

## Article

# Social Innovation in Smart Tourism Ecosystems: How Technology and Institutions Shape Sustainable Value Co-Creation

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**Abstract:** In the service era, markets are reconceptualized as systems of actors interconnected through networked relationships based on resources exchange and producing value co-creation. Two of the main contemporary service research theories, Service-dominant logic and Service science, propose different organizational layouts for producing and harmonizing value co-creation: Service ecosystems and smart service systems. However, these two models show some limitations. So, this work aims at drawing an integrated model, the so called Smart service ecosystem that can be applied to hypercompetitive and experience-based sectors. The model was tested in the tourism sector by using a case study methodology. Ten interviews were administered to key informants to analyze their perception about the main dimensions of the smart service ecosystems. By adopting a holistic view, the results obtained can allow the elaboration of a framework which pinpoints: (1) the main stakeholder groups (actors); (2) the kind of resources exchanged (resource integration); (3) the tools employed (technology); (4) the institution exchange among users (institutions). Applying the model obtained to the tourism sector this work explores the main element-steps for managing and optimizing value co-creation and sustainability in the long run and thus for transitioning from innovation to social innovation.

**Keywords:** smart service systems; service ecosystems; smart service ecosystems; value co-creation; technology; institutions; innovation; social innovation

## 1. Introduction

In the contemporary service era, markets are reconceptualized as systems of actors interconnected through networked relationships based on resources exchange and producing value co-creation [1,2]. This system and service-oriented mindset comes from the stabilization of the network approach adopted several years before in different research areas ranging from strategic management [2] to industrial marketing (IMP group researchers) [3–5] and relationship marketing (Nordic School) [6] aimed at redefining the traditional view of markets, actors and relationships among actors.

Simultaneously, a shift from a goods-centered view, focused on the offering of tangible features, to a service-centered view, grounded on the provision of immaterial dimensions, led to the development of numerous service theories rereading organizational models according to this renewed logic.

In particular, Service-Dominant logic (S-D logic) [7–9] reinterprets theoretically the notions of service and value, whereas other theories such as Service science (SS) [10] aim at providing a practical basis for the application of these new service-oriented foundational concepts. Both frameworks propose the most adequate organizational layouts for producing and harmonizing value co-creation. First, Service systems, configurations of people, organizations technology, and shared information, were

introduced by Maglio and Spohrer [10]. Then, by combining systems view and S-D logic definition of businesses as a network of relationships (actor-to-actor, [8]), Vargo et al. [11] extended the concept of service systems [12] to advance Service ecosystems. Service systems, progressively redefined as smart service systems to take into account the pervasive impact of ICTs (information and communication technologies) on service delivery and on resources exchange, emphasize the technology role whereas ecosystems better define the social links underlying co-creation and produced at the same time through co-creation itself.

It follows that a possible integration between the ecosystem's perspective and the above mentioned smart view can provide an all-encompassing vision for value co-creation, in line with the call formalized by Vargo et al. [13] to determine co-creation processes according to a system perspective.

Despite this need, extant research on service systems and service ecosystems does not take into account: (1) at a micro-level, the qualification of the actors [14], the mechanisms of resources integration and the most suitable technologies for gaining value co-creation [15]; (2) at a macro-level, a strategic and system view on value co-creation exploring the social context (institutions) in which smart service ecosystems lie by overcoming the analysis of knowledge creation and innovation based on the mere interactive sphere for identifying their impact on sustainability in the long run. So, the necessity of adopting an all-inclusive perspective for the exploration of the main drivers for value co-creation—in particular technology and institutions—clearly emerges from the literature.

Therefore, by drawing on these key assumptions, the paper proposes a combination of service system's (technological focus) and ecosystem's (social focus) main features in order to propose an all-inclusive framework for pinpointing the main dimensions which decision-makers should evaluate to manage value co-creation as a key lever for generating innovation in the long run (from innovation social innovation).

The integrated model conceptualizing smart service ecosystems can be applied to hypercompetitive and experience-based [16] sectors such as tourism, whose offering is strictly grounded on immaterial features related to context, human factors or social connections among users.

In detail, the work attempts to answer the following research questions:

- RQ1 (micro-level of innovation): do the main dimensions of smart service ecosystems (actors, technology, resource integration practices and institutions) enable value co-creation and innovation?
- RQ2 (macro-level of social innovation): what is the impact of smart service ecosystem's dimensions on the emersion of social innovation in line with a systems and strategic view of value co-creation?

From the observation of smart tourism ecosystems at a micro and macro level, the detection of the activities of value co-creation emerges at a meso-level (the third standpoint for the analysis of ecosystem advanced in the literature) [17,18]. So, this level is not directly detectable and cannot be a priori operationalized and then measured, but it can be intended as an outcome of the whole process. Through the empirical research herein conducted, the meso-level (the intangible synergistic resources integration among different stakeholder groups) is revealed as a result surfacing dynamically from the analysis of value co-creation practices carried out in the tourism system.

For this reason, smart tourism ecosystem's tools potentially fostering value co-creation, innovation and social innovation (both in the short run and in the long run) are pinpointed through empirical research based on a qualitative approach. In detail, semi-structured interviews with ten owners of bed and breakfast were conducted in Salerno (Italy).

The identification of ICTs instruments fostering value co-creation can enhance current understanding of value co-creation itself and offer innovative insights on the different kind of activities accomplished by users during joint service delivery. Moreover, by exploring the key role of technology in resources integration the study can shed light on the mechanisms promoting visitor's active engagement in tourism destinations. A deeper comprehension of these dynamics can address managers to the elaboration of integrated strategies increasing the competitiveness of tourism destinations and producing both service innovation and sustainable development (social innovation).

The paper is structured as follows. In the first paragraph an overview on service system's and service ecosystem's main dimensions is performed. Thus, a framework deriving from the combination of the two models (smart service systems and service ecosystems) is proposed and defined. The empirical research, reported in the following paragraphs, applies the model obtained to the tourism sector to explore the main element-steps for managing and optimizing value co-creation and sustainability in the long run and so for transitioning from innovation (of products, practices, service, institutions, etc.) to social innovation. Finally, conclusion, managerial implications, and limitations of the study are discussed.

## 2. Service Science and Service-Dominant Logic: toward an Ecosystems View

The above discussed shift from a product/producer-oriented to a service-oriented view in marketing literature [2,19,20]) led to the gradual development of numerous service theories starting from the willingness to redefine service and value exchanges according to the new dogma of the service era.

In particular, Service-Dominant logic (S-D logic) [7,8,21] and Service Science (SS, or Service Science, Management, Engineering and Design, SSMED) [10] identify the main elements involved in service exchange by maintaining different focuses.

S-D logic rereads three concepts through a service-for-service view: (1) service and the relationship between goods and services; (2) customer-supplier relationship; (3) value. In this view, service exchange is considered as the application of users' competencies to produce mutual benefits for all the actors [7,22]. The key assumption of the theory is that value is co-created collaboratively by each stakeholder and users are intended as active participants (actor-to-actor, A2A) and as resource integrators shaping service delivery depending on the specific context (value-in-context).

So, value co-creation can be intended not only as the key concept of this theory, but also as the emblem of the new service era arising naturally from the mentioned above transformations occurring in contemporary markets, actors and relationship among actors [2,7,23]. As introduced by Prahalad and Ramaswamy [2] (p. 11) to determine the process in which "products, service and experience are jointly developed by organizations and their stakeholders", the construct has been reelaborated by Vargo and Lusch [8] to highlight the relevance of the emergence of value during the real encounters and interactions between users, providers, and other co-creators. So, value co-creation is the final outcome of service resources exchange according to a participatory approach in which users are active prosumers and the only determinators of a value which is not anymore exclusively produced by providers.

Service science, instead, represents a practical application of Vargo and Lusch's main assumptions aimed at revealing the right practices and procedures for implementing new service systems and for exploring their managerial implications. This cross-disciplinary research stream advances the elaborations of models for applying scientific principles (science) to service provision in order to foster the creation of new knowledge to manage (management) and improve delivery and planning (engineering and design) to evaluate services in terms of productivity, effectiveness, and efficiency measurement [24].

Thus, it can be stated that S-D logic provides the theoretical, cultural, and philosophical basis for the establishment of a new perspective, the diffusion of new concepts, and a new language for giving birth to a new framework designed to reinterpret service exchange as a system. This implies that S-D logic lies at an abstract level, whereas SS is a science acting at a concrete level. It follows that service systems can be explored from a micro-viewpoint of analysis that is the stage of service-for-service exchanges, interactions, and of real service encounters among users sharing information through technology. Ecosystems, instead, can be observed from a macro-standpoint of overall network interactions among different social systems by broadening the view to include the social prerequisites fostering synergic resources exchange that in the long run can generate value co-creation and new knowledge.

In the following paragraphs, the main dimensions of (smart) service systems (Section 2.1) and service ecosystems (Section 2.2) are discussed in order to highlight similarities, differences, and possible intersections for the further proposition of an integrated model.

### 2.1. Service Science and Smart Service Systems

In order to create the basis for systematic service innovation, IBM researchers introduced the Service Science, Management, Engineering and Design (SSMED), in short Service Science (SS) [12], as a result of the company's shift to service centered logic and to better understand the role of service in the present society.

SS is a multidisciplinary theory combining computer science, management, industrial engineering, operational research, and social sciences to develop a certain expertise needed by an economy based on services [25]. Based on these subjects the four key points of the theory are defined: (1) the application of scientific principles (science) to the study of services and their evolution; (2) management (management) of services to make their design and delivery more efficient and to achieve sustainable competitive advantage through long-lasting systemic relationships; (3) engineering (engineering) services to create new technologies to improve the supply, the detection, measurement, and dissemination of information; (4) the design (design) of service, which consists in identifying the most appropriate configuration techniques for optimum structuring of the service.

The ultimate aim of the SS is to find the most appropriate organizational model supporting the emergence of value. The model proposed is the service system, a "value-co-creation configuration of resources, including people, technology, organization, and shared information, all connected internally and externally to other service systems by value propositions" [24] (p. 5). Service system components are used to create the distinctive features of a company, to generate efficacy and efficiency, to achieve and maintain a sustainable competitive advantage, seen as the ability to establish strong relationships with other service systems [12].

Evolution, interaction and mutual value creation between service systems can be considered as the basis of SS [10,24,26] which promotes interactions of the various existing service systems to obtain value co-creation.

The relationship between service systems leads to the exchange of knowledge among the various actors, including customers (people) who are considered to be "knowledge workers" [15] (p. 81) like other stakeholders.

Knowledge exchange takes place through social and organizational networks but above all through technological tools that help to be productive, continually developed, to generate and capture value, speeding the exchange of resources and value [15].

Resources and information sharing highlight the predominant role of technology as leverage for knowledge exchange to reach all stakeholders and to systematically promote innovation [27].

In line with the central role of technology and ICTs, recent developments in SS propose an evolved version of service systems, the so-called smart service systems that are more modern and linked to the explosion of ICT globally and within the company as a whole as well as the organizational structures of contemporary businesses.

Smart service systems can be intended as organizational models introduced to exploit the benefits deriving from the application of new technologies to service design and delivery in order to promote real-time relationships and speed up co-learning processes. So, their potential implementation aims at pursuing systematic innovation based on the continuous renewal and improvement in knowledge exchange and relationships development leading to innovation in the long run. These systems optimize and manage their goals through self-reconfiguration to perform enduring behavior capable of satisfying all the involved system's members [28].

The application of smart services, so smart service systems, encompasses the most diverse settings, from healthcare to tourism, with the ultimate aim of offering increasingly intelligent services that can support the entire society in order to create a smart planet.

## 2.2. Service-Dominant Logic: From Service Systems to Service (Eco)systems

In order to propose a general framework for conceptualizing the new value co-creation processes in the service era, S-D logic advances an all-encompassing perspective of organizations through the elaboration of a service ecosystems view which broadens the notion of service systems deriving from Service Science. The introduction of service ecosystems [21,29] stems from the need to include the social sphere in the analysis of the system's organization dynamics and to introduce a systems view on value co-creation. For this reason, the ecosystems standpoint (in line with the two research question herein expressed) adopts both: (1) a reductionist view for identifying the drivers of value co-creation; (2) a holistic view for taking into account the emersion of innovation at a broader level and by considering the importance of social norms in shaping exchanges and in the generation of new value.

In fact, rather than focusing on the role of technology for gaining innovation (as in service systems), service ecosystem' view shifts the attention (also) to the attainment of new knowledge at a social level by adding institutional dimensions and by emphasizing the influence of social connections on value co-creation. So, the broader context underlying service exchange is one of the main features of service systems that "become" (eco)systems, seeing as system's organizations are nested among each other.

Service ecosystems have been widely analyzed in contemporary service literature and explored in many different sectors [30–33]. However, there is still a scarcity of research classifying (almost relatively univocally) the main elements of service ecosystems [14].

Over the course of time, as Table 1 shows, different viewpoints have been employed in the observation of ecosystems. In the first original perspective, there is a pre-eminence of the social dimension, based on the key role of context that precedes provision of a macro-level. Vargo and Lusch [21] (p. 176), who introduced the notion, define 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". According to the authors, service delivery provides each member of the system with reciprocal benefits thanks to three key levers: (1) institutions, coordinating exchanges; (2) technology, leading to innovation; (3) language, as a set of common rules for communication. Institutions, that are social rules, guidelines in terms of law, values, symbolic meaning, and language [9], are considered as a central dimension necessary for starting, framing, and regulating interactions at the same time. Moreover, Akaka et al. [18] together with Lusch and Vargo [34] understand service ecosystems as complex systems of actors in which value creation practices are guided by institutions and the different practices carried out by users in a particular context contribute to co-production and co-creation. Similarly, Vargo et al. [35] consider institutions and social norms as the glue that enhances or limits value co-creation, whereas Frow et al. [30] shed light on the influence of value propositions (as a sub-category of institutions) on an organization's survival.

Even if technology is viewed as one of the main dimensions of ecosystems, institutions play a leading role in resource integration and value creation processes [36] that can enable or constrain exchanges. So, in this perspective, the main features included in service ecosystems are: (1) institutions (language, symbols, meanings, etc.); (2) value propositions; (3) resource integration.

On the contrary, the centrality of technological feature is emphasized in a series of studies combining ecosystem view and innovation research [37]. For instance, Ruokolainen and Kutvonen [38] classify three main elements of open service ecosystems: entities, service exchanges, and infrastructures. These systems are autonomous entities evolving and surviving in a dynamic environment thanks to collaborations with other entities fostered by technological facilities. So, technology is the most efficient tool for enhancing resources exchange and value co-creation. In particular, Koskela-Huotari et al. [33] affirm that technology influences institutions so that social norms do not come first, of all the other elements of service ecosystems. The authors stress the impact of innovation on institutions and on the institutional arrangements influencing in turn resource integration practices in service ecosystems. So, in this research stream ecosystems are considered as systems composed mainly of: (1) entities (system's actors), (2) infrastructures (physical tools); (3) service exchanges (outcome of actor's adoption of infrastructures).



Finally, in its recent developments, S-D logic clarifies the relationship between technology and institutions as levers for fostering value co-creation by proposing the existence of a bidirectional relationship between the two dimensions.

In detail, a few years before, Vargo and Akaka [29]—by borrowing Orlikowski’s [39] view on duality of technology—state that institutions and technology together generate resources integration.

The consideration of technology both as a product of social context and an input, thus a mean, for social relationships is then gradually proposed and formalized in the latest contributions on service ecosystems [36,40,41] in which institutions are seen as antecedents of technology, but technology in turn can be at the same time employed one more time in value exchange and then transform society itself [42]. In brief, technology is an outcome of social practices and an input for renewing these practices. This perspective identifies three main interrelated elements in service ecosystems: (1) technology; (2) institutions; (3) resource integration.

**Table 1.** A classification of the main dimensions of service ecosystems. Source: our elaboration.

Approach	References	Focus	Main Ecosystems Dimensions
Original Service-Dominant logic (S-D) logic	Vargo and Lusch [21]; Vargo and Akaka [29]; Akaka et al. [18]; Frow et al. [30]; Vargo et al. [35]	Social dimension; Institutions as drivers for technology adoption and innovation	Institutions; Technology; Language
Ecosystems view and innovation research	Ruokolainen and Kutvonen [38]; Lusch and Nambisan [37]; Koskela-Huotari et al. [33]	Technological dimension; Technology influences institutionalization	Entities; Service exchange; Infrastructures
Latest development in S-D logic	Vargo et al. [36]; Jonas et al. [40]; Siltaloppi et al. [41]	Bidirectional relationships between institutions and technology in influencing resources integration	Institutions; Technology; Resources integration

As discussed in the brief review conducted above, 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. So, there is a gap in literature regarding the absence of studies pinpointing the key elements for qualifying smart service ecosystem’s actors [14], mechanisms of resources integration, and the kind of technology and platforms employed for gaining value co-creation [15].

Furthermore, there has been a recent trend introduced by S-D logic [13] founders proposing the analysis of social context (institutions) in which ecosystems lie by highlighting the necessity for studying both technological and social sphere as drivers for service innovation and, consequently, social innovation. However, the call for the adoption of a system view on value co-creation has been until now unfulfilled.

For this reason, the aim of this work is to integrate Service Systems and Service ecosystems perspectives for rereading tourism as a smart service ecosystem to (firstly) conceptualize and (then) empirically detect the main drivers for innovation, value co-creation, and social innovation in an integrated social system view combining: (1) practical features of SS and its focus on technology (innovation), underrated in S-D logic; (2) social implications emphasized in S-D logic (from innovation to social innovation).

### 2.3. Toward an Integrated Framework for Smart Service Ecosystems

In line with the overview conducted above, it can be observed that smart service systems (deriving from Service Science) and service ecosystems (introduced in S-D logic) show some significant similarities and differences allowing their integration in order to derive a system framework conceptualizing smart service ecosystems.

This new formulation can be logically derived from the complementarity of the two frameworks. Service science is focused on technology and on the definition of service systems (1, people; 2, organization; 3, technology; 4, shared information) whose final goal is to search the most adequate activities for establishing durable and sustainable relationships with other systems producing innovation. So, even if taking into account sustainability as a global outcome, the theory stresses in particular the exploration of the micro-level of real implementations of service delivery from an engineering point of view. S-D logic [9], instead, proposes a deeper and broader perspective of innovation by observing service ecosystems through a zooming out from the mere analysis of dyadic user-provider encounters to espouse a systems vision of value [36,41].

Based on this call (and so on the last developments proposed in S-D logic and analyzed in paragraph 2) the work exploits the strong points and the peculiarities of both theories. If Service science observes at a micro-level how technology generates shared information (not resources in general) and leads to innovation sustainability in terms of relationship, S-D logic steps back to analyze the role of social context in influencing technology itself from the early stages of the process [41] and in producing sustainable value for each system in the long run [43].

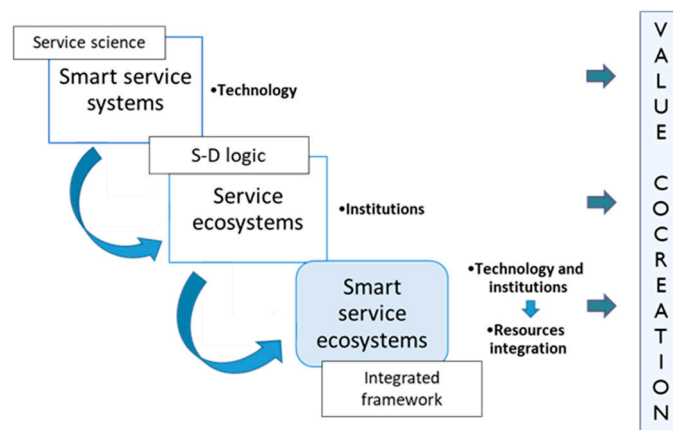
By combining the focus on technology and innovation from SS (at a service and process level) and the emphasis on social dimension from S-D logic (institutions, context, social norms, etc.), an integrated framework for observing the role of technology and social institutions in shaping resource exchange can be elaborated.

Particularly, in line with the latest developments in service ecosystems literature, the framework herein proposed advances that technology and institutions both shape resources integration and then value co-creation which give birth to innovation (product, processes or service innovation at a T-time) in the short run and social innovation in the long run ( $\Delta T$  time). So, technology is conceptualized at the same time as a variable influenced by social context and as an antecedent of social changes.

Thanks to value co-creation, extant knowledge at a T time can be transformed into new knowledge through resources exchange: new technology derives from social context but lastly can modify society itself in a circular vision. Not only institutional arrangements, but also the production of new social embedded technology can determine actor's joint reformation and change of value co-creation practices that in turn can produce alterations in institutional arrangements [41].

Based on drawing on these assumptions, as Figure 1 shows, the paper proposes a circular model for analyzing smart service ecosystems arising from the integration of: (1) service system's technological focus; (2) ecosystem's social focus. This unification can produce an all-inclusive framework for pinpointing the main dimensions which decision-makers should evaluate for managing value co-creation as a key lever for generating innovation both in the short and in the long run (from innovation social innovation). In line with the research questions above proposed, thanks to the combined model, two levels can be explored: a micro-level (innovation), exploring the role of the main dimensions of smart service ecosystems in enabling value co-creation and innovation; a macro-level (social innovation) observing the impact of these dimensions on the emersion of social innovation in a systems and strategic view of value co-creation.

For this reason, the paper reconceptualizes tourism as a smart service system in order to propose an all-inclusive framework for pinpointing the main dimensions which decision-makers should evaluate to manage technology and institutions as key levers for optimizing value co-creation, which is the final outcome of the model (and the ideal goal of both Smart service systems and Ecosystems) and which can generate innovation in the long run.



**Figure 1.** The proposition of an integrated framework for smart service ecosystems. Source: our elaboration.

### 3. Smart Tourism Ecosystems for Sustainable Value Co-Creation

Deriving from the intersection between Service science and S-D logic assumptions, the key dimensions composing the system model herein proposed can be obtained from the synergistic combination of the main variables identified in the brief overview on smart service systems and ecosystems (paragraph 2). If on the one hand smart service systems main features (organization, people, technology, and shared information) are clearly identified in the literature, service ecosystems elements are not univocally pinpointed and three different visions can be identified.

However, even if there is no agreement on the elements giving birth to service ecosystems, from the literature review performed three macro-areas can be identified: (a) an interactive dimension, the real moment of resources exchange and so the user-provider encounter; (b) technological dimension, as a key lever for value co-creation and innovation; (c) symbolic dimension, including institutions, value propositions, language, and all the features in the macro-context that enable value exchange.

Seeing as ecosystems (macro-level) seem to logically “include” smart service systems (micro-level), the dimension of shared information introduced by Maglio and Spohrer [10] has been incorporated into the broader category of resource integration. Users, in fact, exchange not only information but also knowledge, skills, experience, and other immaterial features contributing actively to transform the input knowledge into new knowledge.

However, since the framework proposed aims at mediating between reductionism (RQ1) and holism (RQ2), smart service systems micro-level of analysis has been rediscovered through the inclusion of the dimensions of the human component which concretely performs value co-creation activities. The dimensions of people and organization are then transformed into the more generic class of actors, according to S-D logic conceptualizations of A2A logic, considering that the role of the members in the system can change depending on observation perspective and on the fact that systems are nested among each other: thus, the same stakeholder can be considered as external to a given organization and internal to another company.

Therefore, as reported in Table 2, it can be affirmed that smart ecosystems are made of systems (actors) that exchange skills, knowledge experience (through resources integration) based on a common set of social arrangements (institutions) that generate and at the same time are renewed over the course of time through a specific platform (technology).



**Table 2.** The key dimensions of smart tourism ecosystems. Source: our elaboration.

	Smart Systems	Service Ecosystems		Smart Tourism Ecosystems
Human dimension	People Organization	Institutions Technology Language	→	<b>Actors</b> <b>(Multi-Stakeholder Vision)</b>
Technological dimension	Technology	Technology Infrastructures	→	<b>ICT Platforms</b> <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	→	<b>Institutions</b> Formal and informal/Social rules
Interactive dimension		Service exchange Resources integration	→	<b>Resources Integration</b> (operand/operant)

### 3.1. Smart Tourism and Ecosystems View

In contemporary hypercompetitive markets grounded on the centrality of immaterial features of consumption, much research on service ecosystems has analyzed tourism service since it provides users with overall experience.

In detail, a research stream on smart tourism has been introduced for exploring how tourism experiences are created and shared in innovative ways through technologies [44]. The leading role of ICTs in shaping value co-practices has been highlighted in tourism organizations whose boundaries are even more blurred than in other sectors. In this view, deriving from the convergence of ICTs with the willingness to observe tourism experiences [45], smart tourism systems are intended as dynamic networks of interrelated processes both at a micro and macro level [46,47].

Then, from the combination of the service ecosystems view and tourism systems view, tourism ecosystems have also been proposed and conceptualized as networks of interrelated relationships occurring both at a micro and macro level and performed by stakeholders producing co-created value enabled by institutions and technologies. The final goal is the optimization of resources exchange through the production of technology-mediated experiences and of new social rules (institutions) which in turn improve destination competitiveness and so contribute to the attainment of a sustainable competitive advantage in the long-run [32].

In particular, Gretzel et al. [32] emphasized the necessity for adopting collaboration strategies that allow mutual benefits to be attained and the main features of the smart tourism destinations aimed at co-creating value through user's experiences to be classified. Ecosystem's key elements in tourism are: actors; support services; platforms, NGOs, travel technologies; infrastructures; companies from other businesses. Similarly, Sigala [48] classifies the resources exchanged among actors, based on three features: tangibility/intangibility (tools, software, and information); human resources (skills, knowledge, and commitment); relational resources (relations with all the stakeholder groups in the network).

Therefore, extant research reread tourism systems both as smart systems and ecosystems. So, the two perspective emphasize the need to reinterpret smart tourism ecosystems as: systems of actors (people-organization) actively engaged in resource integration and sharing information (shared information) through ICTs (technology) which at the same time produces new social rules (institutions) to enhance value co-creation and innovation.

Even if smart tourism systems are introduced to take into account the role of ICTs and of the use of technology on value co-creation then ecosystems perspective is also advanced to broaden the view—previous studies in this field (as in Service science literature) do not adequately explore ecosystem main elements [32] and tend to overrate the impact of technology without considering the role of institutions [40] or clarifying their relationship with technology.

So, in line with the integrated framework proposed, it can be stated that the final aim of smart tourism ecosystems can be the production of technology-mediated experiences for enhancing destination competitiveness and acquiring a sustainable competitive advantage in the long-run. According to this system vision, as Table 2 shows, each of the dimensions of smart service systems and ecosystems can be applied to the tourism sector in order to obtain an integrated framework for rereading tourism as a smart ecosystem.

For this reason, the main elements of the tourism sector, whose dynamic combination should facilitate the appearance of co-creation, are herein reread to conceptualize smart tourism ecosystems. The integration of S-D logic, service science, and smart tourism literature allows the identification of the following dimensions of smart tourism ecosystems: (1) actors, (2) technology, (3) institutions, (4) resource integration.

In order to identify the main features of Salerno tourism sector (with reference to the b&b market) considered as a smart service system, these four dimensions are contextualized to tourist peculiarities according to Service Science and Service-Dominant logic and sub-categories for each of them and are identified and discussed in the following paragraph.

### 3.2. Smart Tourism Ecosystems: An Application Model for Tourism

Based on the two research questions proposed above, this work aims at elaborating a framework which pinpoints in the context of Salerno b&b sector: (1) the main stakeholder groups (people-organization); (2) the kind of resources exchanged (resources integration); (3) the most common tools employed (technology); (4) the social rules enabling exchange (extant institutions) and deriving from exchange (production of new institutions). In the second place, according to a systems and strategic view of value co-creation, assumptions about the potential influence of these four dimensions (shown in Table 2) on value co-creation and innovation and on the emersion of social innovation are deduced.

Consistent with the system perspective herein adopted, actors are intended as nested and interconnected systems. This multi-stakeholder vision is in line with Vargo and Lusch [42] assumptions and considers the whole tourism system as a complex set of stakeholder groups ranging from economic to social and systems [49]. Specifically, the actors identified in the model are:

- (1) Economic stakeholders, such as tourists and other groups included in the supply chain, tourism suppliers, tourism intermediaries, transportation carriers, etc.;
- (2) Other private businesses (restaurants, shopping mall, clothing shops, typical food shops etc.);
- (3) Public business (museums or entities organizing cultural events);
- (4) Support services (for instance transportations, telecommunications, payment services);
- (5) Regulatory bodies (tourism or local administration) and NGOs (non-governmental organizations).

Concerning technology, since ICTs play an active role in reshaping user's co-creation experiences [50,51], the work aims at detecting the different platform enabling value co-creation in the hospitality system in all the stages of service provision, from pre-delivery to post-sales [52]. So, the potential adoption of social networks, online websites for review, and other platforms is investigated with reference to three different moments:

- (1) Pre-delivery: platforms devoted to online reservations, such as Booking, Airbnb, Expedia, Trivago, Bedandbreakfast.it, etc.;
- (2) Service delivery: What's app and other applications for instant messaging permitting providers to keep in touch with travelers during the journey;
- (3) Post-delivery: social networks, sites or platforms allowing users to express reviews and evaluations on the service, such as google, Facebook, Tripadvisor, Booking.com, etc.

The third dimension, resources, is referred to the tangible and intangible elements that actors exchange in smart tourism ecosystem, defining respectively operand and operant resources

in S-D logic [8]. Operand resources are physical and tangible, whereas operant resources are immaterial resources directly responsible for successful value co-creation and for gaining competitive advantage [53]. In smart tourism ecosystems, the two kinds of resources are re-elaborated as follows.

- (1) Operand: tangible materials that bed and breakfast owners intentionally deliver to users (informational or recreational, related to basics or “extra” features of service, etc.);
- (2) Operant: information, know-how, competencies knowledge, personal, experience, feedback and all the relational skills hosts and travelers share after, during and before the journey.

Institutions (rules, norms, meanings, symbols, practices, etc.), that together with technology are considered as facilitators of value co-creation, are aimed at coordinating actor’s behavior [49]. For this reason, they are operationalized through the notion of normalizing and representational practices introduced to take into account formal and informal rules and symbols that shape market exchanges [54] and then are applied to S-D logic for examining the different value co-creation activities occurring during resources integration [35]. Specifically, two kinds of institutions can be distinguished:

- (1) Formal Rules: related to check-in and check-out schedules or breakfast schedule or b&b general policies;
- (2) Informal and social rules: views, social norms, value propositions and new social praxis through which actors, on the one hand, make sense of interactions as a common ground for guaranteeing understanding and communication and, on the other hand, give birth to new meanings or influence the way in which meanings and symbols are normally perceived.

In brief, smart tourism ecosystems are systems of actors (users intended both as customers and citizens, other companies from the same industry, companies from other industries, transport systems and infrastructure, local government, associations, etc.) integrating tangible and intangible resources at the same time: (1) using pre-existing technology and institutions as means for successful value co-creation in the short run; (2) creating new technology (innovation) or institutions (praxis, social rules, values, etc.) in the long run.

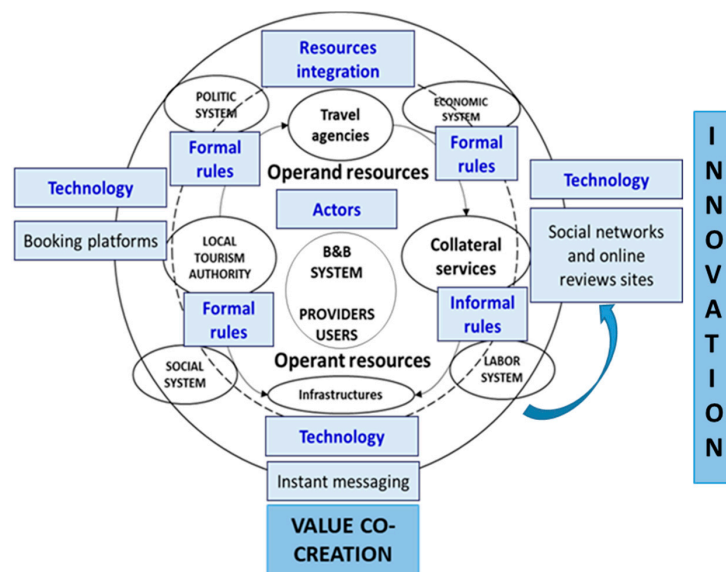
So, as depicted in Figure 2, it is herein hypothesized that the integration of resources between people (users) and organizations (other entities in the social, political or economic system) produce shared information and value co-creation in the short run. The role of technology is all-encompassing, since ICTs both enable and foster resources integration (so are situated horizontally and intersect the other dimensions). The generation of value co-creation at a T time can produce innovation through the continuous renewal of knowledge exchange which in the long run gives birth to new competencies, skills and experience obtained from the re-elaboration of initial knowledge ( $\Delta T$  time).

Therefore, in this integrated view, innovation is the result of efficient value co-creation providing novel solutions for new or existing problems (i.e., the at least partial disruption of existing institutions). More specifically, two kinds of innovation can be conceptualized: (1) service innovation, that can be considered as the improvement of service offering, procedures, management, design or implementation (at a micro-level of SS); (2) social innovation, intended as the creation in the long run of new value propositions and institutionalization of new solutions that lead over time to viability and sustainable value co-creation. Resources exchange at a T time produces value co-creation that over the course of time can give birth to the production and continuous renewal of knowledge and co-learning for gaining sustainable competitive advantage and so viability.

In this process, entrepreneurs should harmonize value co-creation by acquiring the ability to strategically select the right stakeholders providing the most adequate resources and to establish durable relationships leading to win-win situations, thus an equal distribution of (Economic and social) value among actors [55].

After having defined each dimension of ecosystem from a theoretical point of view and having pinpointed sub-categories for each variable, the macro-areas (actors, technology, resources integration,

and institutions) were employed as macro-classes for elaborating the interviewee outline (reported in Appendix A).



**Figure 2.** A framework for managing innovation and value co-creation in smart service ecosystems. Source: our elaboration.

#### 4. Methodology

In order to identify the main features of the Salerno tourism sector, that can be herein reread as a smart service ecosystem [18,35], the research is based on a case study methodology [56]. So, a qualitative approach is adopted since it represents an ideal approach when a holistic and system analysis is required [57–59]. This technique allows the dynamics underlying a single setting to be studied, by examining in depth the phenomenon characteristics within a specific context [60]. Case study methodology can involve many levels of analysis, many cases and many points of view [56,57], and then it is considered the best methodology to analyze the relationships within smart service ecosystems as a series of nested and multi-stakeholder systems.

The present study uses an exploratory case methodology to analyze b&b owners' perception of the main dimensions of smart service ecosystems.

B&b have been chosen for two reasons: firstly, because they are generally considered more familiar places than hotels, so with b&b it can be supposed that owners' interactions with guests are conducted in a more informal way, encouraging the creation and the maintenance of lasting relationships. Secondly, in b&b the five components of the smart ecosystems are combined, in fact, they are sites where organizations and people share information through the use of technology and in which a series of social and representative rules are followed.

In line with the case study approach, we first explore the existence of a relationship among b&b owners and other actors of the tourism system, involving customer, public administration, restaurateurs, drivers, etc. Hence, we analyze the role of technology and other dimensions of the smart service ecosystem to verify if the interaction of these elements enables value co-creation and social innovation.

Ten interviews are conducted to reveal the b&b owner's point of view to understand whether b&bs could be considered as smart service ecosystems, in which the role of the ICTs and the social links are highlighted, in line with the integration of the theories of Service Science [61] and S-D logic. In so doing, a semi-structured interview based on five macro-areas (corresponding to the five components of the smart ecosystems identified in paragraph 3) is administered to b&b owners, as shown in the Appendix A. Even if a sample composed of ten interviewees does not allow any generalization of

results, it seems to be suitable for an exploratory research. The study, in fact, adopts a case study and its goal is not to reach definitive empirical evidences but to suggest insights for encouraging further studies on smart service ecosystems. Moreover, in empirical research based on a qualitative approach, a number of 10–20 interviewees can be considered sufficient. Finally, immaterial constructs such as value co-creation and ecosystems need to be carefully studied first through an inductive and practice-based approach [62,63]. So, the exploratory and qualitative method allows the gain of deeper investigation of a phenomenon and permits only the identification of macro-categories of value co-creation which can be then eventually assessed through a robust sample (quantitative method).

The interviews with b&b were conducted to verify if the interactions of smart service ecosystems main dimensions (in particular technology and institutions) enable value co-creation, innovation, and social innovation.

For this reason, as shown in the Appendix A, specific questions were asked to the b&b owners on the following topics: (1) actors, (2) technology, (3) resource integration practices, (4) institutions. Results for each macro-category are discussed in the next section.

## 5. Results

### 5.1. Actors

B&b owners in our sample usually have informal relationships with other b&b owners. There are no formal collaborations among them but everyone recommends to travellers other b&bs in case of overbooking. Moreover, the hosts interviewed establish relationships also with managers and providers of businesses offering other kinds of service. Mostly, informal collaborations are established with restaurants, transportation system, museums; there were three owners, however, that declared to have proposed some discounts related to the proposition of combined service (b&b travellers can have price reductions in restaurants, bars and so on). Formal economic collaborations are also maintained with parking services and travel agencies for discounts related to exhibitions or excursions.

Another key stakeholder group in the Salerno tourist system is the political administrative structures, such as the municipality and Provincial Tourism Authority, who periodically contact the hosts, update them on events in the city and invite them for regular meetings.

However, a minority of respondents claims to have no good relationship with such actors and others report also a negative perception on the part of tourists:

“Local tourism authorities do not pay attention to the creation of networks with other systems and are not well integrated into the surrounding area—they have no idea what integrated communication/management is—tourists, in fact, often have a negative perception of local authorities and the municipality of Salerno and Campania as a whole. They make comparison between Salerno and other Italian cities (above all in Northern Italy) and their negative opinions are related to poor management of transportations systems and infrastructures...”

Overall, regarding collaborations between the actors of the tourist system, there are some interviewees who believe this is a good idea whereas others criticize the existence of a pre-existing network. The reasons are related to the absence of direct contact with the consumer in all the stages of the journey (from booking to the stay and returning home).

### 5.2. Technology

As regards technology, questions about technologic and online tools were asked to understand which platforms are employed to communicate with travelers before, during, and after the journey. All b&b owners report that they usually integrate ICT tools upstream of their business strategies. The most common platforms adopted in pre-delivery are both online travel agencies for reservations (Booking.com, Expedia, Airbnb) and platforms such as Trivago, Windu, Beb.it, Mrb&b, Hostel.com,



Hostelworld. The interviewees consider Booking.com as the most efficient tool: over half of the visitors usually book their journeys through Booking.com which is also safe in terms of 24 h assistance. Other tools for communicating with travelers before they arrive at b&b's are: official b&b sites, blogs with booking systems, and e-mails.

During their stay, b&b owners keep in touch with guests to care for customer mainly through Whatsapp, through which they can communicate in real time and send maps, sms, msn. Among these, Whatsapp is the most used, whereas after the journey the relationship is maintained with guests through Booking.com, answering to reviews, Whatsapp, and Facebook.

### 5.3. Resource Integration

The resources exchanged between b&b owners and consumers, as above mentioned, can be divided into operand and operant resources.

On operand resources the hosts were asked if they usually release tangible or information materials, gadgets, maps to guests. They replied that they released information material provided by the municipality and the Tourism Local Authority: a map of the city of Salerno in various languages, with the map above with a description of all monuments to visit, brochures of other monuments (e.g., Minerva gardens, churches, etc.), or books with the history of the city. However, there is also informative material released by the host such as ferry and bus timetables, or in one case somebody leaves a gadget.

Regarding operant resources, owners answer that they give information about everything the guest needs, e.g., on transport, events, restaurants. Information and suggestions on other services may be affected by the fact that the host knows the owners of other businesses, but most of the advice provided to consumers is given based on the quality of the business being recommended as the satisfaction of the internal stay is given by the overall travel experience:

“The reviews are influenced by the overall experience even regarding food service . . . The most requested information is about the cultural field. There are both information requests on the cultural heritage of Campania in general (Paestum, Pompeii, Amalfi Coast, etc.) and on Salerno (new town, old city, Minerva gardens, typical foods, etc.)”

Concerning information sharing, a host says:

“This is also our job: we are well-informed on our city and pay attention to its promotion . . . if I know that there is a given event in Salerno and customers stay overnight, or even for a day, I like to let them know . . . and if they are foreign clients I try to arouse their curiosity about our city to avoid them moving elsewhere . . . ”

In addition, many hosts use a series of little special attentions for guests such as: “flowers, fruit baskets, chocolate or cookies”.

As for the information provided by consumers, they always share comments and evaluations of the service provided but also of their previous experiences on the service enjoyed in other b&b's. Experiences exchanged with consumers is useful as they give opinions and suggestions that hosts find useful especially in the start-up phase.

Someone admitted to having improved the particular breakfast service as well as the cleaning after having had collected user's feedback. A host says:

“I like to ask customers anything. I want the customer to be honest . . . in this way, if we have some flaws we can improve...”

Specifically, a host emphasizes the importance of knowledge exchange by declaring to prefer live feedbacks with consumers rather than online reviews. If a problem is clarified immediately, even after a direct comparison with the owners, consumers tend to leave a positive review.

However, hosts admit that it is not always possible to put into practice a guest's advice; four interviewees, in fact, say they put into practice the advice of guests only as far as is possible.

Consumer information exchanges are not just about comments, criticisms or suggestions on b&b experience. Sometimes the information is about culture of origin both of hosts and visitors. So, there is an exchange of information concerning the differences between diverse cultures and the acquisition and learning of new practices and habits both for visitors and providers. Hosts, in fact, can enrich not only their culture but also their knowledge and thus develop innovative ideas to be put into practice to enhance their service. Finally, two interviewees revealed that guests, on some occasions, besides providing information and knowledge made small gifts to the b&b owners.

Lastly, the information exchanged with other b&bs is on formal and economic aspects in some cases (e.g., room prices or costs in general) but informal (on behavior and tendencies of users) in other cases.

#### 5.4. Institutions

Regarding formal rules, respondents say that the guidelines related to check-in and check-out are flexible. Two of them affix regulations on-site and pricing on the website. They also ask customers to avoid vandalism and one host mainly asks to avoid waste:

“I always kindly explain the regulations and I tell guests to act as if they are staying at their own home: not to leave the lights on, not to lock up for the other guests. In the breakfast room there is a free dispenser but it is only for breakfast... not for taking coffee during the whole day.”

Also explicitly requested, visitors can stay beyond the check-out time. However, one respondent admits that he does not allow flexible check-in and he even has a black book where some guests that cannot be accepted anymore are listed. The others admit to being flexible with regard to check-in and check-out times. A host explicitly asks to be contacted 24/24 if necessary.

Regarding social and informal norms, however, we asked b&b owners if they try to transfer the culture of the place through stories or anecdotes. They said that the information provided changes according to the guest's origin and the motivations leading them to travel. However, hosts do try to transfer the culture of the place by telling them about the habits of southern Italy.

“We completely show our lives and tell about Salerno traditions ... we try to represent the beautiful things of our country ... Salerno or Italy in general ...”

A host declared that its entire offering and value propositions are based on the diffusion of Salerno culture. She always actively encourages travelers to discover Salerno and the guests seem to be happy about it. To highlight the link between value propositions and local culture, the rooms of this b&b are named after the main squares of Salerno and are decorated with pictures of the squares. What is more, the host tells the story of each square to the guests. Also during breakfast, which the host defines “the most important moment of the journey”, visitors can “taste” local culture through the offering of typical food and sweets.

However, in two cases, hosts say that they also dealt with guests who were not interested in the culture of the place, and were very unsatisfied with opening hours of museums and the closing days of commercial activities.

In this section of the interview, we also ask about the potential creation of recreational moments with customers aimed at establishing a familiar climate. They depend on the host typology; many times they are spontaneous, while sometimes are strategically “pushed” by hosts. Leisure moments can be influenced by the duration of stay and by the age of the guest. In this sense, breakfast for some respondents is an ideal moment for telling about themselves and their activities spontaneously and asking for information.

There are some rituals that hosts establish with guests, such as a welcome drink, the provision of guests books to leave dedication (where there are quotes on hospitality), or pictures with visitors before leaving b&bs that often are shared on social networks. However, this habit of taking a photo

with guests is not adopted by all b&b owners. With regard to the negative side of social networks, a b&b owners declared: “I don’t like taking pictures with visitors and especially I don’t like sharing these pictures on social networks . . . I think that this may be a privacy violation”.

A host, instead, says: “Some kids usually leave me pictures or illustrations they made that I keep with care. I’m very proud of them”.

However, it happens with some special guests that they stay in touch also after the journey thanks to Facebook or Instagram: in this way, sometimes real and durable friendships have been developed and in other cases visitors become loyal and tend to come back every year.

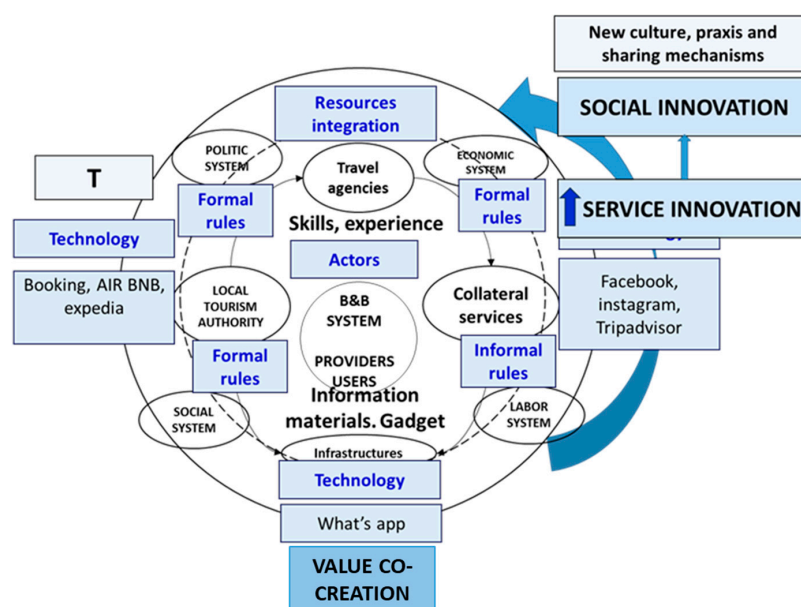
Lastly, in some cases guests from different rooms establish relationships and this highlights the great relational opportunity provided by b&bs and their impact on the enhancement of social connections:

“I remember that there was an Indian and a German girl . . . the other time it was a Brazilian . . . yes, it happened several times . . . (smiles) that guests from different rooms became friends and went out together to eat pizza and created this thing . . . it happened several times.”

Another host tells about the creation of love relationships and also of involvement in important moments of a visitor’s life:

“Some of my guests fell in love . . . Others wanted to marry but could not find the right place . . . I offered them my bed and breakfast . . . for the whole day and the night stay for their relatives . . . and that was a wonderful day . . . ”

So, as Figure 3 shows, technology (and ICTs capability to allow information sharing throughout the whole service provision) is confirmed as an operand resource (tangible set of platforms) providing essential operand resources able to strengthen service effectiveness and to foster service improvement, so value co-creation and innovation in the long run [64]. At the same time, institutions have an impact on social dimensions, allowing the transition from “simple” service innovation to social innovation intended as the co-creation or collaborative recombination of practices that provide novel social practices, such as new value, culture, rituals, and symbols deriving from experiences integration.



**Figure 3.** Reinterpretation of Salerno b&b system as a smart service ecosystem. Source: our elaboration.

More specifically, technological innovation can be considered as service or processes innovation co-created with users and social innovation can be viewed as the generation of new value propositions

and the emergence of new informal rules, culture, and rituals leading to the development of the entire local system.

## 6. Conclusions

By adopting a holistic view, the results support the elaboration of a framework for smart service ecosystems which pinpoints: (1) the main stakeholder groups (actors); (2) the kind of resources exchanged (resource integration); (3) the tools employed (technology); (4) the ICTs-based co-creation strategies and tactics (communication) designed to promote the information flows among users (shared information).

Starting from the considerations discussed above, b&bs' businesses can be considered as a system included into the smart service ecosystem. The results obtained through interviews on the main elements of smart tourism ecosystems can be compared with the assumptions emerged from theory.

As regards actors, the different stakeholder groups in the Salerno smart tourism ecosystem tend to have relationships and also to establish collaborations that are mostly informal and not related to the offering of a bundle of services or discounts.

Concerning technology, analysis of data collected confirms that ICTs are crucial elements for optimizing b&b management and also facilitating the creation and maintenance of sustainable relationships between host and guests. Actors have a good willingness to collaborate and to adopt ICTs for communicating with each other and with guests for exchanging different kinds of information and from which they "bring" some useful suggestions for improving their businesses.

The relevance of resources integration, especially regarding the key role of experience, is confirmed too. The exchange of operand and operant resources occur in all the stages of the journey, from pre-delivery to post-delivery. By focusing above all on user-provider encounters during check-in, b&b owners share information about their own service but also about the services provided from other actors in the local market and concerning the culture of the destination.

In addition to check-in, breakfast and check-out times are also crucial to exchange information with consumers who are often asked explicitly to provide an opinion, comments, or dedications related to their experience. Hosts usually tend to have confrontation on any problem arising during the stay, but in some cases the resources exchange with the consumer creates a link that goes beyond the simple professional relationship. Hosts admit that showing this kind of "care" towards the customer is well considered by them, and helps to avoid negative reviews.

About guests, they share information before, during, and after the stay, both during real live encounters and through the technology. Customers share opinions, preferences, and criticisms, through online reviews that allow b&b owners to get tips and advice from them. These suggestions are considered as an advantage by hosts as they offer insights that give the opportunity to co-create value.

Sharing information both through online and offline comments allows creating innovation in service. Hosts enjoy the use of the guest experience that helps to improve their own service (i.e., regarding breakfast, hygiene, future projects, customer care, and so on) and also the use of social networks.

This system includes not only b&bs but also actors of the whole of the smart service ecosystems (from local administration to associations) by developing over time both actual and representative rules as well as social norms. By confirming the relationship between value co-creation and sustainability, the mechanisms of resources integration identified bring advantages in terms of: (1) economic advantage (b&bs owners obtain innovation because they improve their service); (2) social well-being (by strengthening links with system actors); (3) environmental benefit (the network involves the development of the entire territory).

## 7. Implications, Limitations, and Future Research

The systemic perspective employed for rereading smart tourism as a smart service ecosystem and for adopting a system view of value co-creation can provide a transcending view that reframes the

relationship between resource integration, technology, institutions, and innovation by determining advancements in extant ecosystem research [13].

The originality of the work lies in the reconceptualization of the tourism sector from an all-encompassing ecosystem view based on the service-dominant logic's original assumptions going beyond the mere theoretical description of service ecosystem's elements to better define actors, tools (platforms), and resource integration processes. In this all-encompassing perspective, the four areas identified in smart ecosystems can also aid managers to identify some strategies for a better systemic management of service delivery and for fostering the emersion of innovation and value co-creation in the long run. The integration of service systems and ecosystems models in a system view of value co-creation involves two kinds of implications, theoretical and practical.

From a theoretical standpoint, the identification of some of the key drivers fostering effective value co-creation and viability can improve the present understanding of value co-creation itself and shed light on the different kinds of real activities and collaborations performed by users. By pinpointing the actors involved, the kind of resources exchanged [65], the different ICT tools and the social norms deriving from co-creation, the work addresses a significant gap in the literature. Thus, the practical aspects of value co-creation, an issue relatively unexplored in the literature, is discussed [66]. In particular, the detection of ecosystem's actors and engagement touchpoints can contribute to stakeholder's identification and to the identification of the most proper relational strategies which in turn can enhance service efficacy and effectiveness. Therefore, through integrated strategies for managing ICTs platforms, managers can increase information and knowledge exchanges and foster actor's participation.

Moreover, the operationalization of institutions and the identification of new institutions deriving from user-provider exchange allows the above mentioned gap in previous studies regarding the underestimation of the role of institutions and the link between technology and institutions to be addressed.

The introduction of a strategic view on value co-creation can allow further research to overcome its restricted interpretation [67] by mediating between a holistic (general strategies for harmonizing the five elements of ecosystems) and reductionist (identification of single actors, resources, technology and institutions) definition of value co-creation in complex markets.

In detail, the work can be considered as a first step paving the way for addressing the call formalized by Vargo and Lusch [68] and Vargo et al. [13] related to the need for the adoption of a system view and meta-theory for rereading value co-creation. The study tries to accomplish this goal by employing a meta-perspective aimed at rereading value co-creation according to three multi-leveled viewpoints introduced in ecosystems theory: (1) micro standpoint (identification of co-creation activities); (2) meso standpoint (reconstruction of resource integration practices); (3) macro standpoint (the eventual production of new institutions or consolidation of existing ones). As stated before, meso-level is not directly measurable through empirical research and so it can only arise from the results obtained and from their interpretation.

The proposal of integration of two service theories in order to adopt an all-encompassing framework for synthesizing the different point of views proposed by each framework can contribute to theoretical advancements in service research by making clarifications and challenging the only theoretical level of analysis usually employed in these theories. According to the latest developments in S-D logic, in fact, it can be observed that the adoption of a systems view on markets is essential for reinterpreting the notion of value and relationships in line with the challenges arising in a turbulent dynamic context. Therefore, integration between different service theories is necessary for the introduction of a general meta-theory for service and value co-creation.

From a managerial point of view, the qualification of the key levers for fostering value co-creation and innovation can aid managers to better elaborate strategies for stimulating an actor's engagement and for establishing sustainable relationships in order to challenge complexity.



The identification of the specific mechanisms, actors and the different engagement platforms in smart tourism ecosystems could help decision-makers to elaborate ad hoc strategies for optimizing resources exchange. In this way, policy makers should be encouraged to establish sustainable relationships and to foster knowledge sharing by supporting actors' participation and interactions through the optimal use of technology.

Moreover, the exploration of the different resources integration practices or value co-creation activities can lead managers to elaborate more adequate strategies classifying stakeholders. The conceptualization of the ecosystem's actors and engagement touch points can contribute to stakeholder identification and selection in order to better manage relationships and to increase service efficacy and effectiveness. Thus, managers can foster actors' participation by developing integrated strategies for managing all platforms and by enabling information and knowledge exchanges.

What is more, by exploring and better defining the relationship between institutions and technology, decision-makers can be encouraged to develop strategies for managing ICTs through coordination mechanisms designed to harmonize the different stakeholders' interests in order to pursue individuals and overall system's well-being. A better management of technology usage can foster knowledge exchanges, the creation of new knowledge, and lead managers to increase service innovation. Moreover, it can also address managers to supervise and improve the emersion of co-creation in real time by increasing service effectiveness at each stage.

The proposition of investigating value co-creation according to an innovative system and strategic view aims at promoting the integration of value co-creation practices upstream of organizational strategies in order to fill the gap between strategies and tactics to implement overall management of business processes.

The main limitation of the work is in the methodology. The adoption of a case study, in fact, does not allow any generalization of the results obtained; moreover, the number of b&b owners interviewed can be also increased in order to enhance data validity. Other qualitative research techniques such as observations or content analysis (of posts on social networks and review online sites) can be also integrated with interviews in order to perform more in-depth data analysis and to gain richer data. Furthermore, the empirical research is conducted on b&b owners, so it only takes into account the providers' points of view. So, further empirical research should be conducted on travelers (and also other systems in the smart tourism area) to make comparisons between managers and users perception, as well as acceptance and use of technology [69,70]. The study also provides insights for the exploration of the creation of social innovation through value co-creation and thus settles research agenda for further studies aimed at investigating the underlying mechanisms and the activities involved in the joint production of economic and social value during, before, and after service delivery.

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**Conflicts of Interest:** The authors declare no conflict of interest.

## Appendix A. Interview Outline

### Actors

#### *Economic Actors*

1. Do you establish formal and/or informal relationships with other b&b owners?
2. Do you establish formal and/or informal relationships with other members of local markets (restaurants, transportations, providers of other collateral services)?

3. Do you create with them services bundle or organize other events or joint promotional activities?

#### *Social Actors*

4. Do you establish formal (commercial agreements) and/or informal relationships with cultural associations, museums, etc.? Do you offer visitors discounts for exhibitions or shows organized in Salerno?
5. Do you organize collateral events or activities for your guests to promote special events organized in Salerno?

#### *Politic Actors*

6. Do you establish formal and/or informal relationships with local administration (municipality, local tourism authority, consortium, etc.)?

### **Technology**

#### *Pre-Delivery*

7. Which platforms do you use for online booking?
8. Which platforms, social networks, applications or instant messaging services do you use for communicating with users before the journey?

#### *Delivery*

9. Which platforms, social networks, applications or instant messaging services do you use for staying in touch with customers during the journey?

#### *Post-Delivery*

10. Which platforms, social networks, applications or instant messaging services do you use for staying in touch with customers after the journey?

### **Resources Integration**

#### *Operand*

11. Do you deliver any informative material and/or merchandise customers (or other tangible things)?

#### *Operant*

12. What kind of information do you share with other b&b owners (concerning economic features or also on users' behavior)?
13. What kind of information do you share with visitors (only about your service or also suggestions on other collateral services such as restaurants or other tourist destinations to visit)?
14. Do you share information related to local culture and (personal) habits with users?
15. Do visitors share information with you on their experiences in other b&bs?
16. Do you usually involve users in your business and management strategies (e.g., providing information and update and/or requesting suggestions on b&b maintenance or renovation, etc.)?
17. Overall, do you believe that suggestions and reviews from visitors contribute to service improvement? Did you make changes to your services based on user's suggestions?

## Institutions

### Formal Rules

18. There are some special rules for your guests? For instance, do you fix flexible Check-in and Check-out timetables?
19. Do you allow customers to contact you beyond working hours and also through personal mobile phone?

### Informal Rules (Culture, Value Propositions, etc.)

20. Do you share any recreational moments with your guests? Are these special occasions planned or unplanned?
21. Do you usually try to share your business values, philosophy, and general mood with your guests?
22. Do you try to share local culture to customers or meet with your guests (habits, lifestyle, food, local people, language, etc.)?

### Social Rules (Praxis)

23. Do you share any special rituals with visitors?
24. Do you establish strong and durable relationships with users during and after the journey? Do visitors also establish relationships with other guests?

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