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**CO-CREATING A SMART TOURISM LOCAL SERVICE SYSTEM  
IN RURAL AREAS – A CASE STUDY FROM SOUTH ITALY**

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## LIST OF ABBREVIATIONS

<b>AR</b>	– Augmented Reality
<b>DMO</b>	-- Destination Management Organization
<b>GDPR</b>	– General Data Protection Regulation
<b>IoT</b>	– Internet of Things
<b>ICT</b>	– Information and Communication Technologies
<b>PoI</b>	– Points of Interest
<b>S-D</b>	– Service Dominant Logic
<b>S-TLSS</b>	– Smart Tourism Local Service System
<b>SS</b>	– Service Science
<b>TLA</b>	– Tourism Local Area

<b>TLS</b>	– Tourism Local System
<b>U-TLSS</b>	– Unstable Tourism Local Service System
<b>UX</b>	– User Experience
<b>VSA</b>	– Viable System Approach

## INTRODUCTION

The most recent trends show an increase in the urbanization of cities, and, consequently, inner territories become more depopulated, business activities get closed, services get reduced and the overall services become poor and not able to offer quality offers to visitors (Bolay, 2020). According to (United Nations, 2019), by 2050 more than three out of four people will be living in urban areas. Nowadays, many studies have addressed the evolution and features of Smart Cities (Van Dijk & Teuben, 2015) and tourism is also one of those spheres that got digitally transformed by Smart Cities (Khan, Woo, Nam, & Chathoth, 2017). One of the features of smart applications is the possibility to let the user be a driver of value in creating and sharing contents (Kontogianni & Alepis, 2020). However, the explosion of smart solutions enabled by the latest technological innovations has been mostly contextualized in urban environments while fewer solutions have been developed in less urbanized rural areas (Steyn & Johanson, 2010).

The methodology used employs the merging of two of the core contemporary service research approaches: Service Science and Service-Dominant logic; the first offers an organizational framework to generate and integrate value co-creation in terms of a smart service systems (Polese, Botti, Grimaldi, Monta & Vesci, 2018). For the same purpose, but differently, the second proposes a different layout called service ecosystems (Vargo & Lusch, 2016). This combination of approaches overcomes individual model limitations by setting an integrated model that can be employed to hypercompetitive and experience-based sectors (Polese, Botti, Grimaldi, Monta & Vesci, 2018), and that was adopted by using a case study methodology, relying on semi-structured interviews.

More specifically, 20 interviews on the perception of the main dimensions of the smart service ecosystems were collected, during a period of 8 months (from December 2019 to July 2020) to elaborate a scenario that considers: (1) stakeholders groups; (2) resource integration; (3) technology driver; (4) institutions engagement. By employing this methodology, the process lets investigate the core features to addressing value-co-creation and sustainability in the long term. Overall, the purpose of this thesis is to explore alternative innovative solutions for less urbanized areas and to set a rural territory in terms of a smart tourism system, where every actor involved fully cooperates in the co-creation

and development of value, and to build and maintain a collaborative mutualism among stakeholders.

Indeed, the field of smart tourism has been mostly investigated in the urban context, while very few studies consider rurality into consideration, and, therefore, this study can help literature to grow in this field of research which is in its recent stages. Moreover, it seeks to identify the current situation regarding the level of awareness of the benefits deriving from value-co creation. Furthermore, I chose this topic to understand which are the factors and challenges in facing the implementation of a smart tourism system in term of local service as the focus of academics and practitioners in providing smart solutions has mainly been on urbanized areas and not in those placed outside of the city context (Bassano et al., 2018) and, because, personally, I come from rural village from South Italy, and it is my interest to understand better what solutions could exist for my territory.

The primary goal of the thesis is to present an overview of a solution for the development of a smart tourism system aimed to create a territorial network which creates synergism among the stakeholders and the territory of Vallo di Diano in South Italy. Mostly, it seeks to:

- understand existing tourism practices in rural territories and explore the factors that have been suitable to establish an effective environment for the implementation of smart tourism systems.
- identify the means of improving the processes that encourage smart tourism solutions in rural areas as vehicles to improve quality of life and environment.

Therefore, the goal of implementing a smart tourism system in rural areas is to provide a set of solutions which are able to improve tourism and quality of living through co-creation process (Buhalis & Foerste, 2015). The detection of ICTs tools enhancing growth and spread of value can foster value co-creation practices' knowledge and offer discernments on the several types of activities produced by stakeholders during shared service delivery. Plus, this study can be an insight on the comprehension of mechanisms aimed at actively engaging visitors in tourism destinations. Thus, a better understanding of these processes can help elaborate integrated procedures boosting the attractiveness of a rural destination, generating at the same time social innovation and service innovation.



This research merges the technological focus of the Service System with the main social focused features of ecosystems to offer a framework able to highlight the core elements that decision-makers should consider to leverage value co-creation and innovation in the long run. Basically, this integrated framework can be employed to hyper-competitive and experience-based sectors like tourism (Prebensen et al., 2011), where the offer is based on immaterial elements linked with context, human factors or social beliefs among individuals. More specifically, the aim is to answer the next research questions:

- are the core elements of smart tourism systems (actors, technology, resource integration practices and institutions) driver of value co-creation and innovation also in rural attractions?
- what is the impact of the smart service ecosystem's dimensions on the emerging of social innovation in line with a systems and strategic view of value co-creation when considering rural territories?

To start, the first two chapters deepen literature review on smart cities, Internet of Things, and smart tourism; then, the third chapter explains the value co-creation process in smart tourism systems with particular attention in presenting a scenario that considers also territorial implications. Instead, the fourth chapter brings into account urbanizations issues, urban biases in ICT applications, differences between urban and rural tourism, and current directions and examples in the field of study. To follow, the case analysis will be introduced and sample characteristics and interviews will be presented. Lastly, discussion, limitations, and conclusions will be addressed.

## **1 TECHNOLOGICAL IMPLICATIONS IN THE SMART CITY CONTEXT**

In this chapter, I will try to clear the ideas regarding the Internet of Things (hereinafter: IoT), the technological infrastructure of Smart Cities. Therefore, short concepts about the Smart Cities will be provided as well. Secondly, I will refer to the evolution of IoT, and the business models triggered by it will be shown. The first review showed a precise path of the term, evolving with the advancement of technology, and, a particular to mention is that adjectives like “digital”, “intelligent”, and “smart” work as prefix to “city”. Plus, many definitions about this concept have been reshaped from different areas as urban studies, information technology and biology. Nowadays, smart city initiatives are enabled

by new IoT applications worldwide, by furnishing the possibility to remotely monitor, manage and control devices, and to generate new insights from massive streams of real data (Alletto et al., 2016). The core elements of a smart city comprise of a elevate degree of IT integration and an-all inclusive application of information resources, and the main elements for its urban development should include smart technology, smart industry, smart services, smart management and smart life (Wortmann, & Flüchter, 2015).

The IoT, instead, is connected to installing sensors like RFID, IR, or GPS for everything, and linking them with the internet by proper protocols for information exchange to get smart detection, location, tracking and management. By the technical support from IoT, smart cities can become equipped, interconnected, and intelligent and, therefore, being formed by integrating all these intelligent elements at its advanced stage of IoT development (Neuhofer, Buhalis, & Ladkin, 2012).

Statistics shows that IoT will represent almost 75 billion interconnected devices by 2025 (Statista, Inc., 2020a). One of most dramatic changes in the current ages is that the internet is characterized by a large network of interconnected elements, collecting external data using sensors and interacting with the physical world. It can be said that basically the role of IoT is to digitize physical objects, never connected before to the internet, to create infrastructures of shared “smart objects” serving different purposes (Wortmann, & Flüchter, 2015).

Concerning big data, (Borgia, 2014) highlights three processes related to smart IoT devices:

- Collection: acquisition or generation of data through the sensors of the smart objects;
- Transmission: data gets dispatched via wireless systems to a data collecting and processing centre, where different sources are collected and analysed;
- Processing, managing and utilization phase: data assumed a meaningful value and made available for interpretation.

As a matter of fact, special algorithms and data analyses can be processed through sensors and the IoT, providing opportunities to explore newer and more innovative ways to achieve higher levels of sustainability, and to develop cities more efficiently. Generally, the implementation of smart city concepts is a hard task for the governments, but, with

the support of big data applications, the level of sustainability to improve the living standards became possible to reach (Borgia, 2014).

Smart city can be imagined as composed of the brain leading a body. In fact, there is a control center, which can be seen as the brain of a nervous system, and a peripheral infrastructure, consisting of sensors collecting real-time data on the city which get analyzed by the control center to address better decisions and employ them (Cocchia, 2014). To sum up, all this process connects the physical with the digital world without limitations. Still, overall it can be commonly agreed that Smart Cities are being characterized for the pervasive use of Information and Communication Technologies (hereinafter: ICT), that eases cities to make better choices of their resources in various urban fields (Neirotti, De Marco, Cagliano, Mangano, & Scorrano, 2014).

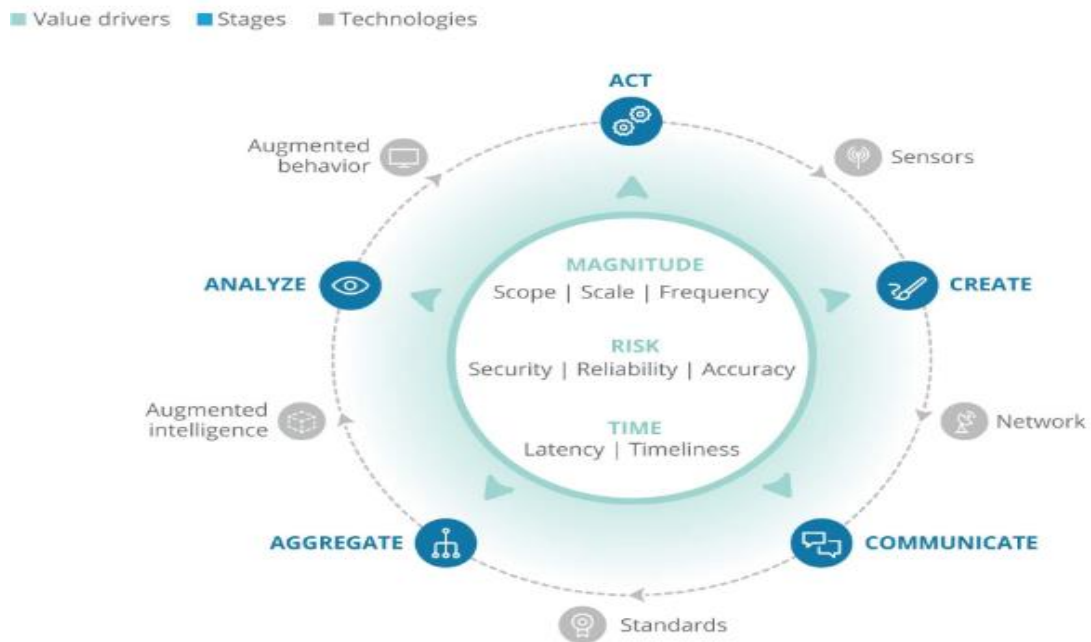
Anyways, no definition of Smart Cities has been universally acknowledged yet, neither a general framework, nor a one-fits-all definition of it (O'Grady et al, 2012). Lately, assessing the level of smartness has become an important task for researchers and public administrators, therefore, some rankings have been developed to evaluate the level variables such as economy, infrastructure, innovation, quality of life, resilience, transportation, urban development, etc (Neirotti, De Marco, Cagliano, Mangano, & Scorrano, 2014). As a matter of fact, these kinds of frameworks can address and inspire local governments to support Smart City initiatives, by recommending directions and agendas for Smart City research and expose practical demonstrations for government experts (Chourabi et al., 2012).

To finish, according to (Statista, Inc., 2020a) IoT market share will grow to around 1.6 trillion by 2025 and its impact on cities and society, generating an increasing interest for Smart City and for IoT applications. Also for this reason, it is important addressing the questions regarding the implications, benefits and concerns which have been triggered by many scientists which are calling for technical debates on innovative research efforts from both academia and industry, especially for the development of efficient, scalable, and reliable Smart City based on IoT (J. I. Kim, 2014).

## 1.1 Value Delivery of IoT

According to (Al Nuaimi, Al Neyadi, Mohamed & Al-Jaroodi, 2015), improvements for citizens' quality of living have been obtained by utilizing IoT and big data analysis in the field of health, education, energy, transportation, and tourism as well. With no doubts IoT offers many opportunities to improve Smart Cities by providing updated and accurate data exchanges, and to understand better decision making processes. One important tool is the Information Value Loop, in Figure 1, which shows the technologies of IoT combined in order to generate value, offered by (Deloitte, 2016).

*Figure 1: Information Value Loop*



*Source: Deloitte (2016).*

In order to generate the Information Value Loop, the following stages need to be going on (Deloitte, 2015):

- Create: physical environment elements that get collected by sensors;
- Communicate: a series of networks, devices or platforms, let data to be shared.
- Aggregate: data manipulation that gives meaningful information.
- Analyze: detecting patterns or anomalies that require deeper investigation got eased by analytical tools.
- Act; once delivered the insights, user is enabled to respond with a real-life action.

One of the key values to let IoT be fully adopted by businesses is surely financial revenue, especially needed for new business models and ways to create value for IoT technology. This is particularly relevant according (Van Dijk & Teuben, 2015), as current trends foresee new income opportunities are getting more appealing while the old traditional business models are declining and in future not applicable anymore.

This section wants to focus and present a list of business models and, below, Table 1 shows a list of business models, where most of them have been already implemented in the latest digital innovations. The clearest example to bring into the discussion can be offered by one of the 5 most visited websites of the world, Youtube (Statista, Inc., 2020b). Shortly, the income gets generated in two ways; from the advertisement revenue and the premium service, which allows access to special contents. This kind of business model is named freemium and its success depends on a simple fact: proposing costless physical things gets unsustainable compared to the current digitized framework, characterized by a low cost of increasing capacity.

Therefore, to found a deep user's base, company can revenue offering their services for free, gaining either by the incomes of the premium users (normally, monthly subscriptions) or with the advertisements targeted to the not-payers, or, instead of advertisements, the data generated by not-paying-users merely create value for the system, to understand human patterns and discover new trends (Van Dijk & Teuben, 2015).

*Table 1: Examples of the Latest Business Model examples in ICT*

<b>Business Model</b>	<b>Basic features</b>
<b>Advertising based</b>	Free content or services in exchange for receiving advertisements
<b>Subscription</b>	Fixed price, monthly or yearly subscription for consuming unlimited digital content and services
<b>Pay-Per-Use</b>	Price based on the number of consumed items
<b>Data monetization</b>	Free service content, but collection of consumers' behaviour/preferences data

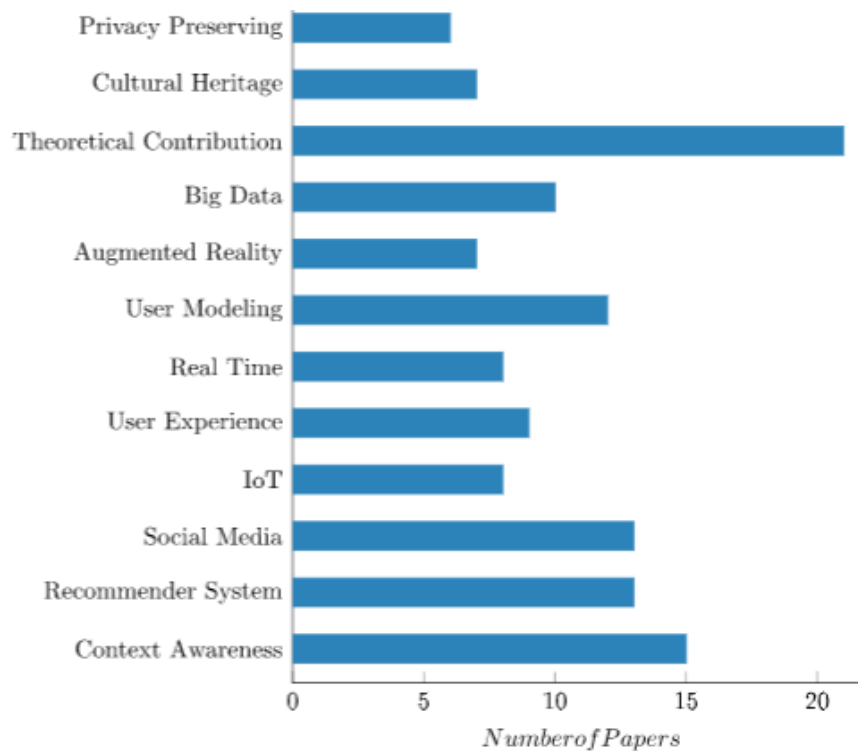
*Source: Adapted from Bassano et al. (2012).*

The IoT seeks to shape new technologies into products. Indeed, the value of traditional physical products is given by their individual performances; but, when IOT comes into play, these products become connected generating a new core element for the product's value: information. Example in this matter can be standard light bulbs, where, just some years ago, brightness, efficiency and lifespan were reflecting their value, while, nowadays, automation, scheduling, remote controlling, and more are processes enabled by the latest enhancements in ICT (Deloitte, 2016).

## 2 SMART TOURISM

In this chapter, the concepts of smart tourism will be addressed. At August 2020, about 210 articles were returned into ScienceDirect when querying its database, while in Google Scholars this term reproduced more than 5.200 mentions from 2015 to 2020. Also other databases such as Scopus, Resarchgate have been used. It is evident that it is an area with undergoing research processes; this field has many implications and dependencies. Overall, smart tourism can be conceptualized as a tourism development and management orientation overtakes technology installation (D. Kim & Kim, 2017).

*Figure 2: Quantity of Papers analyzing each investigated category*



*Source: Kontogianni & Alepis (2020).*

As an outcome of the literature review process, as can be seen in Figure 2, particular attention has been given on 12 core elements identified as the most discussed in smart tourism research. These elements, as shown in Figure 2, are: Privacy Preserving, Context Awareness, Cultural Heritage, Recommender Systems, Social Media, Internet of Things, User Experience, Real Time, User Modeling, Augmented Reality and Big Data, which are preceded by many theoretical approaches in the Smart Tourism sector. Therefore, in the following subchapters these topics will be briefly introduced and discussed as they are the features that have been most frequently found in smart tourism literature review (Kontogianni & Alepis, 2020).

## **2.1 Concepts and Contributions in Smart Tourism**

To start, it has to be said that lately the term “smart tourism” has been wrongly misconcepted. Indeed, there is belief that is linked with the adoption and employ of ICT in the tourism field, leading to a poor construct intended merely as developments attainable uniquely by innovative practices (Xiang, Tussyadiah & Buhalis, 2015). On the contrary, a smart system could be intended as a touristic management orientation with greater impacts on the tourism governance and in terms of a strategic view of a given territory (Gretzel, Reino, Kopera & Koo, 2015).

One remarkable difference pointed out is the one between smart and e-tourism. As a matter of fact, if the focus of e-Tourism is on the informatization and virtualization of touristic exchanges taking advantage of the digital value chain, smart tourism, instead, merge the virtual and physical, and refers to broader techno-utopian views of a destination, highlighting the need of the primary role of the governance in the context of large ecosystem and the relative bond between public and private sector agreements. (Gretzel, Reino, Kopera & Koo, 2015)

Moreover, another difference between the two concepts regards the involvement. More specifically, if e-Tourism follows the tourist experience before, during and after the travel, on the other hand, smart tourism found its bases around the experiences during the travel, not taking the movements from and to a destination (Gretzel, Sigala, Xiang & Koo, 2015). Finally, (Lamsfus, Martín Del Canto, Alzua-Sorzabal, & Torres-Manzanera, 2015) claim that human mobility is the final scope of smart tourism, while, on the other side, (Gretzel, Sigala, Xiang & Koo, 2015) sees tourist experience’s enhancement as the target

of all smart tourism efforts, and, on the same path, points on improving experience co-creation as the final goal of smart tourism (Buonincontri & Micera, 2016).

Similarly, the experience enhancement concept is also the interest core point of (P. Liberato, Alén & D. Liberato 2018), where the tourist destination is intended as a mix of feelings and experiences with smart destination. Therefore, following this idea, tourists communicate in an active way with the service providers, and together they co-create their personal involvement.

## **2.2 Context Awareness**

One of the most analysed concepts linked with Smart Tourism is “Context Awareness”. It is the case of the so-called wearables, devices that can be brought everywhere, differently than laptops, that contain an abundance of sensors, constantly in the users’ context. Therefore, in the perspective of Smart Tourism, the focus on sensors is particularly relevant as it provides an interaction between the smartphone and the environment and, as reflection, context awareness (Yürür et al., 2016). Given the fact that context plays a fundamental role in user preferences to offer personalized contents (Yang, 2018), the relevance of data is huge in a Smart Tourism system.

Moreover, it is already known that decision-making processes, also in tourism, get impacted by contextual information (Jorro-Aragoneses, Agudo & García, 2018). In the literature review, several systems focusing on context awareness have been found, like a context-aware recommender system, called HotCity (Jorro-Aragoneses, Agudo & García, 2018), or a user-centered service mechanism (Feng et al., 2014).

The basic model of a Smart Tourism systems relies on data detected from sensors and human actions, a platform providing high data processing ability and compatibility, capable to be supported by cloud computing, and, to finish, the Service that adapts to tourist needs. Another example is brought by (Braunhofer & Ricci, 2017), whose context-aware recommender system makes use of user contextual information to generate the personalized recommendations and enrich the user experience.

Considering that a recommender app should be based exclusively on contextual elements, (Braunhofer & Ricci, 2017) developed a model to predict the contextual elements



affecting users behaviour when rating an item so as to use the aforementioned factor in the advising process and therefore in more accurate recommendations as output.

### **2.3 Evidences from Touristic Apps IoT-related**

There are several applications of IoT for the tourism environment. As a matter of fact, there is the belief that IoT can enhance the generation of smart technological environments connecting their physical and digital infrastructures. For example, (A.K. Tripathy, P.K. Tripathy, Ray & Mohanty, 2018) introduced iTour, a Java-based IoT framework that seeks to let citizens participate in the tourism development processes.

Indeed, tourists have the ability to find information on a smart map regarding points of interests (hereinafter: Points of Interest), accommodations and request assistance. Similarly, the iTour administrator, tourism department, and other administrative officials are offered with a view of each asset on the city map in real-time and, from them, make analysis and address new activities or policies.

A series of research rely on wearable devices such as smart watches, bracelets that offer interactions to users with the environment surrounding, as it is claimed that can influence tourism behaviour. For these reasons, (Atembe, 2016) tries to offer an overview of the adoption of wearable devices in the tourism sector and the consequences on tourists. Also in another research the fact that wearable devices are able to improve the way of perceiving, understanding, and interacting with tourism attractions gets highlighted (Xiang, Tussyadiah & Buhalis, 2015).

Another study proposed a system, called TreSight, relying on the wearing of bracelets that use IoT and big data analytics for Smart Tourism and sustainable cultural heritage in an Italian city (Sun, Song, Jara & Bie, 2016). More specifically, this context-aware recommendation system monitors through sensors weather stations and collects this dynamic data; then, wearable bracelets and hotspots offer information about places availability, presence of queues or opening and closing hours.

Afterward, the mobile app communicates with the bracelet to provide suggestions to the tourists, offer promotions, and discover PoI once having taken advantage of the collected data. Further examples of IoT systems supporting wearables exploits 3D topographic differences to integrate Smart Tourism management systems. In particular for (Lin, Liu

& Lu, 2019) this system deploys wearables and sink nodes in a leisure park, collecting data from tourists' wearable devices to provide services like interaction with the landscape, detection of physiological data etc.

If a research deals with a IoT system providing location based assistance to users (Gretzel, Sigala, Xiang & Koo, 2015), differently (Nitt, Pilloni, Giusto & Popescu, 2017) propose an IoT architecture for a sustainable tourism app employing sensors in PoI, but also deals with optimisation issues, setting key requirements for an IoT platform in a Smart City environment which are Security Requirements, Flexibility and Data Requirements.

## **2.4 Recommender systems**

In the era of Big Data, one of the hardest challenges is making decisions and recommendations. One of the possible scenarios to tackle is the presence of an astonishing amount of data to process, while another possibility is when even time and place are not the suitable ones for the right decisions to thrive (Braunhofer & Ricci, 2017).

For what concerns how tackling the above-mentioned issues, personalized information filtering and those decision support systems, so called recommender systems, (Jorro-Aragoneses, Agudo & García, 2018), that try to advise relative features to users are solution that have been proposed (Ricci, Rokach, & Shapira, 2010).

What has to be understood is that in such systems recommendations are generated through several techniques and methodologies (Burke, 2007). The most adopted ones can be classified into four main classes relying on collaborative filtering, content-based, knowledge-based and hybrid ones (Braunhofer & Ricci, 2017). For what the tourism sector is influenced, several recommender systems have been successfully employed and getting the shape of apps providing personalized tours to visitors (García, Aciar, Mendoza, & Puello, 2018; Gavalas, Konstantopoulos, Mastakas, & Pantziou, 2014),

More specifically, according to some studies, touristic suggestions can be generated through filtering information, services, (Bobadilla, Ortega, Hernando, & Gutiérrez, 2013) contextual data, like geo-localization or time, budget, and a huge set of other variables like cultural heritages PoI, hotels, attraction, etc. so as to cover users' interest, preferences and needs (Bobadilla, Ortega, Hernando, & Gutiérrez, 2013).

Another demonstration of recommender system using tourist context data is given by a research of (Smirnov et al., 2014): a Smart space-based mobile application able to provide suggestions and to give access to PoI, and recommend the most suitable transportation path to achieve them (Kontogianni & Alepis, 2020). The particularity of it is that user context, profile (trip length, interaction mode, etc.) and a collaborative filtering methodology get exploited by the system in order to provide content-based recommendations to users and to those with similar interests.

Another study, instead, proposes a different approach that aims to integrate context awareness in a mobile tourism recommender system (Khallouki, Ahmed & Bahaj, 2018). Last example brought into the context is an app based on a Smart point of interactions recommendation algorithm. In fact, this considers geo-location and tourist preferences in order to provide suggestions to its tourists. Actually, two versions for this algorithm have been developed; the first considering just the user preferences, while a more extended version which also brings the geographical influence into analysis for the recommendation process (Alvarado-Uribe et al., 2017).

## **2.5 Social Media in Smart Tourism Systems**

Maybe it is not known so much, but it can be said that the first ever invented interface, offering the possibility to users to create its own profile and adding friends, is “Six Degrees”, a social media site, created in 1997 (Kontogianni & Alepis, 2020). Nowadays, instead, the number of social network applications in use is just shocking, till becoming the most preferred online activity, as indicated by web traffic reports (Fan & Gordon, 2014), while a statistic foresees that by 2021 the amount of 3.02 billion monthly active social media users will be reached (Statista, Inc., 2020c).

Mostly, these contain personal information, provided by the users, and data generated from their interactions, like writing a post, publishing a photo, making a live stream, a place review, with the social network media channels. Thus, all this raw data contains a valuable asset to develop models. For instance, a study conducted by (Atembre, 2016) tries to develop a new module that implicitly understands tourists’ preferences relying on their social media photos, thus personalizing its recommendations of tourism attractions.

To start, depending on the users' choices, a huge volume of photos deriving from Twitter, Instagram or other social media get gathered and processed by a micro service architecture. Basically, the process is composed by two phases: the first is linked with the login process to get authorized and authenticated to collect data; while, the second consist of tourist recommender system, a combination based on Deep Learning and Fuzzy Logic methods, capable to understand users' preferences from photos, hashtags and, classifying theme into categories for further analysis. Taking into consideration that that tourists can rely on real-time access about rating, reviews, advertisements deriving from social networks, an interesting study investigating user's trust on this information is brought by (S. E. Chang & Shen, 2018).

Another contribution for Smart Tourism is provided by (Park, Lee, Yoo & Nam, 2016) with an investigation that explores the ways local Korean administrations exploit social networking sites, Facebook first, to foster tourism in their territories. Furthermore, a very interesting paper revealing theoretical and practical implications for the Smart Tourism sector is shared by (Brandt, Bendler & Neumann, 2017) who, taking advantage from spatial analysis and text mining, tries to address how social networks can work as a platform to develop smart services for tourism.

This research has been querying a database with more than half million of tweets for the city of San Francisco. Tweets contain data like texts, geographical location, the user who posted it, and other supplementary information like metadata that can be used for analyses. The outcome of the authors' work shows how social media data offers the possibility for the city of San Francisco to build awareness about presence, engagement with the environment, and topical engagement of people across.

One last example can be a study that tries to identify cultural heritage resources from geotagged social media (Nguyen, Camacho & Jung, 2016). From this study, it results how smart cultural tourism service is able to provide smart interactions among the travellers of smart tourism environments by acquiring and analyzing geotagged multimedia data (for example pictures, hashtags, reviews) from the available social media. By doing so, the authors have been able to exploit these assets to show to people a smart way for leading them as much as possible during their trips (Nguyen, Camacho & Jung, 2016).

## 2.6 User Experience (UX)

In the last decades, a huge number of models have been proposed regarding the concept of User Experience (hereinafter: UX) (Jorro-Aragoneses, Agudo & García, 2018). Generally, the main objective in designing user experiences is reaching and maintaining a high degree of user contentment through the usefulness, convenience and happiness deriving from human-system interchanges that goes far beyond basic usability (Kujala, Roto, Väänänen, Karapanos & Sinnelä, 2011).

Shortly, UX can be seen as the users' realization of a system; three elements affect the interaction when it happens: system in question, the user and the context of use (S. E. Chang & Shen, 2018). Anyways, as well in Smart Tourism related applications, UX is a fundamental concept. Indeed, being capable of influencing user's rating of a tourism system in a positive way, and maintaining a high enthusiasm for it could generate a long lasting bond with applications and let it be recommended to other potential users (S. E. Chang & Shen, 2018; Kujala, Roto, Väänänen, Karapanos & Sinnelä, 2011).

Taking this into account, the real exigence for tourism sector is to fully comprehend traveler's needs and ways of interacting and communicating with others, (Figueredo et al., 2018) in order to provide personalized services that can make better the quality of their travel and cultural experiences (Battino, Balletto, Borruso & Donato, 2018; Lo Bue, Wecker & Kuflik, 2017). In this regard, one instance can be a multilayer framework supporting personalization mixing the physical and digital world proposed by (Not & Petrelli, 2018). Their objective is to enhance visitors' user experience of a cultural heritage PoI using personalization. This last word contains three types of system behaviour:

- adaptability, changing according each visitor's preferences, visit reason and expectations;
- context-awareness, empowering the current state sensing of a given environment;
- adaptivity, a dynamically changing system, able to adapt and respond to new situations.

Specifically, the attempt was to create a cultural spot filled with smart objects, where each of them comes with a story to be presented once conditions are right (Kontogianni & Alepis, 2020). Another example can be a unique platform that provides dynamically

formed personalized experience between guests and employees is the core point of a case study (Neuhofer & Ladkin, 2017) or another research aimed at resolving the usability problems in an Augmented Reality (hereinafter: AR) context and improving UX.

Even though AR provides a great potential in the way information gets dispatched to the user, it could impose users with data overload or result in a system with high usability issues (Shih, Diao, & Chen, 2019). Eventually, the authors developed a ToARist, an AR touristic application based on User-Centered design (Williams, Inversini, Buhalis, & Ferdinand, 2015).

## **2.7 User Modelling**

In the last decades, the concept of ‘user modeling’ can be considered as a trendy topic of many researches. Back to 30 years ago, brilliant minds discussed and presented the developed user models at that point in time, indicating a path to follow for the next investigation in the field (Kontogianni & Alepis, 2020). How is conceptualized in the related scientific literature, the word “user modelling” is the recording and categorization of the several features of users’ behaviors and interests (Kontogianni, Kabassi & Alepis, 2018).

According to (Gao, 2018; Amoretti, Belli & Zanichelli, 2017), user profiling is composed by a series of behavior modelling, and, to estimate future behavior, user–device interaction information offers interesting modelling opportunities to try to locate users’ targets.

One very careful activity in the Smart Tourism environment is to offer personalized services to the user (Kontogianni, Kabassi & Alepis, 2018), providing them the relevant information, at the right time, through the best communication channel (Kontogianni, Kabassi & Alepis, 2018). According to (Lo Bue, Wecker & Kuflik, 2017), a user model for personalization purposes needs to be developed via Feature-based, Content-based and Collaborative filtering or other approaches.

A major concern for any organization, however, should be the collection and effective use of individuals’ data, guaranteeing the respect of their privacy, especially after the advent in Europe of the General Data Protection Regulation (hereinafter: GDPR). In this regard, users’ data can be damaged both implicitly and explicitly. Indeed, explicit user

data are those directly submitted to the system by the user, while implicit user data gets collected from several sources like sensors, social media channels or smart devices.

Plus, it looks like that the collection of data coming from variable sources regarding individuals and their environment is a one-way path in order to achieve user modelling in adaptive, recommender systems (Lo Bue, Wecker & Kuflik, 2017). It must be said also that several papers in the Smart Tourism field tried to tackle problems already mentioned, seeking to set the ground for further investigation in user modelling in the discipline. For example, MuseFy is an application developed to use a double stereotype system in order to get the best user modelling, adapting its UI and giving back customized assistance to users (Alepis, Kabassi & Virvou, 2017).

Furthermore, (Kontogianni, Kabassi & Alepis, 2018) try to present how user modelling can be achieved in a Smart Tourism application through data generated by users' social networks, and data collected from their smartphones implicitly, requiring no user interaction. Lastly, useful to mention is also Utravel, a mobile app, combining user profiling and context-based data to generate the recommendations process (Amoretti, Belli & Zanichelli, 2017). This application drives tourists towards POIs based on their current geo-location and their previously expressed evaluations.

## **2.8 Big Data**

Current ages are characterized by the explosion of the phenomena of Big Data, featured by its 5 V: Variety, Velocity, Volume, Veracity and Value (Amadeus, 2020). This concept is related with the productive exploitation of data with huge variety and velocity, that has a number of attributes like too large, too unstructured, and too fast-moving.

In the Smart Tourism ecosystem, all that heterogeneous set data resulting from social networks, apps, sensors represent a big opportunity for gold diggers (Masseno & Santos, 2018a). For what concerns data sources, the big data linked with Smart Tourism generally can be divided into three main clusters: User Generated Content Data, which includes online textual data and online photo data; then Device Data, which is linked with data produced by devices, like GPS data, Bluetooth data, etc.; and lastly, Transaction Data which collects web search data, webpage visiting data, online booking data and other data. (Li, Xu, Tang, Wang & Li, 2018).

This plethora of free information, derived from users' actions, mixed with the infrastructure (Gretzel, Reino, Kopera & Koo, 2015), analysis real-time synchronization and meaningful interpretation of data (Smirnov et al., 2019) became a valuable source to generate value and deliver a pleasant and unique smart travel experience (Amadeus, 2020). Indeed, Smart Tourism relies on the adoption of emerging technologies, like social media and smart devices and sensors to store and exploit large amount of data for generating new value propositions (Del Vecchio, Mele, Ndou & Secundo, 2018).

Overall, Big Data has been the main concern of several papers in smart tourism research. Interesting to notice is that the target is to understand how Big Data can be used in the most effective way in the Smart Tourism sector. However, the challenges arising from big data exploitation in smart tourism also have been tackled. Indeed, for example, how to translate and give meaning to a wide range of variables like physical, biological and social into a univocal electrical signal (Sun, Song, Jara & Bie, 2016) or how to guarantee the preservation of users' privacy.

Another study in the Big Data and Smart Tourism sector, tries to understand how Social Big Data can be taken advantage from (Del Vecchio, Mele, Ndou & Secundo, 2018). Likewise, many of the studies presented in this thesis combined with a multiple case study methodology describing a number of digital tourism projects taking place in Apulia Italy, are index of how much value can be created for STDs by big data generated from tourists' social media, permitting also organizers to forecast tourists' behaviour and necessities.

Lastly, another exploratory study tries to forecast tourists' response rate to a given attraction through open data analysis (Pantano, Priporas, & Stylos, 2017). To accomplish this objective, the authors have implemented a random decision forest algorithm approach on data deriving from Tripadvisor, to initially train the system, and, then, furnish optimal forecasts and proposition to achieve the target tourist markets, and, so, boosting the usefulness of the associated marketing strategies, and, allowing decision maker to better create attractive tourism products (Pantano, Priporas, & Stylos, 2017).

## **2.9 Real Time**

The smartness of the tourism sector depends not only by the individual technological enhancements (Gretzel, Reino, Kopera & Koo, 2015), but especially from elements like



interconnection and synchronization of innovations (Bodkhe et al., 2019) combined with real-time data (Harrison et al., 2010). Smart Tourism can be seen as a technological ecosystem rather than independent systems where main keys are considered real-time connectedness, synchronization and awareness of users' context (Gretzel, Sigala, Xiang & Koo, 2015; Buhalis & Amaranggana, 2015).

For these reasons, it cannot surprise if the word “real-time” frequently gets shown in Smart Tourism related literature. To present an instance, one of the biggest tracking studies in the tourism sector is produced by (Hardy et al., 2017). In this study, tourists' movements have been recorded with mobile and GPS technology in real-time mode. To be more precise, an app dispatches both real-time location, and survey data get provided by tourists from each point of their trip. This app seeks to collect their experiences, preferences, etc.

Another brilliant example is brought by (Amoretti, Belli & Zanichelli, 2017), who presented a real-time location-based system able to drive individuals to PoI according to their current geo-localization and explicated preferences. Similarly, in the city of Avila, Spain, it has developed a mobile application integrating real-time data with routing algorithms to enhance tourist's experiences.

## **2.10 Augmented Reality (AR)**

One of the most fruitful and interesting concepts in the AR field and, generally for Smart Tourism is image-based localization. Exponential progress has been done over the years in this field but, basically, what image-based localization processes attempt to calculate is the geo-location from which an image is shot, according to location and orientation (Sattler, Leibe & Kobbelt, 2012).

The adaptability to a wide range of applications, going to tourism guides, AR or robotics led to a situation where these methods received increased focus, (Feng, Fan & Wu, 2016; Habegger et al., 2014.), while (Wu, Tang & Li, 2018), considering this interest from academics and enterprises, provided a framework of image-based camera localization approaches.

Another attempt was the one of (Feng, Fan & Wu, 2016) whose efforts were to develop a powerful geo-localization method in order to increase the performances of AR

applications and those of real-time navigation, and lastly, facilitating the development of Smart Tourism systems (Williams, Yao & Nurse, 2017). AR offers a great potential in the way information is delivered to users but is also accompanied by the risk to impose users with data overload or result in systems with high usability issues (Shih, Diao & Chen, 2019). Moreover, (Williams, Yao & Nurse, 2017) tackled the issue of usability in the AR framework, and they proposed through 4 rounds of iterative development a tourism AR application, based on User-Centred design, called ToArist.

The feedback provided by individuals testing this mobile app claim that it is easy and intuitive to use, even though there are challenges that have not been tackled yet. Another problem to overcome is the disadvantage of visual AR applications that may provoke disorientation to users while observing both the environment and interacting with the device (Heller & Borchers, 2015), and some researchers (Boletsis & Chasanidou, 2018) contributed to indicate how audio AR systems can be set in a Smart Tourism scenario.

Further, AudioNear is another clear example. Its prototype was designed to enhance users' experience when visiting open urban spaces by furnishing speech-based assistance regarding their surroundings. More detailed, the tourists let reproduce an audio tour guide mobile app that georeferenced their coordinates and let reproduce an audio with the relevant information concerning a place nearby.

One last example connected to tourism field can be given also by (Ramos, Henriques & Lanquar, 2016) which in their paper present a religious tourism experience model enabling tourists to access to additional contents about cultural, spiritual, and religious heritage, based on technological architecture using intelligent human-computer interactions displayed on personal mobile devices.

## **2.11 Cultural Heritage**

When the 'Heritage' term comes into consideration, then two major categories are taken into account, cultural and natural heritage. In the first elements like tradition, history, customs and folklore weight the most into the definition (Sun, Song, Jara & Bie, 2016). As a matter of fact, tourism and cultural heritage are concepts strictly interdependent, as cultural tourism is a powerful tool for economic and social change and incising also on

several cultural-based regeneration policies created ad hoc in several regions (Graziano, 2014).

It is believed that once integrated with technology, cultural heritage attractions and PoI can be stimulated and become more engaging and exciting to the eyes of tourists. But, and more interestingly, in the last two decades cultural heritage has been under the spotlight of researches related to user personalization and offering context-aware cultural heritage data to individuals (Ardissono, Kuflik & Petrelli, 2012). Consequently, it is evident how several papers related to Smart Tourism tried to take into consideration the cultural heritage sector's perspective.

For example, in the context of cultural tourism a research from (Nguyen, Camacho & Jung, 2016) focused on providing tourists with valuable information, suggestions of PoI around the area, and recommendation on typical cuisine restaurants. The process to achieve that has gone, firstly, to the tentative of detecting cultural heritage assets, relying on geo-tagged social media database of user's locations, and, then, aggregating and ranking according the user contexts previously expressed. What comes out as results of this study demonstrate as the combination of semantic tags and media data like image data provide very functional information for users during their cultural experiences (Nguyen, Camacho & Jung, 2016).

## **2.12 Privacy and Data Protection**

One of the hardest tasks in the Smart Tourism field is linked with the world of user's data privacy and this is reflected by the results of the literature review process in the sector. For the record, data acquisition reflects many cases linked with the law: can be explicitly given, observed, or even tacitly calculated and mostly concern data of personal nature (Habegger et al., 2014).

Therefore, data acquisition needs to wisely evaluate pro and cons: there is no discussion on the driver role that they play to personalize experiences through smart apps and services, but, at the same time, they bring the risk of building too precise tourist profiles. which goes in contrast with data privacy values (Masseno & Santos, 2018b).

According to (Habegger et al., 2014), preserving user anonymity and avoiding the disclosure of private user information are most important actions to employ. In the 2018,

the GDPR, one of the most important changes in data privacy regulation the last 20 years, came out to tackle privacy concerns and regulate these aspects, which, consequently, impose a severe data management in the Smart Tourism field too (Krystlik, 2017).

As this regulation came out only recently, and, actually, there is the feeling that most businesses are not compliant to it, a framework of the legal consequences derived from a wrong data protection management and the potential risks to avoid have not been analysed deeply yet (Masseno & Santos, 2018a). So, this trend justifies the presence of a discrete number of papers focusing on data protection and privacy concerns in the context of Smart Tourism (Masseno & Santos, 2018b; Buhalis & Amaranggana, 2015).

At this regard, several compliance tools enabling Smart Tourism destination developers to match their data protection obligations like privacy policies, anonymization techniques, data protection impact assessment (DPIA), algorithmic transparency and privacy certification have been discussed by (Masseno & Santos, 2018b). Among those technologies that can improve the way how data is stored, fostering transparency and security, blockchain surely is the hottest one.

For what concerns Blockchain, it is one of the latest technologies having possible applications in most sectors such as banking, medicine, teaching, and tourism too (Bodkhe et al., 2019; Nam, Dutt, Chathoth & Khan, 2019). Another example is a research that admits the relevance of crowdsourcing in Smart Tourism systems and highlights the importance of keeping the quality of crowdsourced data, and, for this matter, the use of blockchain technology has been addressed to give consistency to reliability of the data (Veloso, Leal, Malheiro & Moreira, 2019).

In order to keep the trust among the stakeholders of smart tourism systems, BloHosT is a framework that works as an example. Indeed, BloHosT, gives tourists the ability to safely interact with stakeholders via a wallet identifier linked with a cryptocurrency server to conclude transactions (Bodkhe et al., 2019).

Similarly, (Nam, Dutt, Chathoth & Khan, 2019) aimed as well at explaining blockchain technology and how blockchain and cryptocurrency can be applied in the Smart Tourism/Cities context. To sum up, the examples above show how important data issues have become as current legislation's updates may also impose heavy fines if these aspects get neglected.

### **3 VALUE CO-CREATION IN SMART TOURISM SYSTEMS**

Destinations have redefined their role and their business logical approaches started to involve tourists as active co-creators of experiences, equipped with technologies (Buonincontri & Micera, 2016). Therefore, in this chapter, what will be mainly discussed are the main features on which smart service systems framework and service ecosystems environment are based. Both will have a dedicated section to give the reader a deeper knowledge of the context.

In this way, what I would like to provide is a comparison analysis which tends to put similitudes, contrasts, and plausible convergences under the spotlight for the further proposition of an integrated model to consider in the case analysis to discuss later.

#### **3.1 Service Science and Smart Service Systems**

To get the foundations of system service innovation, back in the days, IBM researchers launched the so-called SSME-D, also known as Service Science, Management, Engineering and Design, or, in short, Service Science (hereinafter: SS) (Polese, Botti, Grimaldi, Monta & Vesci, 2018), as a result of the company's transition towards a centered-service logic and, to better analyze the part of service in the society.

More specifically, SS is a mixing of different theories taken from computer science, management, engineering, operational research, and social sciences to spread given knowledge, skills and competencies needed by a service-based economy (Polese, Botti, Grimaldi, Monta & Vesci, 2018).

Overall, this approach comprises four main features, each one taken from a different subject and which shapes this discipline:

- Applying scientific principles to better analyze a service's field and how it evolves.
- Secondly, elements taken from management studies to more efficiently design and shape services, and reach competitive advantages building durable and win-win relationships with the stakeholders.
- Then, engineering services play a crucial role; they are used to design new technologies, to boost supply, detect, quantify, and let information flow;
- Last but not least, service design, which bases itself on analyzing the best configuration techniques for a feasible structure of the service.

The most important aspect of the model proposed is the service system, better identifiable as a “value-co-creation configuration of assets, ranging from people, technologies, entities, and shared information, which are joined inside and outside on other service systems by value propositions” (Polese, Botti, Grimaldi, Monta & Vesci, 2018).

The components of a service system are used to model the peculiar characteristics of a company, to maintain efficient and effective processes, to obtain and keep a sustainable competitive advantage, that can be translated as the capability to establish strong bounds with other service systems (Polese, Botti, Grimaldi, Monta & Vesci, 2018). What can be thought as the basis of SS are the model progress, the interactions and mutual value creation between service systems (Maglio, Vargo, Caswell & Spohrer, 2009). Indeed, these combined forces promote exchanges among the various existing service systems until value co-creation gets achieved.

One of the literature sources has highlighted how the sharing of knowledge happens throughout organizational and social networks, but not as much as through those technological tools facilitating productivity, constantly developing and improving, in order to produce and attract value, boosting the exchange of resources and value up (Polese, Botti, Grimaldi, Monta & Vesci, 2018).

As a matter of a fact, assets and information exchanging strikingly draw special attention to the fundamental role of technology as leverage for knowledge exchange to get all the actors involved and to constantly supporting innovation (Piciocchi, Siano, Confetto & Paduano, 2011). For what concerns territory and regions, there exist a vast amount of literature sources linked to smart services.

However, recently there has been some discussion regarding the duality of the orientations: according some views it is still seen as a mere and deterministic object, or, from a static perspective, a ‘product to be promoted (Bassano et al., 2012). Whatever the interpretation, still there is a lack of systemic subjectivity, and for these reasons, the core strengths of the territory are not in the position to sustain competition.

Something interesting to consider is resulting from a series of studies done by (Barile, Pels, Polese, & Saviano, 2012) around Viable System Component. In fact, this indicates the main elements (natural, artistic, cultural, structural, infrastructures, etc.) owned by a territory that ‘objectively’ have roots into that territorial geographical area and systematic

skills (companies, businesses, people, local administration) which take advantage from a self-generating value capability and to achieve their evolution in the specific territorial environment (Bassano, Pietronudo, and Piciocchi, 2018).

A fundamental condition to frame viable systems bases on the mandatory consideration of taking governance into account as a driver to generate added value for the systems and the actors (Bassano et al., 2012). By considering these assumptions, a Tourism Local Area (hereinafter: TLA), meaning an unstructured integration of structural components, can be pictured as a cohesive Tourism Local System (hereinafter: TLS), which can be interpreted as an interconnected set of correlated elements that cooperate and share with other system elements.

For what concerns TLS, it comprises several features, internal and external elements that coordinate their aspects until reaching a stable identity, an integration of two essential elements (Piciocchi, Siano, Confetto & Paduano, 2011):

- the natural tourism vocation, that considers the architectural structure of the place;
- the focusing on specific processes, deriving from system skills.

In the context of Viable System Approach (hereinafter: VSA), case when the provider, intended as the territory, and the user, meaning any stakeholder, interact among themselves, the final product will be an improvement of the service achieved through value co-creation, where the provider shares the knowledge, and the user provides the assets (Bassano et al., 2012). Overall, it can be said that the intersection between VSA and SS enables the qualification of a territory with a touristic inclination in a configuration of assets that in a dynamic way co-produce valuable assets affecting internal and external dimensions of the structure, enabled by the process of information sharing (Bassano et al., 2012). To present a more detailed overview, the several territorial combinations, from resource to system, marking the core competitive advantage, with the diverse theoretical consideration regarding VSA, SS and their integration, can be seen in Table 2 and will be shortly discussed.

To start, territory as resource, it is a combination where the value proposition is based merely on the territory personality, on what is the current structuration (Bassano, Pietronudo, and Piciocchi, 2018). However, the VSA mentions the embryonic stage of a system, where the elements behave without a mutual planification, with independent

scopes yet, sharing some relations as there is lack a shared guidance addressing the directions and the procedures. Furthermore, according to SS's perspective this combination provides a good dominant direction, and for these reasons both are useful to interpret an area with these features as a Tourism Local Area (Piciocchi, Siano, Confetto & Paduano, 2011).

Secondly, territory is seen as a product. In this second configuration, the identity of the place is the core strength of a product to promote. More specifically, the territorial combination involves a series of visual attributes that dynamically represents the system in a context (Bassano, Pietronudo & Piciocchi, 2018) that in the VSA are identified as an administration with specific regulatory actions, responsibility-takers and other elements that behave in a cooperative, but opportunistic manner. As a matter of a fact, a territory holds not only a functional usage, but, as the same time, supports and innovates the productive processes, and, thus, it can be labeled as a Local Tourism System (Piciocchi, Siano, Confetto & Paduano, 2011).

To continue, the next view interprets territory as a image. The most peculiar thing of this configuration is that the place image, which basically is the stakeholder's general perception of the territory at a given period, represents the competitive advantage, and the local administration offers the agreements, rules and manages the controls. However, by having a variable decision-making process, the system tends to become unstable.

Indeed, for what concern SS, service is the scope, but, in this way, it would lead value co-creation to a fast sinking as no seeds have been sown in the social environment. This scenario configures an Unstable Local Tourism Service System (hereinafter: U-TLSS) (Bassano, Pietronudo & Piciocchi, 2018).

The final combination, territory as a system, makes a shift from the previous direction, grounding the territorial competitive advantage founded on reputation, a set of socially shared beliefs through which co-creating value for and with the actors (Bassano et al., 2018) In synthesis, it is an asset combination adapted for systemic value co-creation because its brand, or value proposition, is distinctive and steady inside, while competing on reputation and spreading commitment and valuable programs.

By having proceeded in this way, a Smart Tourism Local Service System (hereinafter S-TLSS), meaning the result of the SS & VSA mix, can be set and seen a valuable structure



and capable to set a location branding at a structural point of view and a place reputation from a systemic point of view (Bassano et al., 2018).

*Table 2: Different Interpretations of the various Territorial Configurations*

<b>Territorial Configurations</b>	<b>Source of Competitive Advantage</b>	<b>VSA</b>	<b>SSME + D</b>	<b>SSME + D &amp; VSA</b>
<b>Territory as resource</b>	Personality	Embryonal System	Good	<b>Tourism Local Area (TLA)</b>
<b>Territory as product</b>	Identity	Evolving System	Extended Good	<b>Tourism Local System (TLS)</b>
<b>Territory as Image</b>	Image	Unstable accomplished System	Unstable Service System	<b>Unstable Tourism Local Service System (U-TLSS)</b>
<b>Territory as System</b>	Reputation	Stable Viable System	Stable Service System	<b>Smart Tourism Local Service System (S-TLSS)</b>

*Source: Adapted from Bassano et al. (2012).*

Anyways, it worth to mention a couple of points on the addressing the discussion around the importance of argument like communication, because it owns a special role in guaranteeing a strategical and efficient interchange, the effects resulting from synergistic coordinated processes, and the mediation of the stakeholder's interests. As matter of fact, by focusing on these aspects, collaboration and cooperation is eased and allows a better planification and support on building, improving the distinctive cores of the system, and guaranteeing the satisfaction of each stakeholder involved in the process.

Taking everything into account, in the combined vision of SS & VSA the sytemic territorial configuration of a territory becomes a smart and stable system when its reputation becomes source of competitive advantage as each stakeholder gets involved to managing the emergence of value co-creation and innovation (co-design, co-development, co-delivery) across the environment of touristic services.

### **3.2 Service Dominant Logic and Service Ecosystems**

By providing interesting points to the field of study, SS has widened the horizons in the methodological approaches. However, in order to paint a general framework for approaching the new value co-creation processes in the era of services, Service-Dominant (hereinafter: S-D) logic proposes an enveloping viewpoint of organizations by the proposal of a service ecosystems view which overgoes the notion of service systems deriving from SS (Vargo & Lusch, 2010).

One interesting aspect revealed by a research points the necessity to include all those sets of aspects linked with society in the investigation of the system's organizational dynamics and to introduce systems focused on value co-creation as the led to the came out of the service ecosystems (Vargo & Alaka, 2012). Therefore, the ecosystems perspective (which harmonizes with the two research questions above mentioned) embraces: a simplified view for spotting the drivers of value co-creation; and also an integrated view for taking the growth of innovation at a broader level into account and, by considering the relevance of social norms in configuring interchanges and in the generation of new benefits also.

As a matter of a fact, service ecosystem' view focuses also on the attention to the achievement of new comprehension at a social level by including institutional dimensions and by underline the influence of social relationships on value co-creation, rather than focusing on the role of technology for gaining innovation (as in service systems approach). Taking everything into account, contemporary literature has widely analyzed service ecosystems and explored in many diverse contexts, but only considering a wider framework underlying service exchange as one of the main features of service systems that it becomes an ecosystem, identifiable as system's organizations that are nested among each other (Sun, Song, Jara & Bie, 2016; Del Vecchio, Mele, Ndou & Secundo, 2018).

However, an almost relatively univocally classification of the core elements of service ecosystems still lacks valuable research (Banoun, Dufour & Andiappan, 2016). As a matter of a fact, different orientations have been practiced in the observation of ecosystems, over the passing of the times. In the original scenario, there was a predominance for the social dimensions, given the key part playing in the context that foregoes supply of a macro-level. A very interesting citation from the researchers who introduced the notion it defines service ecosystems as "relatively self-contained, self-

adjusting system[s] of resource-integrating actors connected by shared institutional logics and mutual value creation through service exchange” (Vargo & Lusch, 2010).

According to the authors, what creates mutual benefits for each actor involved in service delivery depends mostly to three key drivers: the first is technology, focused on continuously processes’ improvement; then secondly, language, which can be seen a sort of common rules for exchanging communication; and third and most important, institutions, that are those social rules and guidelines referred to laws, beliefs, symbolic meaning, and language that are considered as the main dimension needed for the establishment, understanding, and supervising exchanges at the same moment (Vargo & Lusch, 2011).

Moreover, another academic formulated service ecosystem as a complicated system of stakeholders where value creation methods are led by institutions, and the diverse habits performed by users in a specific environment contribute to co-production and co-creation. On the same mind frequencies, (Vargo, Wieland & Akaka, 2016) acknowledge institutions and social norms as the glue that allows or inhibit value co-creation, while another study focused more on the influence of value propositions (as a sub-category of institutions) on an institution’s survival (Frow, McColl-Kennedy & Payne, 2016; Sun, Song, Jara & Bie, 2016).

According to this view, technology is surely conceptualized as one of the most important features of an ecosystem, but institutions have a leading role in asset combination and value creation actions, capable of increasing or decreasing exchanges (Vargo, Wieland & Akaka, 2016).

Summing up to conclude this argument, the most relevant traits contextualizing the service ecosystems are: (1) institutions (cultural communication, beliefs, traditions, etc.); (2) value orientation; (3) asset combination. On the other hand, the technological feature is emphasized as the main driver in numerous studies that tried to integrate ecosystem perspectives and innovation investigation (Lusch & Nambisan, 2015).

*Table 3: A classification of the main dimensions of service ecosystem*

<b>Approach</b>	<b>Focus</b>	<b>Main Ecosystem Dimensions</b>
<b>Original S-D Logic</b>	Social Dimension: Institutions are drivers for technology adoption and innovation	Institutions; Technology; Language
<b>Ecosystem view and innovation research</b>	Technological Dimensions: Technology affects institutionalization	Entities; Service Exchange; Infrastructures
<b>Newest developments in S-D Logic</b>	Bidirectional Relationship between Institutions and Technology in affecting asset integration	Institutions; Technology; Resources Integration

*Source: Own Work relaboreted from Polese, Botti, Grimaldi, Monta & Vesce (2018).*

In one study, for instance, entities, service exchanges, and infrastructures have been classified as the three core attributes of the open service ecosystems (Ruokolainen & Kutvonen, 2011). In fact, these systems are autonomous bodies living and adapting in a dynamic context thanks to collaborations with other entities fostered by technological facilities (Polese, Botti, Grimaldi, Monta & Vesce, 2018).

This study also claims that technological advances affect institutions in such a way that social values do not have priority, but after all of the other components of the service environment. As pointed by the researchers, the current trend leans on the predominant role that technological innovation has on societal agreements affecting the process involved in asset combination and service ecosystems.

Overall, it can be stressed that these ecosystems consist of several different systems, but the most important features are: the stakeholders involved in the processes, the physical components (the infrastructures) and, lastly, the outcome of the adoptions of the physical components from the stakeholders.

Following new achievements in the field, S-D framework shed lights among the leverage drivers, more specifically technology and social institutions, as means to support value co-creation by offering the existence of a mutual relationship between the above-mentioned dimensions. However, to have a clear framework, also other authors, relying on previous researches, studied how the ambivalence between institutional organizations and technological progresses is able to lead a system towards generation and integration of valuable assets (Vargo & Alaka, 2012).

Furthermore, the latest academic directions and studies in the field of service ecosystem pinpoint and formalize the dual technological point of view, seen both as a social contextualized product both as a mandatory input for social interchanges (Vargo et al., 2017; Siltaloppi, Koskela-Huotari & Vargo, 2016), where social organizations can be surely seen as technological ancestors, but at the same time, also technologies can be hired in the value chain processes, providing benefits to the social stakeholders (Vargo & Lusch, 2016).

Once having considered these orientations, it can be claimed that technology acts in a dual way: first, as social practices' results, and secondly as triggers for renovating these processes. What can be said is that this overview is able to set a perimeter around the three principal features composing service ecosystems: (1) technology; (2) institutions; (3) asset combinations.

Above, it has already been mentioned that among the research it generally misses a univocal harmonization regarding the diverse spheres of service ecosystems, how these interact among each other, and how individuals behave. Indeed, as discussed in the brief review conducted above and summarized in Table 3, extant research still lacks agreement on the different dimensions of service ecosystems, on the role of the single features, and on the relationships among them.

Therefore, a topic of further literature research would be a gap analysis around the absence of studies highlighting the main keys to assess smart service ecosystem's participants (Banoun, Dufour & Andiappan, 2016), asset integration procedures, and the type of technological tools used for generating benefits in co-created way (Polese, Botti, Grimaldi, Monta & Vesci, 2018).

Anyways, it is interesting to let be noted that newer trends in the field of S-D stress the investigation of social environments wherein the ecosystems lay down, underlying the urge to have a dual approach to analyze social sets and technological streams in order to innovate services, and, hence, society (Vargo et al., 2017). To sum everything up, the adoption request for a system perspective on value co-creation has not been satisfied completely yet.

Consequently, the objective in this paper is to combine Service Systems and Service Ecosystems in order to obtain first of all a conceptualization of the topic of discussion, and, secondly, analytically understand the principal features that play a distinctive role in innovating an integrated social organization, by merging together those empirical aspects taken from SS based on technological innovation, that, as seen, did not get the right focus in the S-D approach with the connotations taken in the S-D logic that put social innovations under the spotlight.

### **3.3 Merging the Frameworks for Smart Service Ecosystems**

Tracking what discussed until now, it can be said that smart service systems (deriving from SS) and service ecosystems (introduced in S-D logic) present significant similarities and divergences between them.

What can be understood from previous considerations is that this mutual behavior opens an opportunity to permit their synergies to present an idea of a system foundation capable of conceiving service ecosystems in an intelligent way, and, basically, the sources of the newer theorization takes cues from the harmonization of the two conceptualizations.

In order to understand its final target, it is important to consider the based-view technology of SS (Vargo & Lusch, 2011). As a matter of fact, considering the system from an engineering perspective, the scenario tends to outline the discovery of the micro-level of real developments of service delivery, even when the focusing of the results relies on sustainable outcomes (Vargo et al., 2017).

While, what is proposed in the S-D logic is a wider and more profound innovation scenario, analyzing service ecosystems where the overview starts from considering the pure investigation of binary user-supplier matchings till adopting a value-based system configuration (Siltaloppi, Koskela-Huotari & Vargo, 2016). Considering this, and what

has been tackled in the previous paragraphs, the aim is to take advantage of the most useful points and the foibles from both the theories in order to provide a deeper contextualization of the case-study that here is subject of studying.

However, the most interesting comparison between the two methodologies lays on the fact the SS investigates the generation of mutual information that leads towards newer and more sustainable forms of innovation from a technological point of view (Siltaloppi, Koskela-Huotari & Vargo, 2016), while the S-D focuses on how the primary influence that the social framework affects innovation from the primordial phases of the activities, until being well-set to sustain the generation of valuable outcome for all the stakeholders involved in the long term (Lusch & Sphorer, 2012).

Only when the attention on innovative solutions at service and process stage deriving from SS gets framed into the social dimension proposed by the S-D theory, an unified approach can be devised to examine the performances of technologies and social structures in enhancing asset combinations (Polese, Botti, Grimaldi, Monta & Vesci, 2018).

This paper proposes a configuration of technologies and social structures shaped on asset integration in such a way that leads towards models of technological progress in the short term, and social innovation in the long term. Overall, innovation gets developed considering it as a dependent variable whose behavior gets affected by the social environment and as a preliminary stage of social changes.

What value co-creation fosters is a deeper awareness which can be shaped into new forms of knowledge in a given time by asset combinations; indeed, social context is a necessary condition to take advantage from new technology, even though this can have great social impact leading towards a circular economy (Bolivar, 2018). Still, there is a need to pinpoint that merged stakeholders' structural reorganization, or changes in institutional decisions may cause variability in the value of co-creation activities, which for these reasons do not depend only on institutional arrangements (Siltaloppi Koskela-Huotari & Vargo, 2016).

According to some studies, the overall tourism value proposition represents the competitive leverage on which building the value co-creation for setting competitiveness

as it gets generated by several processes of sharing internally and externally (Piciocchi, Siano, Confetto & Paduano, 2011).

It is interesting to notice that this territorial perspective it proposes new directions to the study referring to smart governance and territorial management, able to affect the obtainment of a competitive advantage, or more specifically, a multilevel structure – organized and shared by local actors, to assess those skills and fly-wheels for improve identity and reputation (Sphorer et al., 2011).

According to (Bassano et al., 2012), these drivers are useful to evaluate both the structural conditions, useful to comply a consonance analysis on which the local tourism service system brand destination, both the systems condition to generate a reputation analysis to enhance attractiveness (Polese, Botti, Grimaldi, Monta & Vesci, 2018).

What is important to recall is that, structurally, a S-TLSS comprises of human and material capital whose scope is co-generating value to the processes: in fact, every social and economic asset is involved in the distribution of the benefit created according to the win-win logic (Polese, Botti, Grimaldi, Monta & Vesci, 2018); while, systematically, a S-TLSS is a set of co-generating and co-participative nets aimed at improving destination appeal and territory attraction through smart multilevel governance.

Indeed, a smart multilevel governance unifies the public and private interests of decision makers to enhance the tourism local service system. By sharing informative cells, schemes of interpretation and sources of values, multilevel governance offers an overall competitive advantage that gives shape to its competitiveness traits (Sphorer et al., 2011).

The integration of these happens by a collaborative approach based on common values and trust starting from the bottom of the organization till reaching the top (Bassano et al., 2012). The capability to compete generates value for the whole environment, but this should be intended as a virtuous loop of syntropy that keeps the progressive status of the value proposition and identity reputation, and at the same time, keeps track of the analysis gap between how the offered value is perceived in the market and the value proposition (Piciocchi et al., 2017).

When using resonance, it is wise to give the right specific weight to the trust involved in the relations, and on the level of user's satisfaction (Bassano, Pietronudo & Piciocchi,



2018). What this also implies in system terms is developing a positive picture that can validate reputation in a S-TLSS as the main driver to build competitive positions up. For these reasons and as Figure 3 wants to represent, the S-TLSS can be labeled as a set of services aimed at creating innovation and benefits inside and outside the local area.

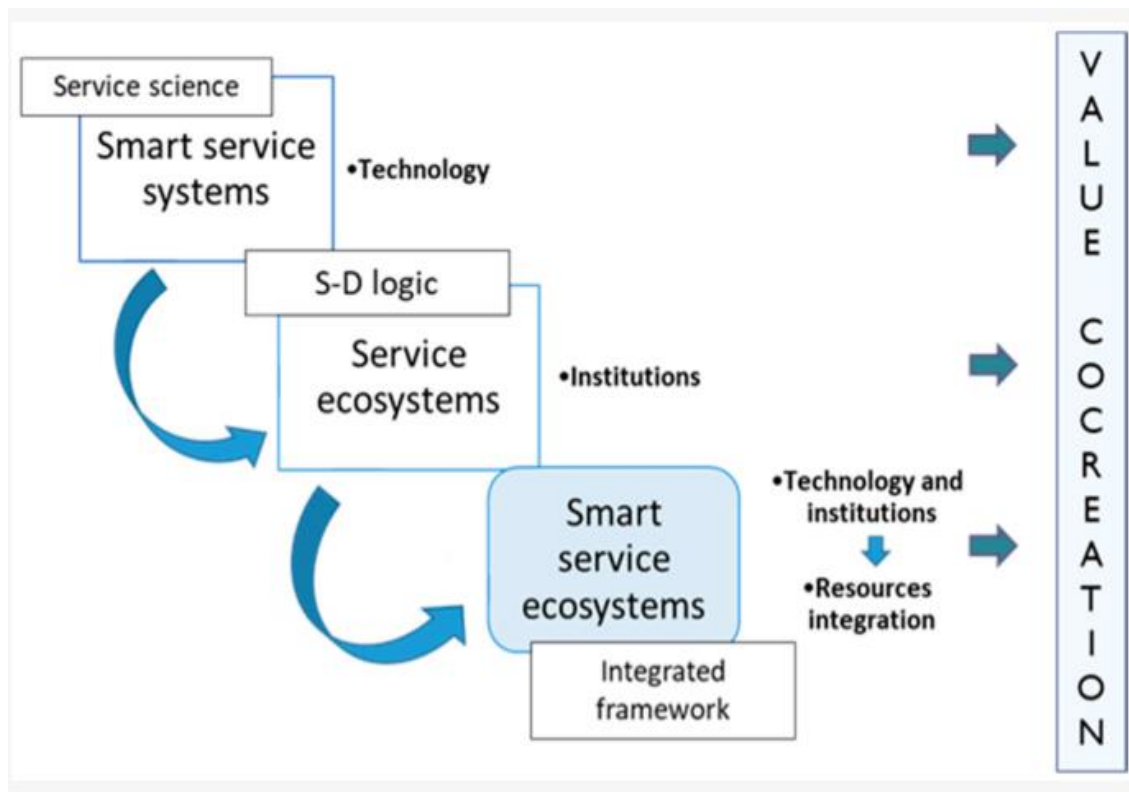
Furthermore, the social interactions between users across embedded contexts of exchange work as input for organizational renovation and for the development of newer ways of social practices, institutions, and cultural meanings (Barile, Grimaldi, Loia, Sirianni, 2020). To conclude, one research of (Piciocchi, Siano, Bassano, & Conte, 2012) explains that when technological and social features get merged, the system needs to provide the following conditions in order to enforce territory competitiveness:

- structural conditions: setting and sharing a recognizable value proposition in line with the local features, customs and traditions, and on the same position with what stakeholders expect, to appeal the territory in terms of a synergistic mutuality between the value proposition and the required input.
- engaging the stakeholders in defining and co-creating the service in a systematic way, to get reliable and contextualized value proposition, improving place reputation by satisfying different interacting entities through the functions of a smart multilevel governance (Bassano, Pietronudo & Piciocchi, 2018).

After having also considered these assumptions into account, in this analysis it will be offered a circular vision capable of combining service system's innovation inclination ecosystem's social focuses to study a smart service system. Taking all the above-mentioned insights into analysis, the final intention here is to gestate tourism as a smart service system. In order to do so, a fully comprehensive scenario able to highlight the main components on which the decision-makers can optimize value co-creation is considered, based on the assessment and management of technology and institutions as key levers.

Ideally, what is expected to get as the final outcome of the model is co-creating value for all the stakeholders and by which sustainability can be achieved in the long term as stated as goals of the two theoretical approaches, both of smart service, both systems and ecosystems).

Figure 3: Value Co-Creation Process in Smart Service Ecosystems



Source: Polese, Botti, Grimaldi, Monta & Vesci (2018).

### 3.4 Smart Tourism Ecosystems for Sustainable Value Co-Creation

What has been discussed till now has allowed us to shortly identify the main components of the intelligent model intended to be presented by combining different studies and orientations offered in the SS and in the S-D logic. Overall, it became clear that smart service systems have been deeply reviewed in the literature and its core aspects (organization, human asset, ICT, and shared data).

At the same time, the features of service system have not been unequivocally stressed yet (Polese et al., 2018). Therefore, even though there is no univocal agreement on what are the features triggering the birth of service ecosystem, the existence of the three main different orientations deriving from papers review will be briefly mentioned below and illustrated in Figure 4.

- an interactive sphere, which basically is the meeting point with the user provider and the specific moment where resources interchanges happen.

- the technological component, that represents the leverage point to sustain value co-creation and continuous improvements.
- a symbolic dimension, meaning all those cultural values, beliefs, institutions, value propositions, and all those characteristics of the macro-context that works as vehicles for value exchange.

*Figure 4: Main dimensions of smart tourism ecosystems*

	Smart Systems	Service Ecosystems		Smart Tourism Ecosystems
Human dimension	People Organization	Institutions Technology Language	→	Actors (Multi-Stakeholder Vision)
Technological dimension	Technology	Technology Infrastructures	→	ICT Platforms <ul style="list-style-type: none"> <li>• pre-delivery;</li> <li>• delivery;</li> <li>• post-delivery</li> </ul>
Social and symbolic dimension	Shared information	Institutions Language Value proposition	→	Institutions Formal and informal/Social rules
Interactive dimension		Service exchange Resources integration	→	Resources Integration (operand/operant)

*Source: Polese, Botti, Grimaldi, Monta & Vesci (2018).*

It is strikingly important to mention that users do not share just mere information, but some much useful, like experiences, skills, comments and other intangible traces, that is fundamental to the process to generate more knowledge on which to create competitive advantage. For this reason, in the asset integration dimension of information sharing tackled by researchers has been join on the category of interactive sphere (Lusch & Sphorer, 2012).

Another point to highlight is that interpreting the model on a macro level, one may be led to include the micro-level of analysis into it. However, the vision offered here tries to moderate reductionism (RQ1) and holism (RQ2), thus, micro-level of analysis has been re-engineered embracing the human dimension aspects that work as inputs for value co-creation activities.

Therefore, human and organization spheres have been conceptualized as a generic class of actors, which respects the actor-to-actor orientation on which the S-D logic stands. More specifically, this considers the systems as nested, but the changes of role of the actors in the system as dependent on the analysis point of view, also. Thus, the same actor can be intended both internal to another structure both external to a given institution.

## **4 RURAL CONTEXTUALIZATION**

The research on smart cities and tourism keeps advancing but problems linked with communities living rural areas tend to be addressed as a part of discussions in neighboring research field, like environmental studies, sociology. Arguably, the concept of ‘the village’ has not been very deepened by academics, even if rural areas and countryside communities are subject of interests for important policies such as the European Union’s Cohesion Policy and Common Agricultural Policy. For these reasons, when advances in sophisticated information and ICT led to the emergence of a extent body of research on smart cities, the application and usability of ICT in the context of a village remained underdiscussed in the literature.

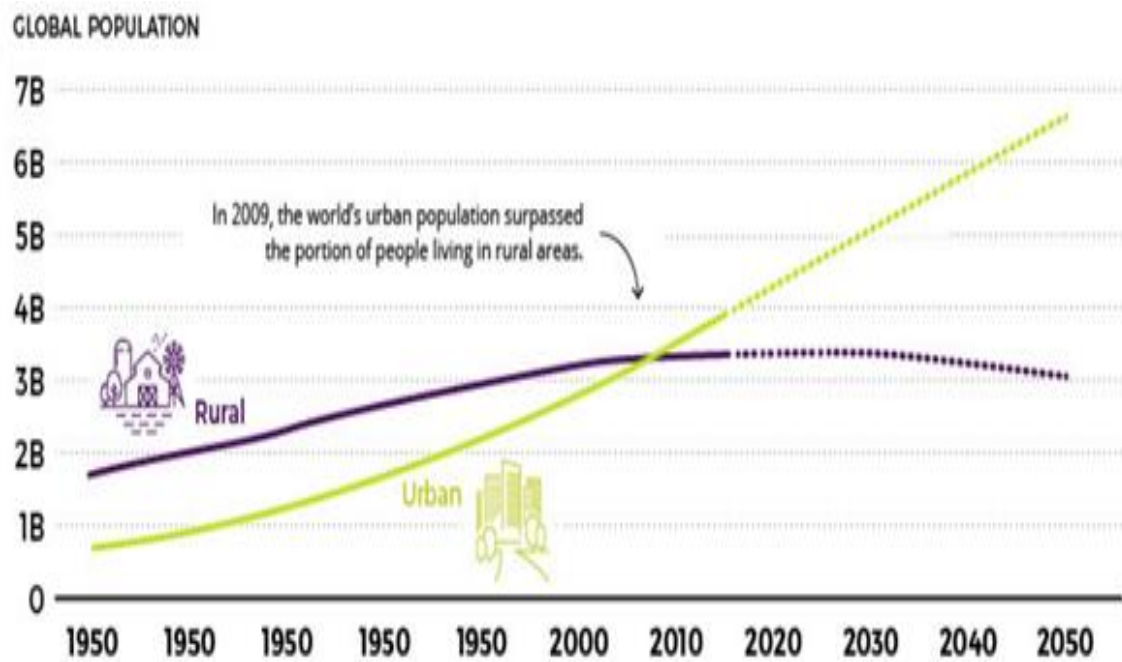
The first section will take into consideration the latest urbanization trends and pointing on the difference between city and rural features; following, urban bias to consider when applying and referring to smart tourism initiatives will be presented. Indeed, the focus is to highlight how smart initiatives have been proposed mainly in city context, and therefore, these models developed in an urban environment may have different implications in rural areas; different definitions and approaches for smart tourism solutions in less urbanized areas are explored. Lastly, examples of initiative to support these places and further consideration will conclude the chapter. Therefore, this section will discuss also the scalability of smart destinations to a regional level, considering the smart tourism features that are heavily present in the urban awareness of smartness integrating the smart city topic.

### **4.1 Trends in population growth**

In the 21st century, a constantly upward trend of human migration out of the countryside, and into swelling metropolitan centres, has characterized the world’s power dynamic just in the last 70 years (World Economic Forum, 2019). Indeed, since 1950, the world’s urban

population has risen from 751 million to 4.2 billion in 2018, and the trend shown in Figure 5 testifies how the rural population is expected to eventually decline (World Economic Forum, 2019).

*Figure 5: Rural vs Urban growth population rate for 2050*

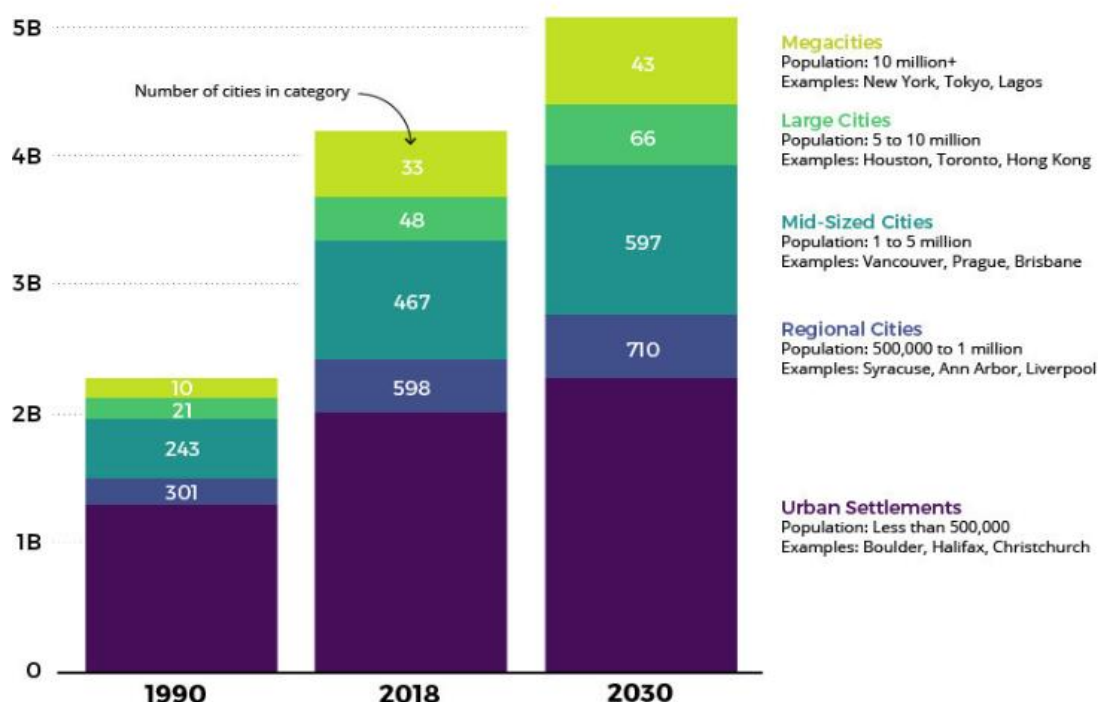


*Source: World Economic Forum (2019).*

Plus, as Figure 6 illustrates, the number of regional to mid-sized cities (500k to 5 million inhabitants) will greatly increase by 2030. Moreover, India, China, and Nigeria represent one third of the expected urban growth till 2050 (World Economic Forum, 2019). However, fast urbanization does not imply only a drastic rise in urban populations. Indeed, some metropolises experience population contractions, given to low fertility rates in Asia and Europe. As rapid urbanization continues to shape the global economy, finding ways to provide the right infrastructure and services in cities will be a crucial problem to solve both for communities and organizations around the world.

Especially this last figure explains the evolutions of metropolis and rural settlements between 1990 and 2030, and it is evident how, even though the major trend results in a extension of urban environment, urban settlements worths a very large part of our society and businesses, which need particular attention when designing innovative solutions not only for urban realities but for rural territories as well.

Figure 6: Global workforce by 2020, by generation



Source: World Economic Forum (2019).

## 4.2 Comparing Rural and Urban Tourism

Nowadays, reality is changing and what always seemed attractive may be usual today. Mass products are not a novelty anymore, the increasingly accelerated dynamic of cities can be oppressive, so it is not strange that tourists started to include rural destinations in their travels, due to which today the traditional and authentic acquires positive connotations. It should be mentioned that the rural area is, essentially, composed of two main elements: its characteristic landscapes and agricultural production.

The combination of these is what really gives it a distinctive richness, which makes it worthy of becoming a tourist attraction (Garau, 2015), while the UNWTO defines Rural Tourism as “tourism activities that take place in the rural space and that have the purpose of interacting with rural life, getting to know the traditions and the lifestyle of the people and the attractions of the zone” (W.T.O., 2019). It should be mentioned that the rural area is, essentially, composed of two main elements: its characteristic landscapes and agricultural production.

*Table 4: Differences between urban tourism and rural tourism*

<b>Tourist attractions in the rural zone:</b>	<b>Tourist attractions of the urban zone:</b>
Stays in places clearly identified with the cultural and historical identity of the area	Intense cultural agenda – the visitors can get to know the city through its architecture, museums and variety of spectacles.
Contact with nature, calmness, and quietude.	Trade malls and local shops – allow the tourist to buy both national and imported products.
Participation in gastronomical experiences »from the land to the plate« – cuisine of typical dishes that are made directly in the place where the products were obtained	Gastronomy experience – the possibility of combining local products, generally from the rural sector, with global culinary innovations and trends, guaranteeing quality and attractiveness.
Wineries – sale of artisanal wines and production of products such as cheese, honey, etc., elaborated in perfect conditions.	Factory production – elaboration of own products.
Routes and guided visits to places that form part of the historical-cultural heritage.	Artisanal production – generally with products from the interior of the territory.
Walks that take advantage of nature such as processions, hikes, climbing.	Routes and guided visits to places that form part of the historical-cultural heritage of the sector.
Artisanal production: direct access to certain raw materials like wood, leather and wool allow the ingenious rural individual to create unique products.	Disposition of infrastructure and mechanisms to generate contacts with the international sphere – advertising, communication and commerce.
Popular and folkloristic festivals of the region	Typical festivals of the region – which are more massive and famous than those in the rural area

*Source: Zachary (2011).*

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The urban domain is usually considered an axis of tourist activity. Given the wide variety of offers, big cities reach to profile themselves as true touristic centers, as such constituting the base of the economic impulse of the economy, of which the rural sector tends to be relegated. Above in table 4, the main features of both are presented.

To summarize, topic is very deep to contextualize, but, beyond the discrimination between the rural and urban, an optimal development of tourism is given when actions and features of both realities co-create in a participative way, thus improving the economy (Zhou, 2019).

### **4.3 Urban Biases and Implication for the Rural Context**

»An innovative tourist destination, built on an infrastructure of state-of-the-art technology guaranteeing the sustainable development of the tourist area, accessible to everyone, which facilitates the visitors' interaction with and integration into their surroundings, increases the quality of the experience at the destination, while also improving the quality of life of its residents« has to be considered (Gretzel, 2019).

What is interesting to notice is that smart destinations became the new paradigm for destination management (Ivars-Baidal, Celdrán-Bernabeu, Mazón & Perles-Ivars, 2017), while (Jovicic, 2019) highlights how public–private–consumer cooperation gets enabled by digital technologies, which turned as the leverage for a destination to obtain successful market valorization of their geographical roots and traditions; and, therefore, this scenario needs to be reconceptualized regarding how a destination is meant and what is involved in its governance (Gretzel, 2019).

It is important to point that the literature almost exclusively discusses the application of smart tourism to city destinations. As a matter of a fact, the whole concept of smart tourism came out with the smart city development (Cocchia, 2014), where smart destinations got intended as special examples of smart cities (Boes, Buhalis & Inversini, 2016), while smart tourism as a specific application of a smart city proposition (Gretzel, Sigala, Xiang & Koo, 2015). Thus, the focus on city destinations derives from a broader and more strategic smart city framework.

Some academics claim that there is an infiltration of smart development topics considered as fantasies or too futuristic, and this is very evident in Northeast Asian visions of cities



described in studies (J. I. Kim, 2014), and this regards also smart destinations. Another initiative addressing smart tourism, is brought by (Gretzel, 2018) that shows how all smart tourism efforts are centered on the city in Seoul, South Korea, while no evidence of inter-city or regional initiatives could be found.

Overall, it can be said the concepts of smart urbanism get reflected by several scenarios of smart development, but at the same time practical reasons for these urban biases can be explained. Indeed, the more feasible smart tourism development happens in the context of a city for the coexistence of several situation as can be the greater concentration of technology initiatives, or, of communication and built infrastructure, plus, public transportation networks are more rooted, and, for what concerns tourism, also the higher density of tourists in small spatial areas and with less seasonality.

Moreover, it must be added that generally the development of smart initiatives addresses urban problems like traffic jams, energy consumption and crowding, and, for these reasons, it could more easily be integrated to urban destinations, struggling with tourist mobility issues and all the social consequences connected to these.

However, what is intended to follow here is that this «urban heritage» of smart tourism might conceptually limit its applicability if we take those such as rural destinations or tourism regions into account, and, to enlarge the focus to which urban biases are presented, specific areas of connectivity, mobility, built infrastructure and governance will be addressed

Therefore, by illustrating how relevant these aspects are in the smart development environment, in this study there is the intention to underline how these features result being problematic in many ways for achieving regional smart tourism comprehension and setting the most proper regional-level actions, and also calling smart tourism systems to be set beyond clusters of singular smart destinations and all over the domains of smartness.

#### 4.3.1 Connectivity

One of the essential features for the functioning of smart tourism is surely connectivity. Indeed, connectivity plays a leading role as it is embedded in the infrastructure (e. g. via an IoT), is vital for the interface with tourists (e. g. through personal smart devices

allowing these tourists to explore a destination) plus, it allows data interchanges to ease innovation (Gretzel, 2019). Nonetheless, connectivity needs a solid infrastructure and, therefore, big investments.

It is not a surprise that establishing connectivity became an important trend in smart destinations, headed by the city of Seoul, Korea (Gretzel, Ham & Koo, 2018), which has drastically invested in setting a very remarkable Wi-Fi coverage in the city. One research points out that connectivity has been intended as either existing or not, but actually, there are several connectivity spheres (Magasic & Gretzel, 2020). One example can be a tourist constantly moving in and out of different connectivity zones (free Wi-Fi on the airport train versus data roaming while walking to the hotel) and needs to align diverse connectivity states (from high-speed to non-existing).

In fact, connectivity can be limited according to the reach (e. g. delimited to a particular perimeter like a hotel lobby) or in terms of bandwidth (e. g. free Wi-Fi not permitting video streaming). Furthermore, it drastically affects tourist experiences and satisfaction (Masri, Anuar & Yulia, 2017). Doubtlessly, higher density and smaller physical barriers make the infrastructure of connectivity more likely to be developed in urban areas, and to this regard (Salemink, Strijker & Bosworth, 2017) analyze the digital divides in terms of IT availability and adoption use between rural and urban areas. This is evidently true for connectivity, as mobile phone network antennas and free Wi-Fi zones are more concentrated in an urban context, which does not mean though that in the cities there are issues or blind points. Lastly, connectivity needs a lot of energy.

It is known that energy grids are dense and charging devices are quite developed in an urban setting, but supporting a smart destination's connectivity infrastructure also requires investments in energy infrastructure when smart tourism development is implemented at a regional level (Gretzel, 2019). However, it is quite rare that in the development of strategies, discussions on such basic level technology infrastructure investments are taken, while mostly it is concentrated on the end-user applications because of this urban bias.

#### 4.3.2 Mobility

On this topic, (Battarra, Gargiulo, Pappalardo, Boiano & Oliva, 2016) followed and analyzed a series of smart city development initiatives, the focus of which was finding solutions to the urban traffic challenges. Similarly, another study identifies targets like the reduction of traffic jams, the increase of transfer speeds followed by a decrease of transfer prices, and solutions as well as car-sharing, urban traffic control systems, pedestrian zones and parking guidance applications (Benevolo, Dameri & D'Auria, 2016). However, an investigation by (Faria, Brito, Baras & Silva, 2017) confirmed that the urban scenario dominates the birth of these actions. Further, another research reveals how embedding smart technologies in public transportation is one of the major topics in the smart tourism development literature; respectively, urban traffic infrastructure such as traffic cameras is an essential part form measuring the attractiveness of a destination and leverage its potential (Garau, Masala & Pinna, 2016).

Another example can be bike or push-scooter sharing, as a main characteristic of smart tourism mobility solutions, short distances in urban street networks are given for assumed (Gretzel, Ham & Koo, 2018). Taking everything into account, smart tourism mobility has been mostly thought for allowing tourists with many mobility options; still, it needs to get investigated better in an environment composed with built infrastructure, traffic control systems and signage, and which basically moves through relatively small, dense areas for rather short periods of time. Overall, this high versatile perspective and readily available mobility solutions are of course less applicable to regional or inner destinations, where tourist's behaviours are usually different as most of the time they are equipped with their personal vehicles or they rent one to cover substantial distances, and access to the dispersed options of infrastructure. So, given the focus and priority on urban settings, smart regional mobility, especially in a tourism context, has yet to be defined, even though there is a growing interest and application in this context as well.

#### 4.3.3 Infrastructure

For what concerns built infrastructure, what has been studied and implemented mostly gets linked with embedding technologies whether it is public transports infrastructure, public buildings, houses or utilities infrastructure. Following the core of the built environment, the theoretical and practical approaches of smart tourism literature have

also provided smart technologies to those touristic PoIs like museums, hotel chains, parks and squares, and in the transportation system, for subways, airports and bus stations (e.g. Chianese & Piccialli, 2014; Alletto et al., 2016; Faria, Brito, Baras & Silva, 2017; Buhalis & Leung, 2018).

There are plenty of cases where the focus is evident on buildings and transportation, even because smart tourism is a buzzy and wide concept (J. R. Chang & B. Chang, 2015). For example, by querying ‘IoT’ on Google Image website, the output will be an astonishing amount of representations and logos whose focus is mainly connected to building and artcraft objects.

However, only by restricting the circle on smart farming, there can be found references made to natural resources and living beings, such instances can be forest fire detection and weather prediction, and animal tracking (Hill, 2016). Even in this context, such applications get rarely applied outside of urban contexts or not interpreted yet.

Taking these considerations into account, the physical layer of smart tourism gets commonly interpreted and conceptualized as buildings and material objects which can be supported by sensors, beacons and other kinds of technologies, while, on the other side of the medal, smart tourism infrastructure inside of provincial-scapes has not been totally expressed and therefore further not so much studies have been analyzed.

#### 4.3.4 Governance

There are several studies on the governance topic. To start, one study focuses on the role of governance and stakeholder involvement plays for smart city development, as well as of a comprehensive vision (Fernández Áñez, Fernández-Güell & Giffinger, 2017). Then, also (Meijer & Rodríguez-Bolívar, 2015) advice that smart city governance has nothing to do with just simply good management of intelligent cities, but, actually, has a difficult job as it needs to transform governing administration and governance processes, often drastically.

One point to underline is that in many of its descriptions, smart city governance is associated with the values of trust, innovation, co-creation, efficiency and reliability (Bolivar, 2018; Chourabi et al., 2012). Following, it has been highlighted by (Fernández Áñez, Fernández-Güell & Giffinger, 2017) that the governance in a smart city regards

facing urban challenges, and therefore, focusing on the urban bias in the framework of smart city.

And, plus, the concept of «smart participation», reviewed in many literature sources and defined as «spreading the use of new technologies to adopt a more collaborative governance model», can get associated with smart tourism which also deals with the need of co-creating, including locals and visitors (Lalicic & Önder, 2018). Another important contribute to the topic is given by (La Rocca, 2014) which propose the following elements of smart tourism governance as characterizing a smart city destination context:

One very important hint is provided by (Gretzel, Ham & Koo, 2018) who points that smart tourism need a stable destination management and, hits the road for smart Destination Management Organizations (hereinafter: DMOs) conceptualizing them as: «lobbies and maybe even partly sponsor the development of smart tourism infrastructure, to curate and manage smart tourism data, to facilitate development and uptake of smart tourism related applications within the digital business ecosystem, to support tourists in learning about and consuming smart tourism experiences, and, finally, to link smart tourism with overall quality of life and sustainable development goals» (Gretzel, Ham & Koo, 2018).

It must be said that following a smart tourism agenda is much easier for local DMOs than for regional realities. One of the reasons can be related to their more innate knowledge of the destination and for the relationship with the various stakeholders which is more personal. What also eases different smart governance in an urban setting is surely linked with a relatively lower number of institutions with clearly defined responsibilities; indeed, policies are generally much more defined and easier to be set up in a well-shaped and geographical area.

A scholar is convinced that those technologies and data that trigger a smart city have not a neutral grade; comparatively political agendas are very ingrained in them (Kitchin, 2013). Nonetheless, the topic and the promoters of these political agendas should be more directly visible and distinguishable as fewer players are embroiled in developing and implementing smart tourism activities. According to (Yigitcanlar et al., 2018), that part of smart city literature that tackled governance usually did not put a decent effort in

defining the institutional actors at work, which suggest that they are assumed to be identified and clearly targetable.

This is way more evident in a better shaped and more homogenous area, which suits more the characteristics of the urban context. Next, it is hypothesized that a person that takes part in a participatory smart governance process is assumed to be involved, connected and informed. However, it can be surely questioned to what extent these features suit well to tourism destinations with a greater income of temporary residents (visitors, real estate owners, seasonal labour), and to the tourism out of the city limits or within multiple cities.

#### **4.4 Smart Tourism Regions**

Practically and, as expected from the literature review regarding urban bias explained above, smart tourism got carried out mainly in the city contexts, with particular attention on the urban dimensions; however, different expectations can be found with regard to destinations of small islands, as evidenced by the yearly held (Smart Island World Congress, 2019), including Tasmania in Australia and Cozumel in Mexico, and some regional Spanish areas, South-east Queensland, Australia and the Bay of Plenty region in New Zealand.

To continue, If the keyword «smart tourism regions» gets googled, the result will deliver only nineteen results, of which just a few are actually relevant. Important to be said, Google Scholar research, with the same inputs of querying, produced 16 results, proving that the topic of smart tourism regions got no such deepening and need more attention yet. Opposite to this, a concept theoretically and practically tackled has been smart tourism regions. Nonetheless, this path was not followed to a great extent, and mainly they got faced from a technological point of view (Morandi, Rolando & Di Vita, 2016).

Moreover, what literature already has studied and can offer are conceptualizations of smart regions as existing around or between smart cities (Rolando, 2011), and, another point highlighted and made by (Herrera-Priano, Armas & Guerra, 2016) is that exists a trend to exclusively smartify capital cities given their higher population densities and the greater costs they can allocate, or, as pointed by (Markkula & Kune, 2015) in their research, often those areas which surround the capital cities get classified into smart regions, as it can be noted in the case of Helsinki.

Further, it can be generally said that their pillars and targets follow the same of smart tourism applications; still, the particularities of the territory let face challenges concerning scalability for all the spheres and elements of smart tourism. One example to bring into analysis is the one that debated the case of the Caribbean region, wherein innovative propositions had the need to set connectivity levels for regional smart tourism. However, the scope, for instance concentrated on a particular area, gets limited because of scalability, and this regards not regional areas, but happens also within urban perimeters (Herrera-Priano, Armas & Guerra, 2016).

Another point to be noted is that Smart Tourism Regions are not just a mere mass of individual smart destinations or a cluster of individuals; indeed, they are gifted with unique distinctiveness characters that then get reflected on the challenges and particular management, infrastructure and improvements needs. In this regard, the same author states: «within the same territory, combining a certain number of smart cities will not necessarily lead to a smart region» (Herrera-Priano, Armas & Guerra, 2016).

The consequence of adding the attention of smart tourism from a regional standpoint is bringing some ramification, and, for this reason, the distinctive features of regions have to be taken into account to better conceptualize the discussion. The starting point is a smart city definition according to (Dameri, 2013), which sees it as a “well-shaped geographical area, while regions are not well defined and sometimes are only imagination fruits of decision makers”.

Plus, many times tourism regions suffer from the marketing conceptualizations at the eyes of a tourist of the area, while there are no policy structures supporting them, or, when regional tourism administrative structures actually exist, then they are not so powerful at local levels, where actually smart tourism should be implemented.

Overall, smart tourism at regional level mostly needs multi-level governance strategies that spread diverse local DMOs. In the same research, it was specified how greater coordination degrees between several stakeholders and across jurisdictions are needed to implement intelligent solutions at regional approaches (Herrera-Priano, Armas & Guerra, 2016). Also, one of the problems that get mentioned is that local governance can be influenced to different degrees, and, thus, it may not be able to mutually profit from smart

infrastructure initiatives, affecting so the stimulus to be involved in a participatory and governance processes which can heavily differ.

To sum up, the missing part inhere is a regional-level perception of smart tourism milestones, starting from its physical infrastructure to the pertinent technological solutions, until analyzing the several types of data needed to be collected for the modernization and regional business ecosystems it requires.

To conclude, and relevant as this last above mentioned point, a very important task on which smart tourism regions have to focus is on the definition of what a smart regional tourism experience implies, which not only requires an understanding of the experiences that a tourist may possess about a given destination, but also considering all those events from and towards a given territory within the region and the people and businesses living in it.

## **5 CASE STUDY ANALYSIS - CO-CREATING A S-TLSS IN RURAL AREAS**

The purpose of this thesis is to contribute to a better understanding of smart tourism practices with particular attention to those co-created by stakeholders in rural areas. For this reason, a literature review has been carried out and got presented in the previous chapters. In next paragraphs, I will provide information on the sample of participants interviewed and on the methodology employed to analyze the sample. Furthermore, information regarding Vallo di Diano, the Southern Italian territory object of analysis, will be shortly given. To continue, data will be analyzed and the results of the interviews will be furnished and insights deriving from this process will be contextualized.

### **5.1 Research Methodology and Sample**

To tackle the challenges in question, a qualitative research is proposed, by employing an exploratory single case study. The reason behind this choice lies in the possibility for an in-depth investigation of a specific phenomenon, and given the theoretical and empirical character of this thesis, the qualitative and quantitative approach is presented as the most appropriate method to be used to achieve the proposed objectives. In fact, qualitative



research does not employ statistical tools as the basis for analyzing a problem, and thus does not intend to measure or number categories (Wang, 2017).

However, quantitative research is characterized by the use of quantification, both in the modalities of data gathering and in its treatment by statistical techniques, from the simplest to the most complex ones (Wang, 2017). As for the objectives, this investigation is characterized as an exploratory and descriptive study.

Exploratory research provides a closer and more general view of a given fact, which will result in the formulation of more accurate and operable hypotheses and hypotheses for further studies (Sung, Kim & Chang, 2015).

While descriptive research aims to identify the factors that determine or contribute to the occurrence of phenomena and deepens the knowledge of reality (Chauhan & Agarwal, 2016). Furthermore, case study is an empirical approach investigating a current phenomenon within its context of reality, where the boundaries between the phenomenon and the context are not clearly defined and in which various sources of evidence are used (Harrison, Birks, Franklin & Mills, 2017).

Concerning the methodology used in this paper, an integration between S-D logic and Service will be employed. The case study takes into account a rural territory in South Italy. The reason why this specific territory is selected is because of the direct involvement between the author of the thesis and the territory.

Overall, the study will be conducted using some techniques based primarily on the analysis of primary sources (semi-structured interviews to stakeholders involved in the tourism field of the area) and secondary sources (bibliometric study, official statistics), visiting websites, identifying smart tourist destination models, etc.), and in the case study for validation and application of the proposed model.

The technique used for selecting the sample is non-probability purposive sampling, as it provides a possibility to interview information-rich cases (Saunders et al., 2018). Respondents are chosen in such a way that will cover differences in gender, generation, and educational background. Details about the sample have been summarized and are presented below in Table 5.

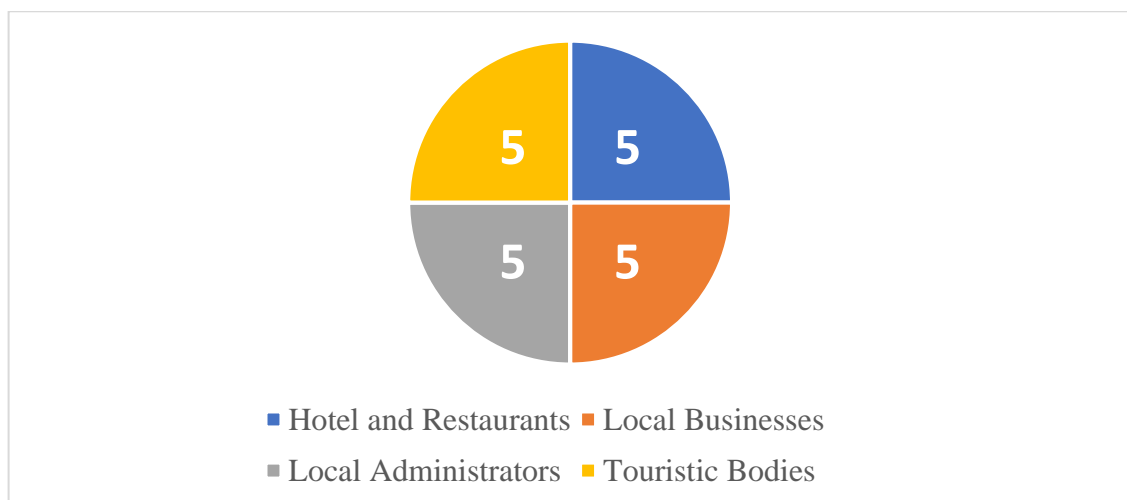
Table 5: Sample's characteristics

Number of participants in the interview process:		
20		
Gender:		
Female	Male	
50%	50%	
Generation:		
18-35 Years	36-60 years	> 60 Years
12%	63 %	25%
Education level:		
High School Diploma	Bachelor’s degree	Master's Degree
20%	40%	40%

Source: Own Work.

Twenty participants have produced their contribution for this case study. Both genders are equally represented. Participants have been divided into three generational clusters, where almost 9 out of 10 interviewees result in being over 35 years old. Regarding the distribution on their educational level, 80% has at least a degree while the 20% left holds a high-school diploma.

Figure 7: Clusters of Interviewers

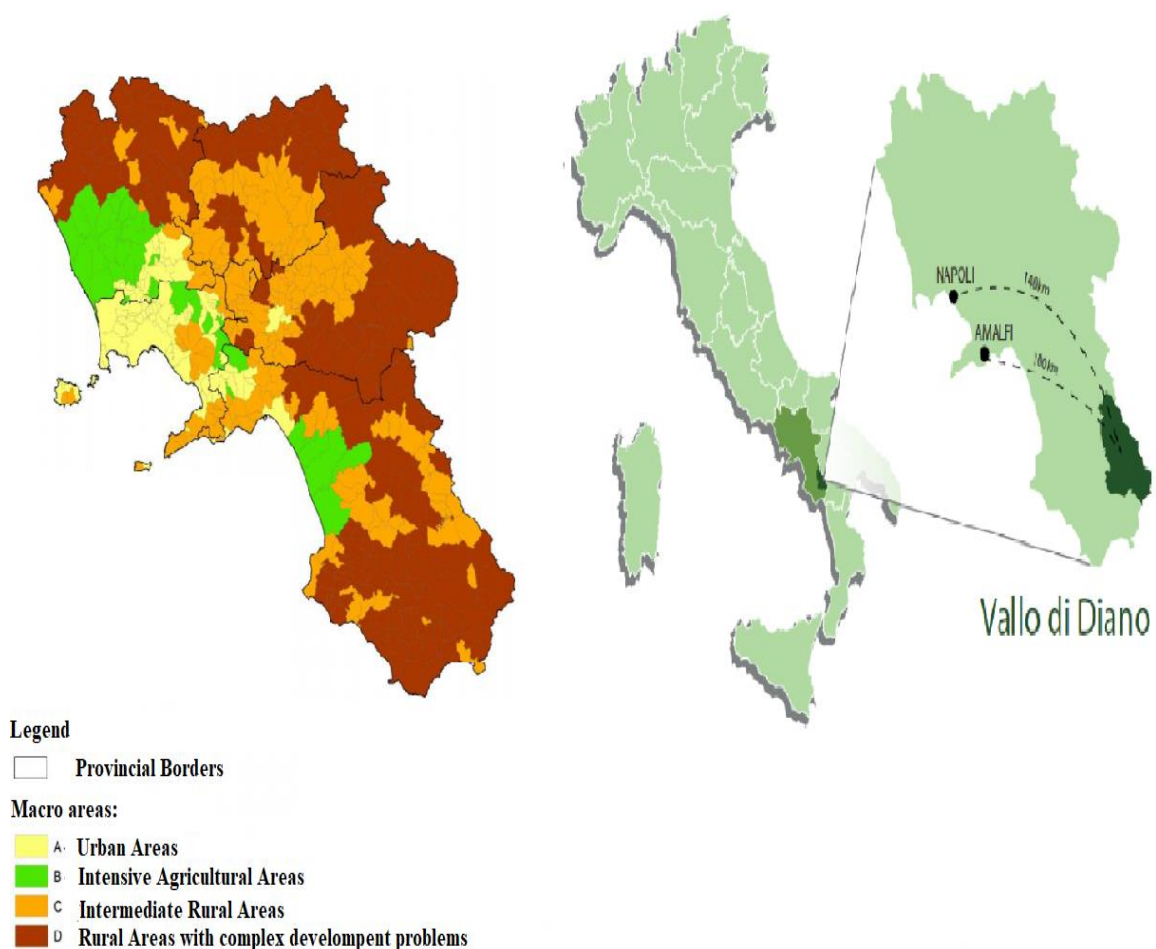


Source: Own Work.

## 5.2 General information about the territory under analysis

The 28th Rural Territorial System “Vallo di Diano” has a territorial surface of 925.1 square km, equal to 7% of the regional territory and 18.8% of the Salerno area, including territories of 20 municipalities, all falling within the province of Salerno. Figure 8 shows the distribution and contrast between the urban and rural areas in Campania region, showing the rural characterization of this territory. 62% of the System's territory falls in areas of the medium and high limestone mountains (Regione Campania, 2013).

*Figure 8: Urban vs Rural Areas in Campania Region and localization of Vallo di Diano*



*Source: Regione Campania (2013).*

Land use is characterized by the typical altitudinal succession of the rooms of the Campania Apennines, with the beech woods and the prairies of the peaks and the extensive highland sand summit karst plateaus; while the middle slopes and lowlands are dominated by sub-Mediterranean deciduous forests and xerophilous grasslands.

The slopes foothills connecting with the plain, with a minimum slope on the debris of groundwater and cones, are mainly for agricultural use, with a dense mosaic of olive groves, vineyards, arable land, fodder crops, small strips of oak woods and locally fruit chestnut trees, located at fresh exposures on deep pyroclastic soils. The hilly areas, arranged on clayey or flysch lithologies, at the foot of the multi-limestone relieves high energy, affecting 17% of the surface (Regione Campania, 2013).

They are characterized by a complex mosaic of meadows, arable land, olive groves and oak woods. About 18% of the system's surface includes the floodplain and terraced areas, with the ancient Pleistocene lake which has been reclaimed since Roman times (Regione Campania, 2013). The plain, crossed longitudinally by the Tanagro river, is characterized, in the northern portion, by soils with fine texture, with limited drainage, intended for cultivation and cereal growing. The southern portion of the plain is instead characterized by medium to moderately fine soils with good or moderate drainage.

In these areas one passes from the landscape to open fields of the northern clay plain, with units' wider cultivation, to that thickly placed, with simple or arboreal vegetable gardens and arable land, or cultivated with permanent meadows and alternate fodder. Overall, the forest formations cover about 50% of the territorial surface of the system; those of prairie (permanent meadows, pastures) on 16%. Urbanized areas, which made up 0.3% of the land area in 1960, today have increased to 2.1%, a phenomenon linked to the expansion of residential areas and production areas in the plain of Vallo di Diano (Regione Campania, 2013).

For what regards infrastructure and communications, the territory is linked with the main city, Salerno, about 80 km, reachable by the national highway, as nearly 30 years ago railway connection has been cut by regional administration, leaving weaker infrastructural systems to this territory.

While for what concerns Internet coverage, ADSL covers the 100% of the houses of each villages, while FTTH and FTTC technologies is currently being installed, with some municipalities already at almost full availability, differently, other more remote locations are in the installation phase and trying to reduce the gap. Vallo di Diano gets considered as a geographical subregion of Cilento, boundary between the Greek colonies of Magna Graecia and the indigenous Etruscan and Lucanian peoples, and it is nested into "Cilento

and Vallo di Diano National Park”, World Heritage Site from 1998. Figure 9 shows the two main tourism attractors that this region offers.

*Figure 9: Charterhouse of Padula, and the Caves of Pertosa-Auletta*



*Source: Own work..*

The most important is the Unesco Heritage Padula's Charterhouse, the second biggest monastic structure in the world, and the Pertosa's Caves, one of the most suggestive caves in South Italy. Besides there is the medieval city of Teggiano, the Roman Bridge and Saint Anthony Convent in Polla, the Paleo-Christian Baptistery in Sala Consilina, and the WWF natural waterfall of "Capelli di Venere" in Casaletto Spartano.

Besides, it relies on strong culinary traditions, which has generated successful wine-gastronomical festivals. Indeed, the so-called Mediterranean Diet takes birth in the south province of Salerno for the particularity characteristics of its products, and, especially during summertime, many people visit these inner areas to discover recipes, ingredients and tastes at the local food fairs.

### 5.3 Data analysis

In order to respect the two research questions proposed, this paper tries to develop the underlying scheme for the environment of Vallo di Diano's tourism sector:

- the principal actors or groups (people-activities).
- the type of asset taken as an object of exchange (resources integration).
- the most common tools employed (technology).
- the social rules enabling exchange (extant institutions) and deriving from exchange (production of new institutions).

Coherent with the system orientation embraced, users are seen as nested and interrelated systems (Vargo & Alaka, 2012), which reflects the entire tourism system as vast sets of stakeholder categories that are related to the various dimensions of our society (Sigala, 2015). More in detail, the identified actors of the model are:

- Economic stakeholders, such as tourists, travel agencies, hotels and all the groups included in the tourism supply chain.
- Private businesses (restaurants, pubs, stores, local food shops etc.).
- Public business (museums, cultural events managers).
- Support services (examples: transportations, telecommunications, payment providers).
- Regulatory agencies (tourism or local administration) and NGOs

For what regards technology, confident of the enhancing driving power in redefining user's co creating experiences (Neuhofer, Buhalis, & Ladkin, 2012), the work seeks to considering several value co-creation enablers in the tourism system taking all the phases of service supply, from pre-delivery to post-sales into account (Tommasetti, Troisi & Vesci 2015). Thus, the plausible social networks strategies, reviews aggregators website, and other platforms will be object of investigation considering three different stages:

- Before-delivery: online platform reservations systems (for example, TripAdvisor, Expedia, etc.)
- Service delivery: applications for instant communication allowing arrangers to keep contact with travelers all over the journey.

- After-delivery: social networks, blogs, enabling actors to review and evaluate the service (instances can be TripAdvisor, Facebook, Booking.com, etc.).

Next, thirdly, resources can be seen as material and immaterial elements that users share in the smart tourism ecosystem, defining reciprocally operand and operant assets in S-D logic (Vargo & Lusch, 2016). The difference between the two resides on the fact that operand assets are physical and material, while operant resources are intangible assets directly linked with successful value co-creation and for gaining competitive advantage (Barile, Pels, Polese, & Saviano, 2012). As explained below, these two types of propositions get re-intended as follows.

- Operand: physical materials that actors intentionally deliver to clients (information linked to basics or “extras” of a service, etc.).
- Operant: data, know-how, competencies knowledge, feelings, experience, reviews and all the relational attributes that tourists share before, during and after the travel.

To continue, another value co-creation enabler as important as technology can be considered institutions, meaning all those aspects lined with norms, symbols, values, law, traditions, etc), which works as coordinator of the behaviors of the users (Barile, Lusch, Reynoso, Saviano & Spohrer, 2016). Considering this, institutions are practiced by applying the concept of normalizing the representational procedures taken into account to consider implicit or explicit laws and practices that affect markets exchanges and then are employed to the S-D context to investigating the divers value co-creation processes happening along the process of integration (Vargo & Lusch, 2016). As much it concerns on this feature, two different areas of institutions can be examined:

- Formal Rules: related to check-in and check-out schedules, payments, or tourism general policies.
- Informal and social rules: beliefs, traditions, cultural propositions and social praxis, by which users exploit interactivity as means to provide understanding and communication to itself, and, at the same time, produce newer contents and affect the ways these meanings and symbols get commonly perceived.

Shortly, smart tourism ecosystems are groups of users (intended both as tourists and citizens, companies operating in the tourism industry, companies from other industries,

systems infrastructure, local administration, local entities, etc.) integrating material and immaterial assets at the same moment:

- Relying on already available technology and institutions as means to co-creating value in the short period.
- Developing new innovations or institutions (praxis, social rules, customs, etc.) in the long period.

It has been hypothesized that the combination among users with other organizations (socio-political or economic bodies) generates shared information and value co-creation in the short period where the acting of technology is embodying, as it empowers and facilitates resources integration extending itself horizontally towards other dimensions.

On the other hand, the production of value co-creation can generate innovation by renovating knowledge exchanges continuously to develop newer capabilities, skills and experiences in the long term obtained by the reformulation of implicit knowledge at given time and, therefore, this integrated scenario offers a ground where efficient procedures of value co-creation can support new solutions to existing or newer problems and generate innovation (Yoo, Sigala & Gretzel, 2016).

To provide a more detailed overview, innovation can be understood according: service innovation, the advancements of the service offered, processes, management, architecture or application (at a micro-level of SS); or social innovation, creating new value propositions and harmonization of new solutions that drive towards sustainable and viable forms of value co-creation in the long term. As a matter of fact, the exchange of assets at a given time generates co-created value which may enable the production and improvements of knowledge, and cooperation for constantly increasing competitive advantage in a sustainable and viable way.

What can be brought in this context derives from a research according to which businessmen should manage value co-creation absorbing the skills to strategically choose the right counterparts furnishing the best combination of resources, and entertaining constant relations to favor the birth of win-wins solutions, and a fair distribution and access of socio-economical value throughout the network of users (Yoo, Sigala & Gretzel, 2016).



Once having presented from a theoretical background, a brief overview of every dimension of the ecosystem and, having underlined the subsets for each category, the macro-areas (users, technology, asset combination, and institutions) have been used as macro-classes for elaborating the interview layouts.

## **5.4 Research results**

The results will be shown in the next paragraphs. Basically, I will provide a brief introduction on the dimensions explored, with tables introducing the objectives of the questions submitted; then, the outcome resulting from the responses of the people interviewed with some short references at their responses to highlight particular insights and comparisons witnessed by this research is presented and on which limitations and conclusion paragraphs will be based on.

### **5.4.1 Actors**

Following the assumptions of (Vargo & Lusch, 2016), the tourism system gets considered as a nested and interconnected set of stakeholders, belonging to the economic sphere, social one, and political. Therefore, different questions have been structured according the following objectives, understandable from Table 6. It turns out that people interviewed in the sample develop informal relationships with other local stakeholders.

Even though formal collaborations among them are not established, there is an overall trend of sharing information and activities by the majority of the actors. With regards to informal collaborations, these get set with restaurants, museums and local buses; formal economic collaborations instead come into play with parking services and travel agencies to obtain discounts related to exhibitions or excursions.

Regarding the political environment there is some evidence of the integration and participation of the local administration in developing touristic projects and ideas. In this dimension have been discovered many political interventions helped the territory to grow up. However, there are also who believe that local administrators lack of a global vision, and that have not implemented the right tools to foster tourism on digital platforms, which get addressed more by the young generations.

Table 6: Target of Questions for Actor's Dimension

Dimension	Objective of questions
<b>Economic</b>	understanding if formal or informal arrangements were made with other tourism-related entities, or with other local actors offering complementary services, and if services or promotional activities get co-created with local members offering subsidiary services.
<b>Social</b>	investigating the setting of commercial agreements and/or informal partnerships with local cultural associations or museums and/or creation of collateral events to promote a given activity.
<b>Political</b>	analyzing if it has established formal and/or informal relationships with local administration (municipalities, tourism entities, etc.) and what is the degree of cooperation between local business or touristic organization with local administrators.

Source: Own Work.

- *“I believe that touristic administration lacks effective communication and management [...] it does not support nor integrate the building of networks with other systems[...] from customers negative opinions pop out when comparing the infrastructures and connections present here, with those that Salerno, Naples or other cities in other regions can offer“*

To finish, about cooperation among the stakeholders of the tourist system, the majority of the interviewed sees it as a good approach, but they also highlight the fragmentation of the territory and jealousies between distinct touristic bodies that during the years have always competed against each other. One interviewee highlighted: *“I was able to get an investor to create a network for electric car mobility into our territory, but the most difficult part is to find an optimal solution for everyone involved, and this becomes frustrating because some people lack of vision on sustainability and innovation“*. While there is also who criticizes touristic networks pre-existing, pointing to the absence of a direct interaction with visitors in all the phases of the travel, meaning in all the processes involved from the reservation to the permanence and returning home.

#### 5.4.2 Technology

For what concerns technology, the questions were made with the purpose of understanding what technology is used and what tools are employed to interact with tourists before, during and after the travel. More specifically, Table 7 addresses the questions' purpose. It turns out from the results that common platforms adopted in pre-delivery are online reservation websites like Airbnb, Booking, Expedia.

*Table 7: Target of Questions for Technology's Dimension*

<b>Phase</b>	<b>Objective of questions</b>
<b>Pre Delivery</b>	understanding on which technological platforms online reservations were made and what were the social networks or applications used to get in touch with users before the journey.
<b>During Delivery</b>	understanding which messaging services and platforms were employed to keep in contact with customers during the journey
<b>After Delivery</b>	discovering which platforms, social networks or applications are mostly employed for staying in touch with customers after the journey.

*Source: Own Work.*

As one interviewee mentioned: *“I know people in the area as well who use Airbnb as well to rent their houses, so all the communication processes happen on their platform or on once having exchanged mobile contacts [...] My hotel reservation system integrates requests from platforms as Booking and Expedia, but we have our own personal website where we have developed a little bot to interact with tourists”*.

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Nevertheless, few interviewees also integrated their own ICT solutions in their websites as the Certosa Charterhouse or the Pertosa's caves as it was claimed that *“On our website people are enabled to buy tickets, retrieve information, and access multimedia contents [...] Since a couple of years we have developed an AR project which allows tourists to have a real idea of what is going to find once it enters in Pertosa's caves even before arriving here”*

Instead, for what concerns during the travel, local activities keep in touch with tourists mainly via WhatsApp and phone calls, allowing a real-time communication, where WhatsApp results the most used one by the whole sample of interviewee.

- *“In the last years, communication has drastically changed [...] Now, everybody uses WhatsApp and since we use it in our activity, it actually changed the responsiveness we can offer to our clients. “*

Lastly, the relationship with tourists after the travel is kept by answering to reviews on web platforms and keeping updated travelers regarding discounts and events through social networks, with Facebook, Instagram, and TripAdvisor playing a leading role. One interviewee revealed: *«Many ignore its potentiality, but I have always invested in marketing campeing on Instagram to promote my activity, and I can tell you that I have reached many people came to my restaurant after some of their freind shared a photo of a pizza and they found it on their feed news... if you look at that photo, it makes you want to eat that pizza »*

However, there is also who mentioned that has difficulties in maintaining a relationship with tourists, as stated by one interviewee who claimed that: *“It is difficult to maintain relationships, as visitors here just spend just a couple of days in our territory and there is not so much time to create connections. Moreover, most of those who come visiting our*

*places are less digitally educated and so we have difficulties to relate with them once they left“.*

#### 5.4.3 Resource Integration

To follow, results on the institution dimension are exposed. As explained before, operand assets are physical and material, while operant resources are intangible assets such as data, experiences, know-how. Both are used in the value co-creation process, and therefore are used as guidelines for the resource’s integration process understanding as Table 8 shows.

Overall, the replies highlighted how mostly the material provided are those furnished by the municipalities and the Tourism Local Authority: maps with the monuments to visit, brochures of other places, booklets with the history of the city, informative material such as bus timetables, and examples of gadgets as well have been encountered.

As example, it has been explained by an interviewee who admitted: *“We furnish them with booklets containing all the information they need, from the timetables of the company buses to move within Vallo di Diano or to get to the main cities [...] to other possible activities that can be done in the area as excursions, horse-riding, local cuisine tasting.”*

*Table 8: Target of Questions for Resource Integration’s Dimension*

<b>Asset Type</b>	<b>Objective of questions</b>
<b>Operand</b>	discovering if informative material and/or merchandise customers (or other tangible things) were delivered to visitors.
<b>Operant</b>	achieving an understanding on the virtuous word-of-mouth among local stakeholders in suggesting collateral offers; analyzing the impact of the suggestions received from visitors to improve the service or to involve them into business strategies.

*Source: Own Work.*

Instead for what concerns operant resources, the received answers considered providing information about everything the tourists need, but suggestions on other services can be influenced by the personal knowledge of other businesses. Most of the suggestions given to consumers relies on the quality of the business being recommended as the overall satisfaction is given by the whole set of the travel experience.

Regarding information provided by tourists, the trend looks like they share opinions and assessments on the service experienced. The sharing of experience becomes useful to those local businesses as they can identify issues to improve. Interestingly, one interviewee highlights the importance of exchange by stating that he prefers physical feedback rather than online reviews, as a problem can be clarified immediately.

- *“ I have run a hotel since more than 30 years [...] layouts have changed, the overall service we provide has become smarter[...] We are totally open to accept suggestions and match tourists' needs; the insights from digital tools are useful [...] I think in the tourism field physical feedback is more important than the digital one.[...] I personally ask if their permanence satisfied their expectations and needs [...] because there is the possibility to better intervene if they encountered a problem.”*

Overall, tourists seem to leave a positive review for local business, while another said that it is often more difficult to match tourists' expectations as they compare this territory with others with different characteristics. Information is linked not exclusively with reviews but also with culture of origin both of locals and visitors. Indeed, an exchange of information about differences among diverse cultures and acquiring and learning of new practices and customs both for visitors and providers comes out from the interviews.

- *“There are several museums in the area, for example the one in Teggiano showing the tools used by our grandparents to harvest, or the one in Polla showing the typical folkloristic dresses [...] These museums testify the roots and traditions of our territory[...] tourists seem to appreciate [...] I had hundreds of conversations where I compared visitors ' customs, traditions. “*

As a matter of fact, locals can benefit not just merely for their culture but as well their knowledge and therefore innovative ideas can be realized to improve the services offered. 4 interviewees declared as well receiving small gifts from visitors. To finish, the

information exchanged with other local stakeholders is both formal and economic in some cases, but informal in other cases.

#### 5.4.4 Institutions

Questions for the institution's dimension have been divided into three areas as it can be seen below in Table 9. Specifically, the type of rules can be divided and summarized into 3 categories: formal, informal and social.

*Table 9: Target of Questions for Institutions' Dimension*

<b>Type of Rule</b>	<b>Objective of questions</b>
<b>Formal</b>	discovering if tourists had to follow some special rules during permanence, or if there were any kind of prepared or unplanned moments with people; understanding if activities was restricted exclusively to working hours or was beyond working hours as well.
<b>Informal</b>	understanding if any recreational times happen with visitors and if these are organized or unplanned or if business values, propositions, philosophy, lifestyles are shared with tourists and local culture get shared to customers or guests (habits, lifestyle, food, local people, language, etc.)
<b>Social</b>	investigating if strong relationships with users have been established during and after the journey, and if they are willing to establish relationships with locals, or if some special rituals are happening with visitors.

*Source: Own Work.*

For what concerns formal rules, mostly they are linked with check-in and check-out time, regulations on-site and pricing on the website, as explained by an interviewee who claimed: *“Since the moment of their arrival, we have to obligation to check IDs, explain the rules of the hotel like breakfast moment, check-out obligations and so on”*. Also, other responses highlight advice to avoid vandalism, waste as stated by an interviewee who told: *“What I do is always explain the regulations especially now after COVID we have*

*to put more emphasis on this aspect [...] but also not leaving lights on, not be noisy during night hours [...] or trash differentiation collection “*

Instead, on the other hand, social and informal norms questions were made to have an understanding of knowledge and culture acquisition of the place through stories or anecdotes. The majority said that the information provided changes according to the travelers' culture and the reason behind their travels.

Anyways, locals try to share the culture of the Vallo di Diano, by providing them information on the customs of this area of South Italy. Interestingly, the whole set of respondents affirms that the offers aim to spread the culture of this territory and to actively push travelers to discover places.

Later, in two interviews, some locals claimed to have had experiences with visitors not interested at all in the culture of the territory and that were not happy with the overall opening hours of attractions and the closing days of business' activities.

- *”Most tourists come here to explore the culture of the territory [...] there are also who just come here to explore nature or to hunt which are less interested in cultural events.[...] I had cases of foreigner visitors which were complaining about the poor transportation to reach the area and for the closing time of supermarkets. ”*

On the creation of leisure moments with tourists, the replies have been different. Some said having spontaneous and informal moments, and mostly get affected by the length of stay and by the age of the visitors. Cases of rituals happening among local and visitors have been found, such as a welcome drink, or taking pictures with travelers.

Regarding establishing relations of friendships among locals and visitors, there have been found evidence of how social networks play a huge role in keeping the contacts and to spread the territory and its attractions; moreover, also cases of retention, with visitors coming back to the visited places have been found.

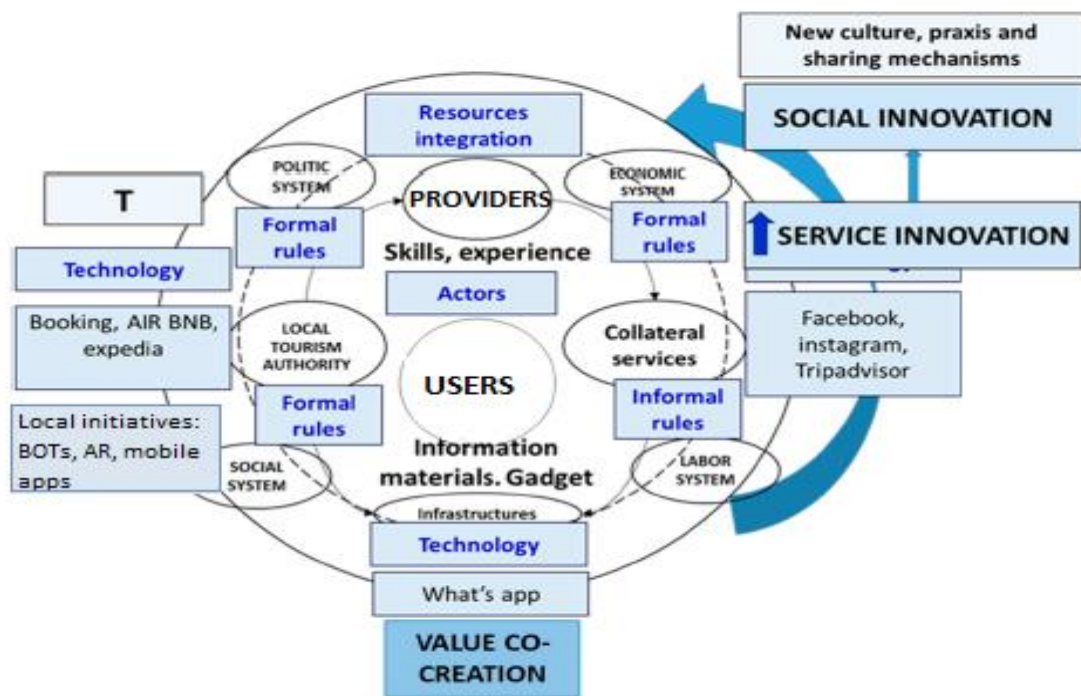
- *”Three years ago, I met a girl from another region who spent some summer days with her family in our village and joined the rafting activity [...] we became friend and we have been staying in contact by Instagram.[...] they were impressed so much from the hospitality of the territory [...] she has also came back visiting here and introducing these places also to other friends.”*



#### 5.4.5 Considerations deriving from the results

Taking everything into account, as shown in Figure 10, the role of technology, which allows the exchanging of information over the whole service provision, gets confirmed as an operand asset; this last one provides those invaluable operand asset that make service effectiveness stronger and to enhance value co-creation and service innovation in the long term (Lim et al., 2018). However, social dimensions get affected as well by institutions, which let service innovation evolve into social innovation seen as co-creation processes boosting new social practices resulting from the integration of experiences. Considering this, the advent of new value propositions and the rising of new informal behaviours, customs, and trends which drive towards the development of the whole entire local rural environment is what social innovation generates as outcome; while the innovative processes and services, which are jointly created with other users, are the results of technological innovation.

*Figure 10: Value Co-Creation Process in a Smart Rural Touristic System*



*Source: Adapted from Polese, Botti, Grimaldi, Monta & Vesce (2018).*

Nonetheless, the whole process is based on the interaction among actors that together they are able to co-create value for the territory relying on the technological infrastructure. What Figure 10 wants to highlight is the need for a smart multi-level solution:

- **smart**, because it is able to detect innovation factors, align interests, leading the efforts and share a co-creative culture;
- **multilevel** as it linked with a bottom-up approach, which considers every actors of the territory: not exclusively policy makers or local and regional administrators, but tourists, locals, tourist operators and businesses as well.

What also comes out is to design such a solution that would mean implementing a set of actions capable of critically studying the tourist area, not just from a mere structural point of view but as well from a systemic one. Therefore, it is absolutely essential defining the strategic analysis of the entire system and, besides that, knowing interests and expectations of each stakeholder participating in the system.

## 6 LIMITATIONS AND IMPLICATIONS

The factor limiting this thesis is surely methodology, as adopting a single case study does not empower a generalization of the outcomes; furthermore, also the number of interviews gathered in the data collection process would need a higher participation to improve data validity. Moreover, it must also be said that in the literature sources there are not so many results linking smart tourism system adoption, value co-creation and rural territories. What could be integrated with the interviews to more deeply analyze data and obtain more insights are further qualitative research techniques like observation or content analysis. Moreover, this research got addressed on local stakeholders involved in tourism and therefore it does not consider travelers' opinions, from which it could be made a comparison analysis between locals and visitors or acceptance and use of technology (Botti, Grimaldi, Monda & Vesci, 2017; Botti, Monda, Pellicano & Torre, 2017).

The elaboration of this work has employed a holistic view to support the co-creation. In order to re-interpret smart tourism as a smart local tourism service system and adopting a system view of value co-creation a systematic approach has been used which is able to furnish an innovative perspective that portray the relationships among asset integration,

local administration, technology and progress by establishing important innovations in this field of research (Vargo et al., 2017).

The uniqueness of this paper is based on a reconceptualization of a tourism sector of a rural area, by a comprehensive approach relying on the S-D logic suppositions overtaking the simple theoretical explanation of the service ecosystem's dimension, which enables to better identify stakeholders, technological platforms, and resource integration processes. Overall, this full-comprehensive approach and its four dimensions identified in the system can be used by administrators and businessmen to spot strategies for managing service delivery in a more effective way, and to spread innovation and value co-creation in the long run.

Two implications, one theoretical and one practical, come into analysis when combining service systems and ecosystems models of value co-creation in a systemic view. With regards to the first, the spotting of those key enablers enhancing value co-creation can help to boost the current interpretation of value co-creation and it highlights diverse users' types of actions and collaborations. The dimensions brought into analysis are useful to analyze a field of study which has not deeply tackled. For these reasons, the practical implications in co-creating value have been faced. What is interesting is that from the observation of the stakeholders composing the system and the way they engage better relational approaches that can improve the comprehensive quality of the service.

This means also integrating and adopting ICT platforms, through which knowledge exchanges and enhancing of stakeholders' involvement can be obtained. In addition to this, the underestimation of the role played by institutions, found as a gap to fill in the literature, can be undertaken by institutions engagement and newer ones detection acquired from user-providers connections. Following, by mediating the holistic definitions (common strategies to balance the dimensions of the eco-systems) and the reductionists ones (detection of single stakeholders, asset, technological infrastructure and institutions) strategic views of value co-creation can be adopted in a complex environment as tourism.

Overall, this work follows the aim of reshaping value co-creation according to the adoption of a system view and meta-theory. In order to do that, value co-creation is re-interpreted according to a micro point of view (meaning the spotting of co-creation

processes), and following a macro standpoint, linked with the possible generation of newer institutions or the reinforcements of the pre-existing ones.

Moreover, the combination of the two methodological approaches can also contribute for further theoretical developments in service research by inspiring new considerations and by challenging those one in theories which are founded merely on a theoretical level. What emerges as well from the last advances in S-D logic is that adopting a system views in unstable and fast-changing environments as tourism becomes fundamental in re-considering the definition of value and interdependencies in dynamic contexts. For these reasons, combining different service theories is needed to introduce theoretical consideration for service and value co-creation.

Another important feature to highlight is that by spotting specific mechanisms, stakeholders and the touchpoint tools in smart tourism service ecosystem, those in charge of decisions can be helped to generate strategies to boost asset exchanges, as well as policy makers in setting sustainable interconnections to spread information exchanges and supporting stakeholders involvement and interaction by using ICT tools. To sum up, the conceptualization of value co-creation for a smart local tourism service system tries to spread the combination of value co-creation practices at the top of the organizational tourism strategies and to reduce the gap in strategy adoption to apply at general management of the tourism system.

## **CONCLUSION**

The elaboration of this work has employed a holistic view to support the co-creative generation of a structure for smart tourism local service systems. What emerges from the interview results is that the stakeholders' clusters of Vallo di Diano's system are inclined to establish relationships. What strikes also is that collaborative approaches are enabled mostly in a formal way, by offering packages of services and discounts; more informal collaborative initiatives have still been encountered, but less frequently.

Instead, for what concerns technology, the totality of the sample highlighted that fact that ICTs represent core aspects on which managing the activities, and it eases the establishment and continuity of sustainable exchanges among local businesses, local administration and visitors. Plus, stakeholders share the collaborative approaches, by

adopting ICT's instruments to communicate among each other and with tourists and to exchange several types of data. Cases of bots, and of AR applications have been found as well. This approach is commonly perceived by the interviewees as an instrument on which useful advice for enhancement can be extracted and therefore leading to improvements.

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Furthermore, the pertinence of the integration of assets gets confirmed too. By focusing on the what comes out of the analysis, the interviewees involved with tourism share information about the services offered, but they do not lack to share other services offered by local stakeholder regarding local markets and for what regards the traditions, customs and culture of the territory. At the same time, another feature popping out is that locals try to discuss any problematic situation emerging in the time spent in the territory and trying to be helpful for tourists. What is interesting to notice is that the exchange of assets with the visitors generates a connection that overcomes professional interests.

Regarding visitors, it emerged that they are active in sharing and communicating all along the three stages of the experience, both by using technology and through real live meetings and conversations. Moreover, another evidence coming out is that they are active in sharing their judgements, feedbacks both positive and negative, or acknowledgements by online reviews that get used by locals to improve their services, and to generate value in a co-generative approach thanks to visitors suggestions. Indeed,

communicating information online or offline enables creating innovation in the assistance offered. To conclude, and to confirm the interdependence between value co-creation and feasibility, the identified features of resources integration, enabled by ICT, create value as: (1) economic benefit, local businesses can achieve improvements as they develop the service offered; (2) social welfare, by enforcing connections among system stakeholders; (3) environmental gains, this co-creative approach calls for the growth of the whole territory.

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## **APPENDICES**

## **Appendix 1: Povzetek (Summary in Slovene language)**

Po podatkih Združenih narodov (2019) bo do leta 2050 v mestnih območjih živelo več kot trije od štirih ljudi. Danes veliko raziskav obravnava razvoj ter značilnosti pametnih mest (Van Dijk & Teuben, 2015) in turizem je ena tistih sfer, ki so jih pametna mesta digitalno preobrazila (Khan, Woo, Nam, & Chathoth, 2017). Ena od značilnosti pametnih aplikacij je možnost, da uporabnik postane gonilna sila pri ustvarjanju in skupni rabi vsebin (Kontogianni & Alepis, 2020). Toda eksplozija pametnih rešitev, ki jih omogočajo najnovejše tehnološke inovacije, je bila večinoma kontekstualizirana v urbanih okoljih, medtem, ko je bilo število rešitev, ki so bila razvita v manj urbaniziranih podeželskih območjih, manjše (Steyn & Johanson, 2010).

Področje pametnega turizma je bilo večinoma raziskano v mestnem okviru, zelo malo študij pa upošteva podeželje. Zato lahko ta raziskava pomaga literaturi, da poveča število študij na tem raziskovalnem področju, ki je v zadnjih fazah. Poleg tega skuša ugotoviti trenutno stanje glede stopnje ozaveščenosti o koristih, ki izhajajo iz ustvarjanja vrednosti. Cilj uvajanja pametnega turističnega sistema na podeželju je zagotoviti niz rešitev, ki bodo s procesom soustvarjanja izboljšale turizem in kakovost življenja (Buhalis & Foerste, 2015). Odkrivanje orodij IKT za povečanje rasti in širjenje vrednosti lahko spodbudi znanje o praksah ustvarjanja vrednosti in ponudi razlikovanje o več vrstah dejavnosti, ki jih zainteresirane strani proizvedejo med deljenjem storitev.

Uporabljena metodologija združuje dva temeljna sodobna pristopa k raziskovanju storitev: Storitveno znanost Service Science, ki ponuja organizacijski okvir za ustvarjanje in vključevanje ustvarjanja vrednosti v smislu pametnih servisnih sistemov (Polese, Botti, Grimaldi, Monta & Vesci, 2018). In storitveno dominantni logiko, ki predlaga drugačno postavitev, imenovano storitveni ekosistemi (Vargo & Lusch, 2016). Ta kombinacija pristopov premaga omejitve posameznih modelov z določitvijo integriranega modela, ki ga je mogoče uporabiti v hiper kompetitivnih in na izkušnjah temelječih panogah (Polese, Botti, Grimaldi, Monta & Vesci, 2018) in je bila sprejeta z uporabo metodologije študije primera, ki temelji na polstrukturiranih intervjujih. Natančneje, cilj je odgovoriti na naslednja raziskovalna vprašanja:

- So glavni elementi pametnih turističnih sistemov (akterji, tehnologija, prakse vključevanja virov in institucije) gonilo ustvarjanja vrednosti in inovacij tudi na podeželskih atrakcijah?

- Kakšen je vpliv razsežnosti ekosistema pametnih storitev na nastanek družbenih inovacij v skladu s sistemom in strateškim pogledom na ustvarjanje vrednosti pri obravnavanju podeželskih ozemelj?

Da bi upoštevali predlagana raziskovalna vprašanja, poskuša ta raziskava razviti osnovno shemo za okolje podeželskega ozemlja Južne Italije z upoštevanjem:

glavnih akterjev ali skupine, vrsto sredstva, ki se vzame kot predmet menjave, najpogostejša uporabljena tehnološka orodja in prakse ter družbena pravila, ki omogočajo izmenjavo in izhajajo iz izmenjave.

Za zaključek in potrditev soodvisnosti med ustvarjanjem vrednosti in izvedljivostjo prepoznane značilnosti vključevanja virov, ki jih omogoča IKT, ustvarjajo vrednost kot: (1) gospodarska korist, lokalna podjetja lahko dosežejo izboljšave, ko razvijejo ponujeno storitev; (2) socialna skrb z uveljavljanjem povezav med deležniki v sistemu; (3) okoljske koristi, ta ustvarjalni pristop zahteva rast celotnega podeželskega ozemlja.

## **Appendix 2: Interview questions**

The questions asked during the interview process in order to obtain the results of this study are the following:

### **Actors**

#### **Economic Actors**

1. Have you set connections with other bodies involved in tourism?
2. Have you fixed agreements with other local members offering other complementary services?
3. Have you ever offered service packages or join promotional activities with other local stakeholders?

#### **Social Actors**

4. Have you set commercial agreements and or informal partnerships with local cultural associations or museums?
5. Have you ever organized or let visitors get involved in cross events or activities to promote special events in the territory of Vallo di Diano?

#### **Politic Actors**

6. Have you established some kind of relationships with local administration, like city-halls, tourism authorities, ecc.? Are these positive and useful to growth?

### **Technology**

#### **Before-Delivery**

7. Through which technological online platform are your reservations/applications made?

8. Which social networks or applications have you employed to get in touch with users before

### **During Delivery**

9. In order to connect with visitors, what communication channels do you rely on?

### **After-Delivery**

10. After the visit, which communication channels do you employ to keep relationships built with visitors?

### **Resources Integration**

#### **Operand**

11. Are you used to providing any kind of informative booklets, or offer particular merchandise to tourists?

#### **Operant**

12. With visitors, do you provide information just regarding the service you offer, or do you offer as well advice for other services and places?
13. Do you foster information about local traditions and customs with tourists visiting the territory?
14. According to your experience, are advice and comments left by visitors able to let you improve your service?
15. Do you normally share your business strategies, such as program activities, or updates with those visitors you have entered in contact?

### **Institutions**

#### **Formal Rules**

16. Do those visitors entering in contact with your service need to follow particular rules?
17. Is your availability to be contacted by visitors flexible or are you reserving specific hours to be contacted?

### **Informal Rules**

18. Does it ever happen to meet or spend recreational times with tourists? If yes, is it something you organized or is it improvised?
19. Do you try to communicate your values, point of views, or ethics with those one accessing your service?
20. Do you tend to spread local traditions?
21. Do you try to share local culture and traditions such as customs, typical gastronomies, local people, dialects etc.)?

### **Social Rules**

22. Have you established any type of rituals with visitors?
23. Are you able to set strong and lasting connections with users during the stages of their stay?
24. In your experience, do visitors try to set connections with locals?

## **Appendix 3: Interview answers**

### **Actors**

#### **Economic**

**Respondent 7** replied: *“Lately, Paladianflex lately has hosted national and international artists, hosting their concerts and their shows, becoming one of the most important structures in Southern Italy... Anyways, the achievement of this success could not be reached if we made agreements with Media and Event Management actors... We established formal relationships with bus companies to provide connections and transportation from the surrounding area and from the metropolitan area of Salerno to the place of the event.”*

**Respondent 1:** *“We of MIDA Foundation thought that it would be good to amplify our offer for tourists... We have made arrangements with the rafting school, providing them a seat in our museum, in order to propose complementary activities... Rather than being an obstacle, this rafting school has found a friendly Foundation... This has generated a virtuous circle as, by following this approach, we have been able to hire 5 new local young people working for us... In the Foundation we established 'Speleo Bar', which offers a series of typical local products. Everyone who cultivates and produces food and beverages in a radius of 50 km from Pertosa's caves has the possibility to access and obtain a special trademark that allows the sale of these products in the bar with a special privilege... By creating this brand, we are now able to better provide those attentions needed by tourists, and at the same time valorize the area.”*

**Respondent 15** replied: *“For what concern my municipality, Teggiano, the example I can provide you is linked with Costanza's celebration happening in August for three days... Last edition counted more than 100.000 people in those 3 days... In organizing this event, we cooperate with local artistic associations to give the possibility to those tourists, interested in deepening the history and the art of our territory, to extend their knowledge... We work jointly with the 'Museo degli usi e delle tradizioni del Vallo di Diano', which is a treasure trove of artifacts, kept alive in their original function, that testify our origins and customs... As during those days only the historical center was accessible, we needed to create arrangements as well with transportation companies, to let tourists enter in the city.”*



**Respondent 1** replied: *“Actually, I think our example is a kind of anomaly when compared to other local realities. Indeed, MIDA Foundation is a union of public entities characterized by a high entrepreneurial vocation. So, part of the generated incomes get re-invested for the MIDA's mission, which starts from documenting and investigating our territory for analysis purposes, and from this point we seek to valorize our territory by divulgating our studies... Lately we established a project called "3 Grotte e 3 Fiumi", involving other social bodies of the province in order to provide a higher offer... This project aims to enable tourists to walk for 130 kilometers surrounded by different natural views among the caves of Morigerati and the Bussento river, the caves of Pertosa and the Tanagro river, and the caves of Castelvita and the Calore river.”*

**Respondent 19** claimed: *“We are people who live in nature and want to valorize this territory... In our territory there is a runners association that participated in many marathons in several places in Italy and abroad... what they thought was organizing a marathon context in our territory, that recently arrived at its 10th edition, and that years after years it becomes greater and better organized, with an upward rate of participants... All of this became possible only working jointly with many local businesses providing food and drinks for the runners and other services, helping points coordinated by our local administration and the runners association suggesting activities and promoting discounts with the Charterhouse of Padula and the Caves of Pertosa... Overall, I guess it is an example of how local administration co-created with local members an environment that got appreciated and which fosters value for many members of our community.”*

## **Social**

**Respondent 1** replied: *“We have made special conventions with local hotels and restaurants, providing them discounts when they sell the tickets to their customers for our attractions... Last November we had a consecutive 4 sundays initiative where we were giving Pertosa's Caves entrance tickets for free to all municipalities in the Vallo di Diano's area and to some other nearby municipalities as well... This action has allowed a stream of more than 500 visitors in low season during these Sundays... It also let restaurants and hotels benefit from the initiative.”*

**Respondent 3** replied: *“Our association each first Sunday of the month proposes a free tour of the territory, even though we ask for a voluntary contribution at the end of the*

*activity... During these Sundays, we open museums and some old churches which normally are closed to attract our co-citizens and tourists to experience something not accessible everyday and which belongs to our community.“*

**Respondent 16** replied: *“We wanted to have a more digital approach as most of our customer segment is based by young people... We developed our mobile application that offers the possibility to access discounts and special offers when reserving with it.“*

**Respondent 19** replied: *“We established conventions with the Charterhouse of Padula and with the Mida's Foundation to sell discounted tickets to our guests.“*

**Respondent 19** replied *“Since a couple of years, the hotel has made a partnership with one local excursions group... Each weekend offers outdoor activities in the program such as trekking paths, speleology activities, horse riding, and bicycles exploring spe that shows the natural beauties of Vallo di Diano and our cousins from Cilento... One problem we face in this territory is that we are not so able to let customers spend more than 1-2 days in this territory, despite having such important attractions as the National Park of Cilento and Vallo di Diano... Such partnership has been established with the purpose of increasing the attractiveness of our territory to those people visiting the area.“*

### **Political**

**Respondent 16** replied *“We do integrate politics of coordination with the city halls, the Regional Museum Authority and the National Superintendence of Cultural Goods and Touristic Activities... It is vital for us to promote this unique place, which in its genre is the biggest in Italy and Unesco Heritage.“*

**Respondent 19** admitted: *“I believe that touristic administration lacks effective communication and management... it does not support nor integrate the building of networks with other systems... I had several conversations with my guests and negative opinions pop out when comparing the infrastructures and connections present here, especially when compared with other regions.“*

**Respondent 7** said *“There are many objectives which have been promoted. The brand that we need to exploit is the one of the Cilento and Vallo di Diano's National Park. We are proposing solutions in order that local restaurants need to have on the menu at least 3 typical local wines, for example. Those who will follow these indications can access to*

*particular economic incentives and therefore grow. Moreover, there are many initiatives in our region, lastly, it has been coordinated one with other politicians to let arrive in our territory art exhibitions of a famous Italian painter from '600. The coordination with other local political figures sometimes is difficult but we have been able to realize good initiatives during the years thank to the local administration.“*

## **Technology**

### **Before Delivery**

**Respondent 9** replied: *“My hotel integrates booking requests from platforms as Booking and Expedia, but it has its own personal website with its online reservation system... I think my website provides a better idea of the offers on the room and a nicer panoramica of the whole area and its point of interests.. but these systems are most common and accessible... lately in the website we integrated an automatic bot able to reply to the tourists frequently asked questions.“*

**Respondent 14** answered: *“When my partners and I were younger, we have started our activity from social networks like Facebook and Instagram to achieve possible targets, and to invite and share and communicate events to our clients... During the years we have grown, and we built a webpage and also we developed our own mobile application, where people are able to buy tickets for concerts and theatre, finding information about location and indications, and accessing further useful information.“*

**Respondent 2** instead gave this answer: *“How people enter in contact with us is through our website, where they are enabled to buy tickets, retrieve information, and access to multimedia contents... Since a couple of years we have developed Augmented Reality as well which allows tourists to have a real idea of what is going to find once it enters in Pertosa's caves even before arriving here.“*

### **During Delivery**

This question has obtained the same answer from all the interviewee

**Respondent 10** stated: *“The most common platform on which we communicate during the travel with our customers is WhatsApp... Also Facebook is useful because it allows us to immediately give them support to their needs and to communicate special updates on the page of the event.”*

### **After Delivery**

**Respondent 3:** *“After our tours, we always ask tourists for leaving us feedback on our Facebook page and on TripAdvisor regarding the overall satisfaction of the activity... This is very important for us... because it allows to understand potential features to improve... and it lets spread our territory to other eyes that can discover our roots, culture and traditions.”*

**Respondent 9:** *“Besides personal and direct questions on the goodness of the stay, Booking automatically asks for reviews about the overall stay in the structure... Our routine is to personally appreciate and reply to the feedback, especially, in rare cases I must say, if the rate was negative to apologize and understand what has not worked, in order then to improve the quality of our service... We send specific celebration messages and particular discounts to those tourists that spent their holidays in the hotel in order to improve customer relationships and to keep them updated on what is happening in the territory.”*

### **Resources Integration**

#### **Operand**

**Respondent 7** claimed: *“Yes... When they arrive at the event, we provide some fluorescent gadgets, as glasses or bracelets, or face-paint, which is really appreciated by clients... We set some little spaces where they can get pictured in a special framework and the photos will be shared on our social media pages.”*

**Respondent 11** *“Totally... at the beginning of the tour we provide each tourist with a map of our city, where the PoIs are tagged, and other informative booklets available also in other languages furnished by the city all providing general information regarding each site to visit.”*

**Respondent 20** *“When clients check-in the hotel, we furnish them with booklets containing all the information they need, from the timetables of the company buses to move within Vallo di Diano or to get to the main cities., to other possible activities that can be done in the area as excursions, horse-riding, local cuisine tasting.”*

### **Operant**

**Respondent 4** answered: *“Sharing this kind of information is basically our job, and we need to be very prepared in knowing how to answer every visitors’ questions... For sure we suggest collateral activities, and most of the time we introduce visitors to local business activities or local people which are very appreciated by tourists for their warmness, availability and hospitality... Many times, then, I have received messages of visitors thanking me for having suggested a restaurant where they have eaten or a place they have visited.”*

**Respondent 17** said: *“This question basically is the ultimate scope of our activity, and what visitors coming here are most interested in... There are several museums in the area, for example the one in Teggiano showing the tools used by our grandparents to harvest or the one in Polla showing the typical folkloristic dresses... These museums have a discrete success and they testify the roots and traditions of our territory, which people of this area are very proud of... tourists seem to appreciate and most of time they tells us about their customs and traditions comparing it with what we propose.”*

**Respondent 6** told: *“We always try to share our local traditions, and the most frequently asked question is linked to the best places to eat ... We often suggest ‘agriturismi’, one of the features of Italian rural tourism, making homemade meals made with local products. Our territory has one of the best culinary offers in the world, and many people are attracted by the quality of our products... Therefore, we also suggest local farmers producing typical products and businesses making handicrafts products with particular tissues and raw materials of the area.”*

**Respondent 8** said: *“It is very important for us to receive feedback from users to improve our tours... I can tell you that from some feedback we decided to not propose a given activity to highlight another one that seemed to attract more the eyes of visitors, and which became one of our aces... I am inclined to believe that constantly receiving*

*feedback will lead us to offer better activities, so it is important to internally analyze what is worth offering and what needs to be improved after suggestions.“*

**Respondent 9** said: *“I do believe so. I have run a hotel for more than 30 years, and some renovations have been during the years, for example layouts have changed, the overall service we provide has become smarter... We are totally open to accept suggestions and match tourists' needs, but I think that physical feedback is more important than the digital one, even though this last one cannot be underrated... For me it is more important to personally ask if their permanence satisfied their expectations and needs. This is because there is the possibility to better intervene if they encounter a problem.“*

**Respondent 4** affirmed: *“We try to not lose contact with people that visited us... We share our latest updates, new available excursions. We share a program of activities each season and we advertise it through social network campaigns and reminders through emails... Overall, by doing so, we have noticed as many people have returned to the area and participated in other activities proposed, and many became active members of our association.“*

**Respondent 9** claimed was: *“One of the issues we face is to offer an integrated experience and activities to let visitors stay with more area... Personally I am in contact with several local stakeholders to collect all the events happening in the area and propose them in the board of our reception where it can be visible to our clients, and we update our website with this information and address toward our potential clients... However, it is a difficult task given the fragmentation of our territory and jealousies among our small villages, and because it involves coordination between entities which is one of the weaknesses of our tourism.“*

## **Institutions**

### **Formal Rules**

**Respondent 19** said: *“Definitely... During our excursions we ask people to not get too far from the rest of the group and to keep the line... For example, when we do speleology activities and visiting caves people have to wear particular helmets and lights... Moreover, we ask to not throw on the ground any stuff in the environment, as these places we visit are protected areas....There happen many unplanned situations, for example, if*

*someone gets injured or feeling dizzy during an long walk... but as well surprising moments, when you find animals like foxes or wild horses.”*

**Respondent 20** claimed: *“What I do is always explain the regulations... I am inclined to repeat advice to guests like not leaving lights on, not be loud after night hours... We are a community, so it is more a sort of informal hospitality... guests can cook the food they bring, but then they have to clean once finished to use the kitchen... or they can store food into the fridge but they have to label their stuff.”*

**Respondent 20** said *“Totally, and it is part of my responsibilities... I also rent apartments for short-term... I have experienced getting called late in the night by clients that for a reason or another had the necessity to call me to solve some issues.”*

**Respondent 11** stated: *“We have predefined working hours where our helping point is available... However, we developed a bot in our website with the purpose of addressing customers when physically we cannot support them.”*

### **Informal Rules**

**Respondent 19** mentioned *“There are plenty of recreational moments during our excursions... Normally, we share a meal at certain points of our activities where we are more able to create friend relationships... Personally, I met many interesting and nice people, and with some of those I still keep myself in contact... Overall, all the excursion experience is recreational activity, normally planned to guarantee safety standards, but sometimes unplanned events happen, like heavy rain or meeting of wild animals, which we experience together with the tourists.”*

**Respondent 20** claimed *“Many times I invite my guests to eat together or have drinks together... Hospitality is one of most appreciated among our values... visitors, especially foreigners, are surprised by these behaviors... I remember many times that interesting topics have popped out by chatting with clients, and personally I learned many things from them... Let us say that most of the time these moments are not planned, and it depends also on the mood of tourists, their age, the length of their permanence... but I shared many nice moments with visitors, and I try to repeat it with other people visiting the area to spread our hospitality.”*

**Respondent 13** said: *“The whole value propositions of our offers reflect the intention of spreading the culture of the territory and our hospitality... I always encourage visitors to discover places, try local food and talk with the people of the villages... I always give my availability to be contacted or to be pinged so I can help them, and I can suggest to them what to experience.”*

**Respondent 5** mentioned: *“What I perceive from tourists’ feedback at the end of the tour is that they actually understood the values which reign this area and that they are enthusiastic about the information they received... Many of them always mention in their reviews that the tour was entertaining, and that many information have been provided on local habits and customs... When I read this kind of comment it makes me happy because we were able to match tourists expectations but at the same time we were able to let them enjoy a remote and beautiful area of our beautiful country.”*

**Respondent 20** said *“Yes, and it is part of the mission of our Hostel... It is one of the nicest jobs I have ever done because I met many people from different parts of Italy and also many foreigners... We normally cook local homemade meals made with the seeds cultivated and with them every-day we propose a dinner hour where typical food is served, and everyone is free to join.”*

**Respondent 15** *“Lately I was reading a statistic by SWG and it was interesting because it mentioned that local food is what interests me the most when they discover a new place. And in fact I totally agree with it... When proposing our tours, tourists coming here are very curious about our traditions, especially culinary habits... For more than 20 years we have organized a festival, ‘Arte e Mestieri’, with the purpose of showing the traditions, the customs, the dresses of our territory, and integrating a gastronomic offer which proposes several typical dishes of our local cuisine.”*

### **Social Rules**

**Respondent 5** answered: *“During our free walking tour, we always offer to have a toast with the local liquor made with local herbs of our Park... while we do this we teach them the local motto of toasting... I have to recognize that this is a moment that is particularly enjoyed by tourists... and we offer the possibility to let them buy it in shops that we can indicate, so we can foster also for tourists...”*



**Respondent 12** answers: *“I think nowadays it has become easier with the advent of social networks... lately, for lunch a very famous Italian singer passed by... I took a photo with him and I shared it on the restaurant’s Facebook page... during that day my page obtained a lot of visualization... but when I started my agritourism 30 years ago, it was not that easy to interact with clients... I have a wall in the hall with all the letters and postcards I received all over the years from tourists who visited us... I think this is the demonstration for me that I was able to establish good relationships with customers... Many people keep coming back here when they pass in this part of Italy when they go on holidays... It is one of the satisfactions of running this activity.”*

**Respondent 18** revealed: *“I always try to establish connections with people... our territory is not so known, and they are a vehicle to spread our beautiful natural places and our great culture out of our territory... During the tours I always try to be the more empathic I can, and to be just simple and helpful with people... Three years ago I met a girl from another region who spent some summer days with her family in our village and joined one rafting activity... we stayed in contact through Instagram, and she came back the following summer with other friends... we are now friends and I also visited her when I passed through Tuscany.”*

**Respondent 12** stated: *“For my experiences, I can tell you that there are many people with different needs.... Overall, those visiting this area get flabbergasted by its beauty and they do not lack to ask me questions regarding the area, the best places to discover beside the most known ones... but also regarding my life, my family ... sometimes, especially with foreigners, there is the language barrier that makes communication more difficult... However, I have heard from many of them telling me that the persons they met here are different from those living in the context of big cities because people from this area are very available, responsive, and kind.”*

**Respondent 18** claimed was *“During our activities we have met people from all the regions of Italy and many foreigners... Some of them often come in a little group and tend to stay more on their own... some others are very funny and more social... Anyways, overall I can tell you that they are very curious about our culture, our territory, food... I also got invited many times by visitors for having dinner together and getting to know each other more.”*