts of tourism on the quality of life of residents relate to the following dimensions [7,19,24,40,44]:

- (i) Economic (e.g., strengthening the local economy, employment opportunities, rising living standards, investment contribution, creation of new businesses, increased tax revenues, increased cost of living, increased price of goods and services, real estate speculation, etc.).
- (ii) Sociocultural (e.g., social interactions, cultural exchange, preservation of cultural goods, increased leisure and entertainment activities, community well-being, loss of cultural identity, violence and crime, gentrification, tourism, etc.).
- (iii) Environmental (e.g., preservation of natural resources, increased environmental awareness, better management of natural resources, increased pollution, environmental degradation, waste management/disposal, etc.).

The perception of residents regarding the impacts of tourism on their quality of life can be either positive or negative, leading to either favorable or unfavorable attitudes towards tourism and their support for tourism-based development [7,35,45–47]. In relation to the latter aspect, studies based on

the Social Exchange Theory highlight that residents assess the costs and benefits of tourism development and its quality of life [23,42,45,48,49].

Thus, it is generally assumed that the economic impacts of tourism are usually perceived as positive by residents, while social and environmental impacts are perceived as more negative [18]. The support of residents to tourism would be more connected with the perception of the positive effects of tourism, especially the economic ones [41], corroborating the principles of the Social Exchange Theory.

In addition to the economic, sociocultural, and environmental impacts of tourism, it can be emphasized that the political context in which destinations are unfolded has a remarkable role [2,50–52], which can also have an impact on the quality of life of the community. The main political factors that promote tourism development and the quality of life of residents are participatory democracy, control of corruption, the rule of law [53,54], the stable political environment [10,53], the formulation and implementation of tourism development policies [55], the social capital [56,57], governance [51,54,58], and trust between the agents of destination [51].

In this way, Schenkel and Almeida [52] highlight the importance of public policies to promote tourism activity linked to the enjoyment of tourism and leisure as part of the quality of life of societies. Other authors consider that tourism-based economic development policies also contribute to the quality of life of society [47,55]. Sirgy [54] highlights the importance of the stability of the political system of tourist destinations so that there is a real improvement in the quality of life of residents.

Finally, we could say that the impacts of tourist activity in addition to promoting certain aspects related to the quality of life of the local community, can also influence the well-being of tourists [21,22] through the quality of the tourist experience [55] and value creation [18,48], supporting the promotional marketing of the destination. To this end, destination managers need to promote concrete actions aimed at improving the quality of life of residents [49] and encourage their participation in the tourism policy planning and implementation process [18], in addition to actions related to the sustainability of the destination [37,57].

2.3. Smart Places: Smart Cities and Smart Tourism Destinations

The concept of smart tourism destinations arises in literature from 2010 and is closely related to the concept of smart cities [59–61]. Despite there being no consensus in the definition, the smart city is basically understood as a territory that is based on ICT [62–68] that “must be able to optimize the use and exploitation of tangible and intangible assets” [69] (p. 26) through the participation of multiple stakeholders [70], to promote sustainable development [71–73], and be able to increase the quality of life of citizens [13,74].

The tangible assets of the smart city relate to natural resources, services, and urban infrastructure [73,75–80], while intangible assets include human capital, intellectual capital (private sector), and organizational capital (public sector) [69].

On the other hand, the tourist destination is configured as smart, when it makes intensive use of the ICTs provided by the smart city, transforming into an innovative tourist territory, which guarantees sustainable development [14,81,82], improves the quality of the tourist experience [83–85], and increases the quality of life of residents [12,86].

The dimensions and factors of smart tourism destination include governance, sustainability, technology, innovation, accessibility [86], connectivity and smart sensor networks, information system, smart applications/solutions [61,87,88], social and human capital, entrepreneurship, leadership [83], and cultural heritage and creativity [89].

Therefore, it can be considered that both the smart city and the smart tourism destination are urban areas that would be constituted in “smart places” [61,90] through the intensive use of ICTs, which would have as their main purpose the increase in the quality of life of people [13,78], whether residents or tourists (Figure 1).

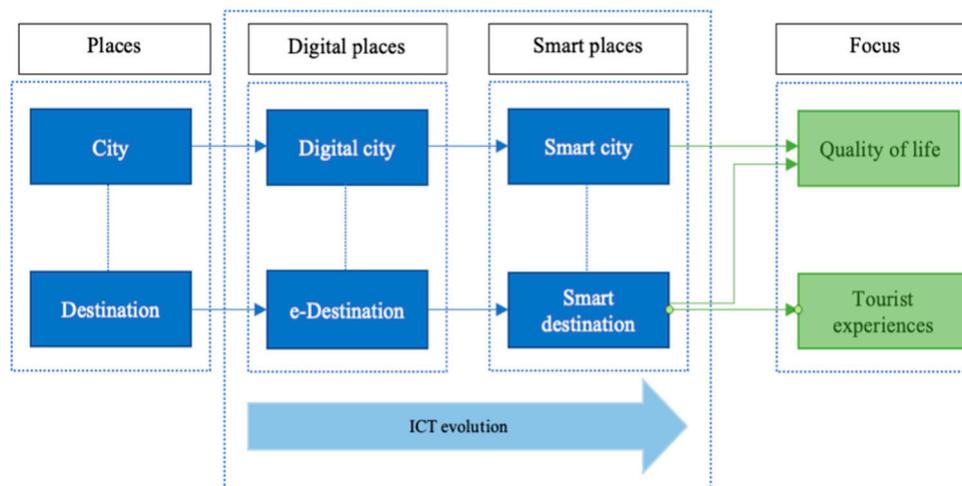


Figure 1. Purpose of the smart places.

Among the main differences between the smart city and destination, two main aspects can be highlighted:

- (iv) Territorial: unlike cities, a tourist destination can be associated with any territorial unit (place, city, region, or country) consisting of natural and cultural attractions and with some planning and administrative capacity, which may encompass a place, a city, a region, or a country [91].
- (v) Focus: while the smart city is oriented to the quality of life of citizens [60], the smart tourism destination seeks to improve the experiences of tourists and improve the quality of life of residents [12].

2.4. The Role of ICTs in Smart Places

ICTs refers to technological infrastructure, connectivity and smart sensor networks, information system, and smart applications/solutions [61,87,88] of smart places, which affect the operation of urban [69] and touristic spaces [90]. Examples of smart technologies that affect the improvement of performance for people and businesses through their use in smart places: Mobile Technology, Real-Time Information [92], Cloud Services and internet services available to end users, Internet of Things (IoT) [11], Big Data and Data Mining [93], Virtual Reality (VR), Augmented Reality [87], Artificial Intelligence (AI) [87,94], Near Field Communication (NFC), Radio-Frequency-Identification (RFID), and Mobile Applications (Apps) [95].

We infer that ICTs are cross-cutting factors [88] that can affect tourist destinations more intensively (hard effect) or less intensively (soft effect), “in relation to the importance of ICT systems as key technologies” [69] (pp. 26, 27). In the case of the hard effect of ICTs, energy and water management, waste management, management of natural resources, for example Reference [69], which would be closely related to the environmental dimension. On the other hand, the soft effect of technologies may refer to entrepreneurship and innovation, social and human capital, and governance [83], which could relate to economic, sociocultural, and political dimensions, respectively. However, there are aspects of key technologies that have both effects at the same time, such as health and safety factors [69].

3. Methodology

3.1. Review Process

For the realization of this research, the method of systematized literature review was applied for the analysis of the relationship between smart tourism destinations and quality of life. According to Grant and Booth [96], systematized review is a method that attempts to “include elements of the systematic literature process without stopping at the systematic review” (p. 95). The systematized

review allows the researcher to do a thorough search on “one or more databases and then code and analyze the recovered results systematically” (p. 103).

We carried out a thorough search in the Scopus database with the intention of identifying the most relevant documents for this investigation. Table 2 shows in detail the systematized review process and its eight steps. Two search categories were initially established, corresponding to the objectives of this research: “tourism and quality of life” and “smart places (smart cities and smart destinations) and quality of life” (Step 1). Second, the search keywords for each category were set (Step 2). Third, to narrow down the search process on the Scopus platform, the following filters were used: title, summary and keywords, document type, thematic area, year, and language (Step 3).

Table 2. Systematized review process.

Step 1	Search Categories	Tourism and Quality of Life	Smart Places (Smart Cities and Smart Destinations) and Quality of Life
Step 2	Title-Abstract-Keywords	(“touris* impact*” OR “impact* of tourism” OR “attitudes toward tourism” OR “support for tourism”) AND (resident* OR communit* OR citizen* OR population OR inhabitant*) AND (“quality of life” OR “life quality” OR “life satisfaction” OR “wellbeing” OR “communit* satisfaction”)	(“smart cit*” OR “smart tourism” OR “smart destination*”) AND (resident* OR communit* OR citizen* OR citizen/ OR population OR inhabitant*) AND (“quality of life” OR “life quality” OR “life satisfaction” OR “wellbeing” OR “communit* satisfaction”)
Step 3	Document Type	Article AND Review	Article AND Review
	Subject Area	Social Science AND Business, Management and Accounting AND Environmental Science	Social Science AND Business, Management and Accounting AND Environmental Science
	Year	2000–2020	2010–2020
	Language	English AND Spanish AND Portuguese	English AND Spanish AND Portuguese
Step 4	Total Publications	123	151
Step 5	Removed Publications	–85	–99
Step 6	Included Publications	14	19
Step 7	Total valid Publications	52	71
Step 8	Included Documents		8

The category “tourism and quality of life” included articles and bibliographic reviews on tourism and its relationship to the quality of life of residents. Issues related to the impacts of tourism and the attitudes and support of residents towards the development of tourism were taken into account. Research published from the 2000s were considered since this is the period with the highest number of studies on the subject. On the other hand, in the category “smart places and quality of life”, articles and reviews were inserted in relation to smart cities and destinations with the quality of life of residents. Studies published from the 2010s were considered, as this is the beginning of research on smart tourism. The search resulted in a total of 123 and 151 publications, respectively (Step 4).

Once the searches were complete, some documents were discarded (Step 5) and others were included from specific recommendations and interviews conducted with two researchers from the University of Malaga and two researchers from the University of Lisbon, in 2019. Based on these recommendations, other relevant studies on quality of life, smart tourism, and ICT were included, identified in the Scopus, Google Scholar, and ScienceDirect databases (Step 6). Thus, in Step 7, a total of 123 valid publications were considered, with 52 studies referring to the category “tourism and quality of life” and 71 studies referring to the category “smart places and quality of life”.

In addition, 8 reports and studies were consulted from research groups and international institutions (Step 8), such as: European Commission [89], Valencian Institute of Tourism Technology (Invat.tur) [61,88], and State Trade Society for the Management of Innovation and Tourism Technologies (SEGITTUR) [86].

3.2. Publications Analysis

As can be seen in Figure 2, of the 123 valid publications (e.g., articles, reviews, book chapters, and conferences) that were analyzed, 50 correspond to the category “tourism and quality of life” and 72 correspond to the category “places smart people and quality of life”. Thus, 9.61% of the studies on tourism and quality of life were published between 2002 and 2007, 84.62% were published between 2010 and 2019, and 5.77% in 2020 (Figure 2a). On the other hand, 97.14% of the studies on smart cities and smart tourism destinations were published between 2011 and 2019, and 2.86% in 2020 (Figure 2b). A significant number of investigations are noted from 2010.

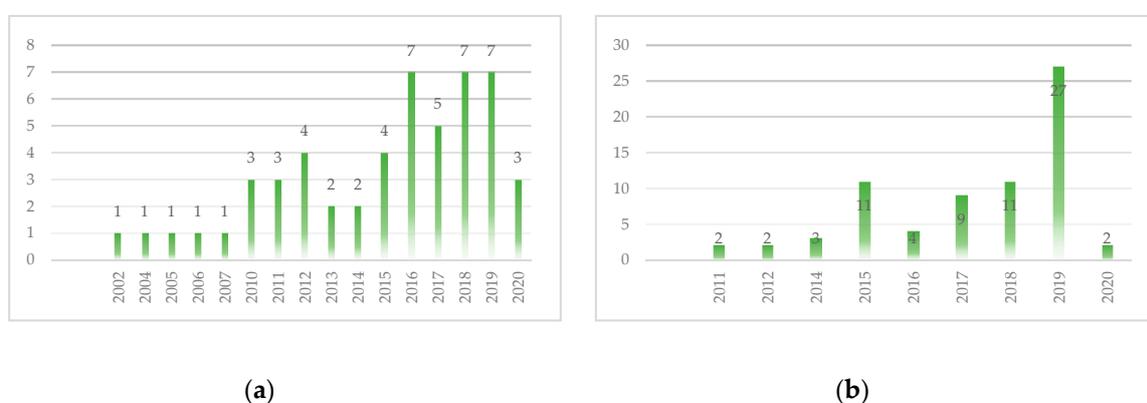


Figure 2. Publications analyzed per year: (a) Tourism and quality of life, (b) smart places and quality of life.

Regarding the types of research (Figure 3), it was observed that a large part refers to theoretical research, with 13 publications in the category “tourism and quality of life” (Figure 3a) and 33 publications in the category “smart places and quality of life” (Figure 3b). On the other hand, the empirical research comprised mainly studies carried out in the USA (12 publications), China (6 publications), and Spain (5 publications) (Figure 3a), and Europe (9 publications), Brazil (6 publications) and India (4 publications) (Figure 3b).

In addition to the 123 valid publications, 8 reports and studies from research groups and international institutions were also analyzed, with 2 studies on quality of life, 2 studies on smart cities, and 4 studies on smart tourism destinations. Thus, a total of 131 publications were analyzed.

Finally, it was possible to establish the theoretical context of this research from the search categories and the information provided, as well as the discussion on the quality of life of residents in smart destinations and the proposition of a theoretical model, which is explained in the next section.

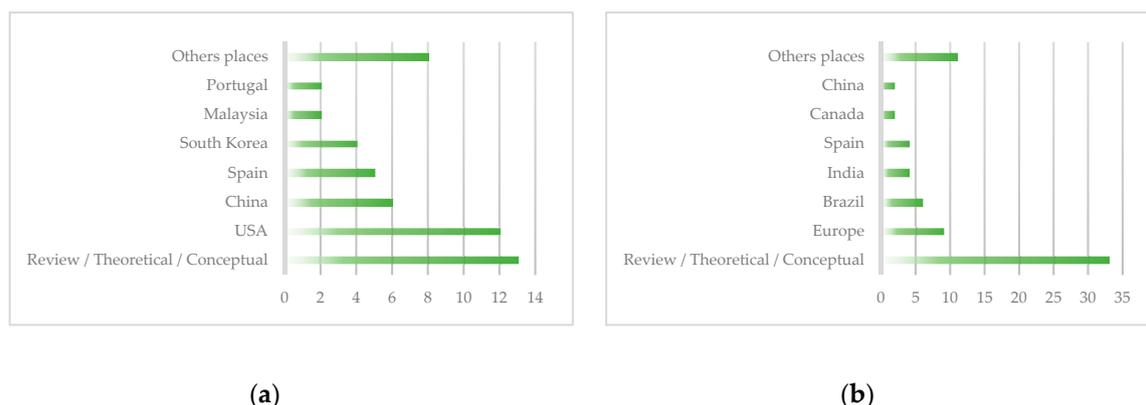


Figure 3. Types of research: (a) Tourism and quality of life, (b) smart places and quality of life.

4. Theoretical Model of Residents' Quality of Life in Smart Tourism Destinations

Based on the analysis of the documents selected in the systematized review, it was possible to determine some preliminary results. Firstly, it was observed that the quality of life of residents can be measured through subjective well-being (subjective indicators) and objective well-being (objective indicators) [18,39,97,98]. However, it was noted that much of the studies on quality of life in tourist destinations [1–3,10], as well as in smart cities [68,73,78,99,100], focus on measuring the subjective well-being of the community. A few tourism studies, such as those of Meng, Li, and Uysal [9], and Urtasun and Gutiérrez [10], assess the quality of life through objective well-being.

Secondly, it was perceived that subjective well-being can be grouped into two factors [1,3]: material or non-material well-being. Material well-being relates to economic factors, such as satisfaction with employment and wages, and costs of living, while non-material well-being refers, in particular, to culture and recreation, health and safety, public services, education, environment, and community participation, among others. The combination of material and non-material well-being influences overall life satisfaction.

Thirdly, from a subjective well-being perspective, it was noted that some research in the tourism area shows that the impacts of tourism (economic, sociocultural, and environmental impacts) affect positively and negatively the overall quality of life of residents [34,43–45,47]. According to Ko and Stewart [7], the positive or negative perceptions of residents about the impacts of tourism influence the specific factors of life and overall life satisfaction, which in turn affect attitudes favorable or not to the development of tourism [35,46].

Fourthly, with regard to the theoretical approach, it was noted that work on subjective well-being in tourist destinations is based mainly on the Bottom-up Spillover Theory [1,23,25], by which the residents' overall life satisfaction corresponds to the satisfaction or well-being of the community in relation to the specific factors of life. Another theory that stands out in several research on the quality of life of residents in tourist destinations is the Social Exchange Theory [2–4,24,40,42,49], whereby the community assesses the costs and benefits of tourism development through the perception of the impacts of tourism on their quality of life. On the other hand, it was found that few studies in the field of smart cities, mention theories that analyze the use and acceptance of technologies by the local community, for example: Social Exchange Theory, Technology Acceptance Model and Theory of Self-Determination [78], Unified Theory of Acceptance and Use of Technology, Diffusion of Innovation Theory [68], and Motivation Theory and Commitment Theory [77].

Fifth, the political dimension is mentioned in few studies and is mainly linked to the issue of governance [51,58,60,69,97,101] and the share capital [56,57,83]. According to Sirgy et al. [38], political well-being would be one of the specific life factors that makes up the overall satisfaction of life.

Sixth, according to Chourabi, et al. [74], López de Ávila and García [12], Pencarelli [13], and Shafiee et al. [14], it is understood that ICTs can increase the quality of life of residents, essentially through the optimization of natural resources and urban services and infrastructure [73,75,78,79],

and development of human and social capital [69,83]. In this regard, some publications were evidenced regarding the impacts of smart technologies and technological innovations in the context of smart cities [62–64] or the tourism industry [13].

Finally, analysis and reflection on theoretical models of quality of life in smart places, especially in smart destinations, is still very little researched. In the context of smart cities, there were some studies that analyze some objective variables of the quality of life of residents [97,102,103], and very little research measuring aspects of the subjective well-being of residents [78,99,100]. On the other hand, the existence of some theoretical studies on models of smart tourism destinations was identified [61,86], but they do not include the analysis and measurement of the quality of life of residents.

Therefore, based on preliminary results and taking subjective well-being as an analysis perspective [1,3,37], we propose a theoretical model of the quality of life of residents in smart tourism destinations (QOL-STD). The model consists of five main elements: perceived tourism impacts, ICT, satisfaction with specific life factors, overall life satisfaction, and support for further smart tourism destination development (Figure 4).

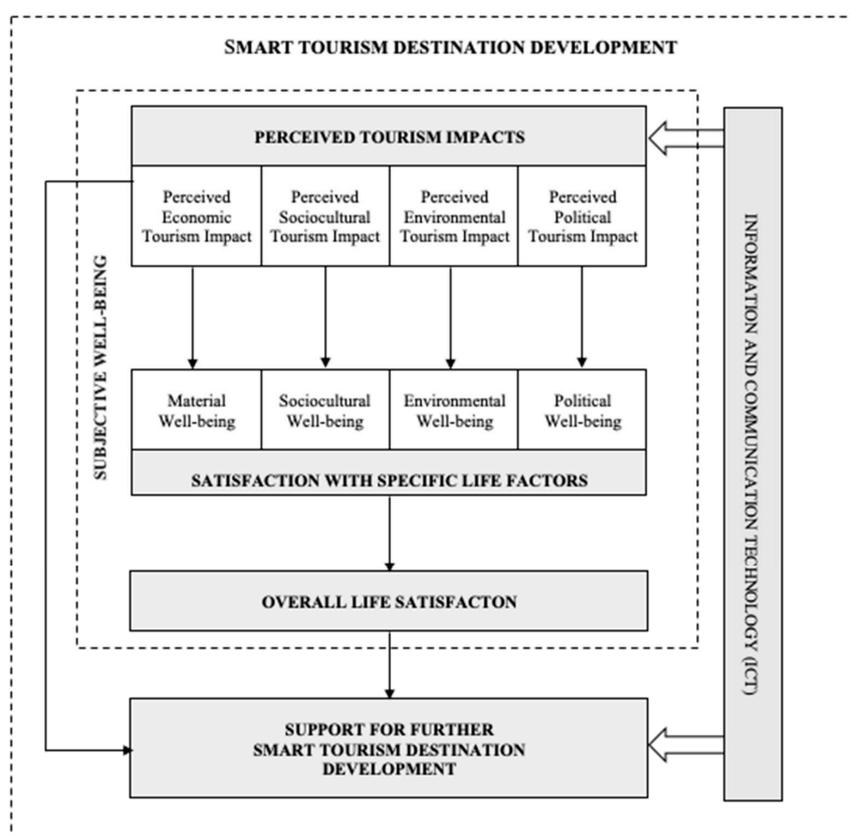


Figure 4. Theoretical model of residents' quality of life in smart tourism destinations.

It is established that residents' overall life satisfaction in the development of the smart tourism destination results from the relationship between perceived tourism impacts [1,7] and satisfaction with specific life factors. On the other hand, we highlight the important role that ICTs play in this model, as they function as cross-cutting factors that influence the perceived tourism impacts and support for further smart tourism destination development [88].

In addition, we suggest that the overall satisfaction of the resident with its quality of life favors the assessment of the smart tourism destination [3,39]. In the subsections below, the elements of the proposed theoretical model are discussed.

4.1. Perceived Tourism Impacts on Smart Tourism Destination Development

Based on the QOL-STD model (Figure 4), we determine that the perceived tourism impacts by residents in the development of smart tourism destinations are classified into four dimensions of economic, sociocultural, environmental impacts [1,7], and political impacts [50]. The perceived tourism impacts on smart tourism destinations can be either positive and negative, playing a major role in setting up the destinations and in residents' quality of life. We consider that each of these dimensions (economic, sociocultural, environmental, political) is composed of factors, which are essentially based on the study of Boes, Buhalis, and Inversini [83], Giffinger et al. [97], and Neirotti, De Marco, Cagliano, Mangano, and Scorrano [69], and indicators based on the authors listed in Tables 3–6.

Table 3. Economic impacts perceived by residents in smart tourism destinations.

Dimension	Factors	Indicators	Authors
Perceived Economic Tourism Impacts	Entrepreneurship and Innovation: implementation of new ventures related to tourism and other activities, with the support of ICTs	-Creation of new tourism companies -Implementation of innovative local businesses	Appio, Lima, and Paroutis, 2019 [75]; Boes, Buhalis, and Inversini, 2015 [83]; Buhalis and Amaranggana, 2014 [11]; Giffinger et al., 2007 [97]; Ivars-Baidal, Celdrán Bernabeu, and Femenia-Serra, 2017 [88]; Ivars-Baidal, Celdrán-Bernabeu, Mazón, and Perles-Ivars, 2019 [104]; Neirotti et al., 2014 [69]; Nunkoo and So, 2006 [45]; Olya and Gavilyan, 2017 [46]; Park, Nunkoo, and Yoon, 2015 [58]
	Collaborative Economy: job creation and increased revenue through peer-to-peer transactions on online platforms	-Business creation opportunities on digital platforms	Capdevila and Zarlenga, 2015 [71]; Garcia-Ayllon, 2018 [105]; Gretzel, Werthner, Koo, and Lamsfus, 2015 [106]; Perles Ribes, Moreno Izquierdo, Ramón Rodríguez, and Such Devesa, 2018 [107]
	Employment: job creation in tourism, ICT and other activities	-Employment opportunities in the tourism industry -Job opportunities in technology and innovation companies -Employment opportunities in other activities	Giffinger et al., 2007 [97]; Kim, Uysal and Sirgy, 2013 [1]; Ko and Stewart, 2002 [7]; Macke, Casagrande, Sarate, and Silva, 2018 [100]; Macke, Rubim Sarate, and de Atayde Moschen, 2019 [73]; Nunkoo and So, 2006 [45]; Olya and Gavilyan, 2017 [46]; Park, Nunkoo, and Yoon, 2015 [58]; Picatoste, Pérez-Ortiz, Ruesga-Benito, and Novo-Corti, 2018 [66]; Shafiee et al., 2019 [14]; Uysal and Sirgy, 2019 [37]; Yu, Cole, and Chancellor, 2018 [4]
	Income: income generation through physical and digital businesses	-Contribution to community revenue -Business revenue opportunities on digital platforms	Giffinger et al., 2007 [97]; Ko and Stewart, 2002 [7]; Macke, Casagrande, Sarate, and Silva, 2018 [100]; Macke, Rubim Sarate, and de Atayde Moschen, 2019 [73]; Park, Nunkoo, and Yoon, 2015 [58]; Shafiee et al., 2019 [14]; Yu, Cole, and Chancellor, 2018 [4]
	Quality of Products/Services: improving the quality of products and services (related to tourism or not), which favors the competitiveness of the destination	-Improving the quality of local business products and services -Modernization of local businesses	Buhalis and Amaranggana, 2014 [11]; Huang, Goo, Nam, and Yoo, 2017 [85]; Shafiee et al., 2019 [14]; Yeh, 2017 [68]
	Costs of Living: increased living costs, mainly in relation to housing and consumption of goods and services	-Increased prices for products and services -Increased housing costs	Ko and Stewart, 2002 [7]; Martín Martín, Guaita Martínez, and Salinas Fernández, 2018 [108]; Nunkoo and So, 2006 [45]; Olya and Gavilyan, 2017 [46]; Uysal and Sirgy, 2019 [37]; Yu, Cole, and Chancellor, 2018 [4]

Table 4. Sociocultural impacts perceived by residents in smart tourism destinations.

Dimensions	Factors	Indicators	Authors
Perceived Sociocultural Tourism Impacts	Human Capital: increasing the level of training and professionalization of residents; encourage learning and adapting to smart technologies; knowledge generation	-Increasing the level of education and knowledge training -Development of language skills -Digital skills development -Easy access to information	Appio, Lima, and Paroutis, 2019 [75]; Boes, Buhalis, and Inversini, 2015 [83]; Buhalis and Amaranggana, 2014 [11]; Chourabi et al., 2012 [74]; De Guimarães, Severo, Felix Júnior, Da Costa, and Salmoria, 2020 [109]; Giffinger et al., 2007 [97]; Mattoni, Gugliermetti, and Bisegna, 2015 [110]; Nam and Pardo, 2011 [111]; Dameri and Ricciardi, 2015 [112]; Neirotti et al., 2014 [69]
	Social Capital: generation of relationships/interactions and experiences between residents and tourists and other actors of tourist destination through ICTs	-Interaction with tourists through social media -Interaction with the community through social media -Increased cultural exchange	Appio, Lima, and Paroutis, 2019 [75]; Boes, Buhalis, and Inversini, 2015 [83]; De Guimarães et al., 2020 [109]; Femenia-Serra and Neuhofer, 2018 [87]; Gretzel, Werthner, Koo, and Lamsfus, 2015 [106]; Giffinger et al., 2007 [97]; Lim, Edelenbos, and Gianoli, 2019 [65]; Macke, Rubim Sarate, and de Atayde Moschen, 2019 [73]; Moscardo and Murphy, 2014 [57]; Moscardo et al., 2017 [56]; Nam and Pardo, 2011 [111]
	Health: expansion and modernization of health services; prevention, diagnosis and treatment of diseases with the support of ICTs; healthy habits of the population	-Improving the health system -More modern and innovative health services -Healthier population	Abdullah Almaqashi, Lomte, Almansob, Al-Rumaim, Jalil, 2019 [62]; Anisetti et al., 2018 [113]; Cerutti, Martins, Macke, and Sarate, 2019 [114]; Pouikli, 2019 [115]; Trencher and Karvonen, 2019 [67]; Uysal and Sirgy, 2019 [37]
	Security: expansion and modernization of public safety services (police and firefighters) with the support of ICTs	-Improving the public safety system -Increased fire services -Most protected population	Abdullah Almaqashi et al., 2019 [62]; Ko and Stewart, 2002 [7]; Jordan, Lesar, and Spencer, 2019 [32]; Madakam, Ramaswamy, and Date, 2019 [101]; Uysal and Sirgy, 2019 [37]; Yu, Cole, and Chancellor, 2018 [4]
	Mobility and Accessibility: modernization of public transport; improvement of traffic through real-time information and other technologies; creation of alternative means of transport	-Modernization of the transport system -Improving traffic control	Al-Thani, Skelhorn, Amato, Koc, Al-Ghamdi, 2018 [63]; Appio, Lima, and Paroutis, 2019 [75]; Braun, Fung, Iqbal, and Shah, 2018 [94]; Cerutti, Martins, Macke, and Sarate, 2019 [114]; Edge, Boluk, Groulx, and Quick, 2020 [116]; Giffinger et al., 2007 [97]; Ismagilova, Hughes, Dwivedi, and Raman, 2019 [72]; Neirotti et al., 2014 [69]; Schaffers, Ratti, and Komninos, 2012 [79]; Wirtz, Müller, and Schmidt, 2019 [80]
	Social Inclusion: inclusion of people in society with the support of smart technologies; accessibility	-More equitable society -Opportunities for all -Improving accessibility	Boes, Buhalis, and Inversini, 2016 [90]; Giffinger et al., 2007 [97]; Lim, Edelenbos, and Gianoli, 2019 [65]; Moustaka, Theodosiou, Vakali, and Kounoudes, 2019 [117]; Pencarelli, 2019 [13]; Shafiee et al., 2019 [14]; Yeh, 2017 [68]
	Culture and Entertainment: generation of experiences and appreciation of cultural heritage through the use of ICTs; management, conservation and modernization of the cultural heritage of the destination Digital Gap: Gap between those who have access and ease in the use of ICTs (computers, mobile devices and the internet) and those who do not	-Preservation of cultural heritage -Modernization of cultural heritage -Increased leisure and culture offer -Increased use of ICTs	Boes, Buhalis, and Inversini, 2016 [90]; Buhalis and Amaranggana, 2015 [84]; Giffinger et al., 2007 [97]; Kim, Uysal and Sirgy, 2013 [1]; Ko and Stewart, 2002 [7]; Jordan, Lesar, and Spencer, 2019 [32]; Neirotti et al., 2014 [69]; Shafiee et al., 2019 [14]; Uysal and Sirgy, 2019 [37]; Yeh, 2017 [68]; Yu, Cole, and Chancellor, 2018 [4] Appio, Lima, and Paroutis, 2019 [75]; Chourabi et al., 2012 [74]; Spicer, Goodman, and Olmstead, 2019 [118]
	Gentrification: displacement and reduction of residents and local trade in certain areas based on the intensity of tourism activity driven by the use of ICTs	-Displacement of residents of tourist downtown -Increased use of digital platforms for the leasing of immovable or rooms	Garcia-Ayllon, 2018 [105]; Ioannides, Röslmaier, and van der Zee, 2019 [119]

Table 5. Environmental impacts perceived by residents in smart tourism destinations.

Dimensions	Factors	Indicators	Authors
Perceived Environmental Tourism Impacts	Water and Energy Management: optimization of energy and water use; implementation of smart energy grids and water (smart water management) systems; renewable energies renewable energy	-Improving the water supply -Improving energy supply -Increasing the use of renewable energy	Appio, Lima, and Paroutis, 2019 [75]; Battista et al., 2014 [120]; Buhalis and Amaranggana, 2014 [11]; Faheem et al., 2019 [121]; Giffinger et al., 2007 [97]; Ivars-Baidal, Celdrán-Bernabeu, Mazón, and Perles-Ivars, 2019 [104]; Mosannenzadeh et al., 2017 [122]; Mosannenzadeh, Di Nucci, and Vettorato, 2017 [123]; Neirotti et al., 2014 [69]
	Environmental Management: management, preservation and monitoring of natural heritage; waste management; with the support of ICT integration	-Preservation of nature -Increased environmental awareness of the community -Improving the cleanliness of the city -Effective garbage collection service	Appio, Lima, and Paroutis, 2019 [75]; Dameri and Ricciardi, 2015 [112]; Eslami et al., 2019 [24]; Giffinger et al., 2007 [97]; Park, Nunkoo, and Yoon, 2015 [58]; Simonofski, Vallé, Serral, and Wautelet, 2019 [124]; Uysal and Sirgy, 2019 [37]; Yu, Cole, and Chancellor, 2018 [4]
	Sustainable Urban areas: modernization and expansion of the city's green spaces and parks; renovation and construction of sustainable and innovative buildings	-Increase in sustainable and innovative constructions in the city -Increase in the city's green spaces and parks	Anguluri and Narayanan, 2017 [125]; Galle, Nitoslawski, and Pilla, 2019 [126]; Macke, Casagrande, Sarate, and Silva, 2018 [100]; Neirotti et al., 2014 [69]; Nunkoo and So, 2006 [45]; Olya and Gavilyan, 2017 [46]
	Over-tourism: over-tourism on account of the intense promotion of tourist marketing on online platforms, which can result in the overcrowding of public and private spaces (shopping malls, bars, etc.)	-Overcrowding public spaces -Overcrowding of private spaces	Ioannides, Röslmaier, and van der Zee, 2019 [119]; Koens et al. (2019); Martín Martín, Guaita Martínez, and Salinas Fernández, 2018 [108]; Perles Ribes, Moreno Izquierdo, Ramón Rodríguez and Such Devesa, 2018 [107]
	Pollution: increased sound, environmental and visual impact due to the intensification of tourist activity	-Increased sound pollution -Increased environmental pollution -Increased visual pollution	Ko and Stewart, 2002 [7]; Nunkoo and So, 2006 [45]; Olya and Gavilyan, 2017 [46]; Park, Nunkoo, and Yoon, 2015 [58]; Pouikli, 2019 [115]; Randhawa and Kumar, 2017 [127]; Uysal and Sirgy, 2019 [37]; Yu, Cole, and Chancellor, 2018 [4]

Thus, it is established that the economic impacts (Table 3) relate to the dimensions of entrepreneurship, collaborative economy, employment, income, the quality of products/services, and increased costs of living, are associated with the use of ICTs. Based on that, it is understood that residents of smart destinations could have ample job and rental opportunities due to the intensive use of ICTs (business creation opportunities on digital platforms). However, the intensification of tourist activity would lead to an increase in the costs of living in the community, mainly in relation to house prices.

On the other hand, sociocultural impacts (Table 4) refer to the formation of human and social capital, to improving health, public security and mobility of destiny, and social inclusion, among other aspects. It can be noted that ICTs can contribute to the improvement of human capital (knowledge, skills, and attitudes) and social interactions, and provide better public services in smart destinations. While, smart technologies can also increase the digital divide between the population based on their income and can also intensify gentrification processes, which are already common in tourist destinations.

Table 6. Political impacts perceived by residents in smart tourism destinations.

Dimensions	Factors	Indicators	Authors
Perceived Political Tourism Impacts	Governance: participation and collaboration of various actors (public sector, private sector, residents, tourists, other agents) in the decision-making process, planning and policymaking of the smart tourism destination, with the support of smart technologies; political leadership	-Existence of tourism development policies -Existence of urban development policies -Community participation in the decision-making process of the destination -Greater local government transparency on tourism actions -Trust in local government in tourism decision-making -Participation of citizens in solving the city's problems through digital platforms	Appio, Lima and Paroutis, 2019 [75]; Boes, Buhalis, and Inversini, 2015 [83]; Buhalis and Amaranggana, 2014 [11]; Chourabi et al., 2012 [74]; López de Ávila and García, 2015 [12]; De Guimarães et al., 2020 [109]; Giffinger et al., 2007 [97]; Ivars-Baidal, Celdrán Bernabeu, and Femenia-Serra, 2017 [88]; Ivars-Baidal, Celdrán-Bernabeu, Mazón, and Perles-Ivars, 2019 [104]; Khan, Woo, Nam, and Chathoth, 2017 [60]; Nam and Pardo, 2011 [111]; Nunkoo and So, 2006 [45]; Olya and Gavilyan, 2017 [46]; Perles Ribes and Ivars-Baidal, 2018 [81]; Praharaj, Han, and Hawken, 2018 [128]
	Digital security and privacy: provide the security and privacy of residents' data in the use of ICTs	-Increased online purchases -Virtual crime control -Privacy of personal data	Anisetti et al., 2018 [113]; Appio, Lima, and Paroutis, 2019 [75]; Belanche-Gracia, Casalo-Ariño, and Pérez-Rueda, 2015 [76]; Braun et al., 2018 [94]; Buhalis and Amaranggana, 2014 [11]; Lim, Edelenbos, and Gianoli, 2019 [65]; Lin, Zhao, Yu, and Wu, 2019 [78]; Moustaka, Theodosiou, Vakali, and Kounoudes, 2019 [117]; Pencarelli, 2019 [13]; Yeh, 2017 [68]
	Fake News: lack of control or promotion of fake news through ICTs	-Control of false information on online sites and social networks	Fedeli, 2019 [129]

With regard to environmental impacts (Table 5) and the effects of ICTs on smart tourism destinations, some positive aspects can be highlighted, such as natural and cultural resources' efficient management. However, smart technologies also contribute to the increase the tourist flow in tourist destinations, which can impact the overcrowding of public spaces, in addition to causing more pollution. Thus, smart management of destinations would be important to promote a balance between the needs of residents and tourists.

With regard to political impacts (Table 6), it is worth mentioning the importance of planning and governance processes, as well as the issue of the security and privacy of users of information services and systems. ICTs would facilitate communication between the community and other tourism actors, which corroborates the smart destination planning and governance process. As Buhalis and Amaranggana [11] point out, one of the essential requirements for the implementation and operationalization of the smart destination would be the establishment of tourism governance (public–private partnerships and the community), with the support of governments. On the other hand, smart technologies could lead to undemocratic and participatory technocracy.

4.2. ICT on Smart Tourism Destinations

We understand ICTs [88] as cross-cutting factors affecting the impacts of tourism (economic, environmental, sociocultural, and political), as well as in residents' attitudes towards the development of the smart tourism destination. We consider ICTs to play a very important role in the development of smart tourism destinations [11,83,104,106], through technological infrastructure and smart solutions [87], as they facilitate the interconnectivity of systems, and provide innovative and personalized services for tourists and local population [78] and optimize the use of the resources of the destination [69].

In addition, we emphasize that ICT can have a hard or soft effect [69] on the impacts of tourism on the development of smart tourism destinations. In the case of environmental dimension (e.g., water and energy management, waste management, sustainable constructions) and social dimension (e.g., public health system, mobility and public safety), a high investment in ICTs is required. On the other hand, ICTs would have a softer and less costly effect in relation to the economic and political dimensions of the destination (e.g., entrepreneurship, collaborative economy, governance).

4.3. Satisfaction with Specific Life Factors, Overall Life Satisfaction, and Support for Further Smart Tourism Destination Development

Based on the Bottom-up Spillover Theory [2,23,25], we infer that the overall satisfaction of residents' lives in the development of smart tourism destinations results from the combination between the impacts of tourism perceived and the effects of ICT and from satisfaction with the specific factors of life.

Therefore, for the QOL-STD model, we determine that the sense of well-being with the particular factors of life consists of four dimensions: material well-being, sociocultural well-being, environmental well-being and political well-being. In this way, we could consider that the sociocultural, environmental, and political well-being dimensions would be related to non-material well-being [3]. Table 7 shows the factors of each dimension, which are essentially structured from the studies of Andereck and Nyaupane [10], Kim, Uysal, and Sirgy [1], Nunkoo and So [45], Uysal and Sirgy [37], Woo, Kim, and Uysal [3], Yeh [68], and Yu, Cole, and Chancellor [27]. Following the same procedure as in the previous section, the main studies related to the indicators formulated are mentioned (Table 7).

Table 7. Satisfaction with specific life factors in smart tourism destinations.

Dimensions	Factors	Indicators	Sources
Material Well-Being	Employment and Income Well-Being	-Satisfaction with employment -Income satisfaction	Appio, Lima, and Paroutis, 2019 [75]; Boes, Buhalis, and Inversini, 2015 [83]; Eslami et al., 2019 [24]; Giffinger et al., 2007 [97]; Gretzel, Werthner, Koo, and Lamsfus, 2015 [106]; Khizindar, 2012 [28]; Kim, Uysal and Sirgy, 2013 [1]; Ko and Stewart, 2002 [7]; Macke, Casagrande, Sarate, and Silva, 2018 [100]; Macke, Rubim Sarate, and de Atayde Moschen, 2019 [73]; Neirotti et al., 2014 [69]; Perles Ribes and Ivars-Baidal, 2018 [81]; Shafiee et al., 2019 [14]; Tokarchuk, Gabriele, and Maurer, 2017 [26]; Uysal and Sirgy, 2019 [37]; Woo, Kim, and Uysal, 2015 [3]; Woo, Uysal and Sirgy, 2018 [2]; Yeh, 2017 [68]
	Cost-of-Living Well-Being	-Satisfaction with the cost of living	Eslami et al., 2019 [24]; Giffinger et al., 2007 [97]; Khizindar, 2012 [28]; Kim, Uysal and Sirgy, 2013 [1]; Ko and Stewart, 2002 [7]; Tokarchuk, Gabriele, and Maurer, 2017 [26]; Uysal and Sirgy, 2019 [37]; Woo, Kim, and Uysal, 2015 [3]; Woo, Uysal and Sirgy, 2018 [2]; Yu, Cole, and Chancellor, 2016 [27]
Sociocultural Well-Being	Personal Development Well-Being	-Satisfaction with the level of education -Satisfaction with access to education -Satisfaction with access to information	Albino, Berardi, and Dangelico, 2015 [130]; Appio, Lima, and Paroutis, 2019 [75]; Boes, Buhalis, and Inversini, 2016 [90]; De Guimarães et al., 2020 [109]; Giffinger et al., 2007 [97]; Ko and Stewart, 2002 [7]; Liang and Hui, 2016 [29]; Macke, Casagrande, Sarate, and Silva, 2018 [100]; Mattoni, Gugliermetti, and Bisegna, 2015 [110]; Yeh, 2017 [68]
	Well-Being of Social Interaction	-Satisfaction with interaction with tourists -Satisfaction with community interaction -Satisfaction with the use of social media	Andereck and Nyaupane, 2011 [10]; Andereck, Valentine, Vogt, and Knopf, 2007 [44]; Boes, Buhalis, and Inversini, 2016 [90]; Carneiro, Eusébio, and Caldeira, 2018 [31]; Chi, Cai, and Li (2017); Giffinger et al., 2007 [97]; Ko and Stewart, 2002 [7]; Liang and Hui, 2016 [29]; Pencarelli, 2019 [13]; Shafiee et al., 2019 [14]; Tokarchuk, Gabriele, and Maurer, 2017 [26]; Uysal and Sirgy, 2019 [37]; Yeh, 2017 [68]
	Health and Safety	-Satisfaction with the public safety system -Satisfaction with fire services -Satisfaction with the health system	Anisetti et al., 2018 [113]; Cerutti, Martins, Macke, and Sarate, 2019 [114]; Giffinger et al., 2007 [97]; Khizindar, 2012 [28]; Kim, Uysal and Sirgy, 2013 [1]; Liang and Hui, 2016 [29]; Macke, Casagrande, Sarate, and Silva, 2018 [100]; Neirotti et al., 2014 [69]; Pouikli, 2019 [115]; Trencher and Karvonen, 2019 [67]; Tokarchuk, Gabriele, and Maurer, 2017 [26]; Uysal and Sirgy, 2019 [37]; Woo, Kim, and Uysal, 2015 [3]; Woo, Uysal and Sirgy, 2018 [2]; Yeh, 2017 [68]

Table 7. Cont.

Dimensions	Factors	Indicators	Sources
Sociocultural Well-Being	Well-Being of Urban Services	-Satisfaction with public transport -Satisfaction with traffic -Satisfaction with the availability of public spaces	Andereck and Nyaupane, 2011 [10]; Appio, Lima, and Paroutis, 2019 [75]; Benita, Bansal, and Tunçer, 2019 [99]; Carneiro, Eusebio, and Caldeira, 2018 [31]; Chourabi et al., 2012 [74]; Edge, Boluk, Groulx, and Quick, 2020 [116]; Giffinger et al., 2007 [97]; Khan et al., 2017 [60]; Ko and Stewart, 2002 [7]; Jordan, Lesar, and Spencer, 2019 [32]; Li, Huang, Chen, Zheng, and Liu, 2019 [77]; Liang and Hui, 2016 [29]; Lin, Zhao, Yu, and Wu, 2019 [78]; Macke, Rubim Sarate, and de Atayde Moschen, 2019 [73]; Martín, Moreira, and Román, 2019 [33]; Matarrita-Cascante, 2010 [34]; Nam and Pardo, 2011 [111]; Neirotti et al., 2014 [69]; Nunkoo and Ramkissoon, 2011 [35]; Schaffers, Ratti, and Komninos, 2012 [79]; Wirtz, Müller, and Schmidt, 2019 [80]; Yeh, 2017 [68]; Yu, Cole, and Chancellor, 2016 [27]
	Well-Being of Social Inclusion	-Satisfaction with digital inclusion programs -Satisfaction with the most vulnerable audience inclusion programs -Satisfaction with the accessibility of the destination	Appio, Lima, and Paroutis, 2019 [75]; Chourabi et al., 2012 [74]; De Filippi, Coscia, and Guido, 2019 [64]; Edge, Boluk, Groulx, and Quick, 2020 [116]; Neirotti et al., 2014 [69]; Perles Ribes and Ivars-Baidal, 2018 [81]
	Emotional Well-Being	-Satisfaction with cultural and entertainment -Satisfaction with cultural life -Satisfaction with the preservation of public and historic buildings	Boes, Buhalis, and Inversini, 2016 [90]; Buhalis and Amaranggana, 2015 [84]; Giffinger et al., 2007 [97]; Khizindar, 2012 [28]; Kim, Uysal and Sirgy, 2013 [1]; Ko and Stewart, 2002 [7]; Neirotti et al., 2014 [69]; Park, Nunkoo, and Yoon, 2015 [58]; Shafiee et al., 2019 [14]; Tokarchuk, Gabriele, and Maurer, 2017 [26]; Uysal and Sirgy, 2019 [37]; Woo, Kim, and Uysal, 2015 [3]; Woo, Uysal and Sirgy, 2018 [2]; Yeh, 2017 [68]; Yu, Cole, and Chancellor, 2016 [27]
Environmental Well-Being	Sustainable Well-Being	-Satisfaction with the water system -Satisfaction with the electricity system -Satisfaction with the quality of the environment -Satisfaction with waste management -Satisfaction with the city's green spaces and parks	Boes, Buhalis, and Inversini, 2015 [83]; Caragliu, Del Bo, and Nijkamp, 2011 [70]; Dameri and Ricciardi, 2015 [112]; Galle, Nitoslawski, and Pilla, 2019 [126]; Ko and Stewart, 2002 [7]; Macke, Casagrande, Sarate, and Silva, 2018 [100]; Macke, Rubim Sarate, and de Atayde Moschen, 2019 [73]; Mosannenzadeh et al., 2017 [122]; Neirotti et al., 2014 [69]; Park, Nunkoo, and Yoon, 2015 [58]; Randhawa and Kumar, 2017 [127]; Shafiee et al., 2019 [14]; Trencher and Karvonen, 2019 [67]; Tokarchuk, Gabriele, and Maurer, 2017 [26]; Uysal and Sirgy, 2019 [37]; Yu, Cole, and Chancellor, 2016 [27]
Well-Being Political	Community Participation Well-Being	-Satisfaction with citizen participation -Satisfaction with local government transparency -Satisfaction with trust in local government -Satisfaction with data protection and digital security	Albino, Berardi, and Dangelico, 2015 [130]; Hukonsson, and Obel, 2016 [131]; Cortés-Cediel, Cantador, and Bolívar, 2019 [132]; De Guimarães et al., 2020 [109]; Degbelo et al., 2016 [133]; Heddebaut and Di Ciommo, 2018 [134]; Liang and Hui, 2016 [29]; Macke, Casagrande, Sarate, and Silva, 2018 [100]; Praharaj, Han, and Hawken, 2018 [128]; Schaffers, Ratti, and Komninos, 2012 [79]; Simonofski, Vallé, Serral, and Wautélet, 2019 [124]; Snow, Yeh, 2017 [68]

We highlight that sociocultural well-being is a dimension that encompasses a greater number of factors and indicators that are closely related to the sense of quality of life (e.g., social interactions, public services, leisure and entertainment, personal development), and that has received greater attention from academic studies. We understand that political well-being [38] refers to the satisfaction with community participation factor.

Moreover, from the Social Exchange Theory [42,45,48,49], it is clear that overall life satisfaction is directly related to residents' attitudes towards the additional development of a smart destination [3,4] (Table 8). We thought that residents could associate the modernization of the city with tourism development.

Table 8. Overall life satisfaction and support for further smart tourism destinations.

Dimensions	Indicators	Sources
Overall Life Satisfaction	-The living conditions are excellent -I am satisfied with my life in general -Overall, I am a happy person	Nunkoo and So, 2006 [45]; Woo, Kim, and Uysal, 2015 [3]; Woo, Uysal, and Sirgy, 2018 [2]
	-Tourism is an important activity for my community	Nunkoo and Ramkissoon, 2011 [35]; Nunkoo and So, 2006 [45]; Woo, Kim, and Uysal, 2015 [3]
	-I support the current tourism development	Woo, Kim, and Uysal, 2015 [3]; Yu, Cole, and Chancellor, 2018 [4]
Support for Further Development of Smart Tourism Destination	-Further tourism development would positively affect the quality of life of my community	Woo, Kim, and Uysal, 2015 [3]
	-My city is more modern (technological and innovative) with tourism	(Own elaboration)
	-The modernization (technology and innovation) of the city positively affects the quality of life of my community	(Own elaboration)

Therefore, we highlight that the quality of life of residents in smart tourism destinations is an assessment of perceived tourism impacts and satisfaction with specific life factors, taking into account the effects of ICT. Studies seem to indicate that the population is more willing to support the development of a smart tourism destination, if it perceives a positive association between the development of tourism and the modernization of the city, which would reflect in the increase in quality of life of residents.

5. Conclusions

This investigation focused its analysis on two phenomena, quality of life and smart tourism destinations. The systematized review of publications led to the development of a theoretical model on residents' quality of life in smart tourism destinations. This shows the relevant role that technology plays in the perception of residents' quality of life. We believe that this theoretical contribution will help guide future research on smart tourism destinations, taking into account the strong increase in these studies that is taking place in recent years.

These main aspects relate to the research questions that were raised in the introduction section. In relation to the first research question, concerning the possible measurement of quality of life in smart tourism destinations, the studies analyzed determine that the quality of life of residents in smart places can be measured through indicators of objective and subjective well-being. However, the results of the papers analyzed show that much of tourism studies focuses on subjective well-being to measure the quality of life of the local population [18]. This approach to analysis has been supported by the Bottom-up Spillover Theory, that individual satisfaction with specific quality of life factors affects the general satisfaction of the community [2,23,25].

In large part, the subjectivity of the concept of quality of life makes it easier to explain through subjective indicators what this concept really represents for residents. The quality of life in smart tourism destinations can be measured through subjective indicators that express the level of satisfaction with the well-being dimensions (material, sociocultural, environmental, and political), in addition to the effect of tourism and ICT. Objective indicators are important as they complement subjective information and allow comparisons with other destinations and regions. The results from the assessment of the satisfaction of residents with the quality of life are good indicators that had to be used by the destination managers, both for the improvement of the offer and support for tourism development and other factors involved in the destination [2].

The second research question concerns the possibility that smart technologies can increase the quality of life among residents of smart tourism destinations. The results show that the use of smart technologies facilitates the creation of better tourist experiences [84,85], contributing to greater visitors' satisfaction, however they alone do not have sufficient transformational capacity to produce an increase in residents' quality of life. This potential to increase or improve the quality of life in smart tourism destinations occurs in combination with a set of variables such as human and social capital, innovation and entrepreneurship [83], governance [11,104], creativity [89], social inclusion [14,68], accessibility [86], etc., which make the technology properly combined to increase quality of life levels in the local community. The same technology in destinations with disparate levels in the aforementioned variables could provide different levels of quality of life. Technology is necessary, but does not produce quality of life per se. The studies analyzed do not allow us to say that there is an explanatory relationship between quality of life and smart technologies, but they are mentioned as a necessary factor.

ICT plays a cross-cutting role in smart tourism destinations [88], which encourage the local community to have a more positive perception of their quality of life [12] and of tourism activities and urban infrastructure [77,78], and which promote the improvement of human and social capital, and above all, generate an ecosystem favorable to economic activity [106]. These technology-linked benefits are not always equitable and can lead to a social gap in access to and use of technology [74] or economic growth that only favors certain stakeholders.

It is noticed that there is a propensity for investigations on the positive effects of ICTs in smart places. Some research in the field of smart cities emphasizes that the quality of life of residents will be related to environmental sustainability [73] and urban services [78]. Moreover, it is observed that much of the research on smart tourism destinations focuses on the satisfaction of tourists. On the other hand, ICTs raise issues for smart places. For example, tourist data can be shared between tourism service providers, making consumers vulnerable. So, privacy is a concern in smart places [84]. Also, the true costs of smart places have to be estimated, for example, energy consumption and waste, since sustainability is a big concern in cities and destinations [135]. Another concern with ICTs is that tourism is not an industry that attracts a lot of knowledge workers. Therefore, human resources issues regarding smart places need to be planned in advance [135]. Studies on the positive and negative issues of smart tourism on the quality of life of residents are still in the early stages and need to be explored and verified in future research on smart tourism destinations.

Although the issue of the quality of life of residents is an issue that has been widely discussed in tourism research, it was noted that, in the current state, there are no studies on quality of life on smart tourism destinations. We believe that the dimensions, factors, and indicators presented in the model of this research can represent indicators for managers and planners of smart tourism destinations. The analyses collected should be taken into account when developing policies and measures for the development and participation of the local community.

As a direction for further research, we suggest conducting studies to confront and validate the proposed indicators, as well as the development of other indicators and models of quality of life in smart tourism destinations. Furthermore, we also suggest the realization of studies on residents' role on smart tourism destinations' development, as well as on the impacts of smart technologies on residents' quality of life in conventional destinations and tourism destinations configured as smart.

Finally, as limitations of this research, we highlight the scarcity of previous research studies on the quality of life of residents in smart tourism destinations, and the difficulty of identifying and establishing subjective indicators of quality of life in the context of smart places. Furthermore, the failure to use objective indicators of quality of life in this research precludes the presentation of a holistic theoretical model.

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