# Smart service systems in restaurant management: a case study analysis

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## Abstract

**Purpose -** This work aims at rereading restaurant booking websites as smart service systems in which people, organizations, technology and shared information are integrated, according to the logic of Service Science (Maglio and Spohrer 2008; Spohrer and Maglio 2008; Spohrer et al. 2012). We seek to demonstrate how restaurateurs and customers, through the technology, exchange knowledge that brings to value co-creation. Seeing as extant research focuses on customer perceived usefulness of online tools (Liu and Park 2015; Sèlley-Rauscher 2015; Rassega et al. 2015), this paper intends to highlight technology role from restaurant owner's point of view.

**Design/Methodology/approach -** The research is based on a qualitative approach and adopts a case study methodology (Yin 2003; Feagin et al. 1991; Tellis 1997). It is analyzed the case of TheFork, a restaurant booking website which serves as a guide for restaurants and in which customers post reviews. Firstly the paper re-configures TheFork as a smart service system, then semi-structured interviews were conducted with key informants: the restaurant managers who adhere to the community of TheFork.

**Findings -** The findings reveal how the rereading of TheFork as a smart service system depends on two variables: reviews content and restaurateurs' willingness to change.

**Research limitations -** Limitations of this work lie in the methodology. The case study approach, despite of quantitative technique, doesn't allow maximum soundness in terms of reliability (Yin 1984).

**Implications -** From a theoretical point of view, the reinterpretation of TheFork as a smart service system can contribute to service science and restaurant management advancements. From a practical point of view, the results of the study can address restaurateurs to identify the most adequate strategies for managing relationships with consumers in order to enhance value co-creation.

**Originality/value -** The originality of the research lies in providing development to the theory of the service science through the analysis of a specific case study, settled in Italian context. Moreover, for the first time restaurant owner's point of view is pointed out.



**Key words**: restaurant management, service system, TheFork, online review, online booking, smart service system

## 1. Introduction

Recent developments occurred in technology solved a series of issues in restaurant management (Kimes 2008). Among these issues, current studies in foodservice research focus on customer satisfaction and relationship (Oh et al. 2004), more and more managed by the information and communication technologies (ICTs) that support management efforts (Kim et al. 2009). Online restaurant guides and restaurant booking websites, in which customers post online reviews (e.g. Grouptable.com, Opentable.com, Bookatable.co.uk, etc.), help restaurateurs and consumers to create a direct link and bring benefits both to actors (consumers and restaurateurs) (Kimes 2008; Pantelidis 2010).

This mutual advantage for users and providers is also highlighted in Service Research Theories (Vargo and Lusch 2004; Bitner and Brown 2006) that see service exchange as a service system where actors cooperate and exchange information with the ultimate aim of creating value, according to a win-win logic (Vargo and Lusch 2004; Maglio and Spohrer 2008). Particularly the theory of Service Science (Maglio et al. 2006) holds that interaction and cooperation in the relationship between the actors of a system generate a smart service system in which actors co-create value through the main role of technology.

Although few studies apply these theories to different fields (Piciocchi et al. 2013; Botti et al. 2017a; Polese and Capunzo 2013) no one applies it to restaurant management.

The paper aims to fill this gap by re-reading restaurant booking websites as smart service systems, in which restaurants and customers interact and share knowledge through the crucial role of the ICTs. Moreover, the research intends to highlight restaurant owner's point of view about technology role, especially about online booking and online reviews.

The case study is the most used Italian restaurant booking website: TheFork. We analyzed it both from a theoretical and practical point of view, in order to find the existence of a possible gap between theory and practice. From a theoretical point of view, we re-read TheFork as a smart service system, according to the theory of Service Science, while from a practical point of view, interviews to restaurateurs using that platform were conducted to support theoretical analysis.

The originality of the research lies in providing development to the theory of the Service Science through the analysis of a specific case study, settled in the Italian context and in an unexplored field of study: the restaurant management. Moreover, for the first time restaurant owner's point of view on these topics is taken into account. Seeing as extant research focuses on customer's perception of usefulness of online tools (Liu and Park 2015; Sèlley-Rauscher 2015; Rassega et al. 2015), this paper intends to highlight technology role from restaurant owner's point of view and to understand if these sites are perceived by the restaurateurs as enablers of value co-creation.

## 2. Theoretical Background

### 2.1 The Theory of Service Science

Service science, management, engineering and design (SSMED) or Service Science (SS), for short, is a multidisciplinary discipline that studies the implications emerging from adopting new management approaches to services.

Service Science (Maglio and Spohrer 2008) was born due to company's shift from a good-logic to a service centered perspective, undertaken to better understand the role of service in today's society. The aim of this theory is to combine and to apply computer science, operational research, industrial engineering, management and social sciences in order to develop a unitary framework for studying design, delivery and evaluation of services (Cavenago and Mezzanzanica 2009).

The theory aims to find the most appropriate organizational model to support the emergence of value by categorizing and explaining "the many types of service systems that exist as well as how service systems interact and evolve to co-create value" (Maglio and Spohrer 2008, p. 18).

According to Service Science, service is seen as the interaction of several actors on the basis of a value proposition that guides the application of competence for mutual benefit. In fact, rather than focusing on the definition of service itself, service science scholars dwell on the indissoluble link between service and a user-supplier interaction that can generate and share value. This is a circular process of exchange of information and knowledge between organization and consumer that generates value creation (Rust 2004; Carrubbo 2013; Barile and Polese 2009). In interpreting the service, SS focuses on the value derived from it, referring both to the produced innovation and to the qualification of the technologies involved. The theory focuses on the development of modern technologies, specifically on the role of ICTs that enable greater availability and more immediate access to information, which increasingly guarantee the continuous rise of service performance.

For all these reasons SS see the services as interacting and interdependent systems that include people, technologies and business activities that are constantly connected to the outside (Maglio et al. 2006; Maglio and Spohrer 2008a), called service systems. Service systems are used to create the distinctive features of a company, to achieve and maintain a sustainable competitive advantage (Maglio et al. 2006). The service system's function is to "to make use of its own resources and the resources of others to improve its circumstance and that of others" (Vargo et al. 2008).

#### 2.1.1 Service systems and smart service systems

Service systems are value-creation networks composed of people, organizations, technology and shared information (Maglio and Spohrer 2008; Spohrer et al. 2007).

*Organizations* define the most appropriate organizational model to favor the emergence of value for all actors in the system. To ensure that multiple purposes are pursued, then to achieve benefits for everyone, organizations should focus on the human factor, that is the customers (*people*) and the resources they share.

The main resource within a system is the exchange of knowledge (*shared information*). It is the real added value that guarantees value co-creation both internally, in the organization, and externally, among the entities of the system (Vargo et al. 2008; Vargo and Akaka 2009). The application of new *technologies* to service allows stressing the importance of cognitive factor in service exchanges (Vargo and Lush 2008). ICTs, in fact, determine the growth of opportunities for sharing knowledge and information between users and organization (Norman 2001; Vargo and Akaka 2009).

Recent developments in SS, in line with the central role of technology and the ICTs both at global and business level, propose a revised version of service systems concept, the so-called smart service systems. New technologies reconfigure old service systems by promoting real-time relationships and speeding up co-learning processes in many fields (e.g. smart services in the energy sector, transport, telephony, tourism, and so on).

Implications of this ICT-based approach can be threefold: 1) the involvement of many actors in the personalization of the service, hence a wider process of value co-creation; 2) the ability to react in real time to environmental changes; 3) the importance of service quality.

Service systems become smart because they come from systematic methods, continuous learning, data collection, innovation, social responsibility and network governance, and all the operations that benefit from the application of new technologies.

Any type of service, from the medical to the tourist one, can be realized in a transparent, sustainable and more efficient way, by respecting users and contributing to the well-being of the whole community.

However smart service systems are often reported only in a theoretical way, far from practical applications, rarely operationalized. Although system thinking, service systems and smart service systems are applied to some fields, i.e. cyber-physical systems (Mikusz 2015), local systems (Piciocchi et al. 2012; Piciocchi et al. 2013), medical fields (Carrubbo et al. 2015; Polese and Capunzo 2013), innovation (Pittaway and Autio 2015), logistic services (Troisi and Tuccillo 2013; Botti et al. 2017), public sector (Ciasullo et al. 2016; Troisi, 2015), none apply them to the field of the restaurant management. Therefore, this research is a first exploratory attempt to apply Service Science to the field of foodservice.

## 2.2 The role of Technology in Restaurant management

The role of technology in restaurant management is increasingly pervasive. Technology plays a crucial role in this field, allowing restaurateurs to improve sales and profits by implementing each stage of dinner experience, for example, by using handheld ordering device and communications systems that speed up the ordering process (Kimes 2008).

The advent of the internet has further contributed to the improvement of restaurant management by providing opportunities not otherwise available, such as maintaining an effective e-marketing strategy (Kasavana 2002) that allows managing restaurant's online brand.

The increasing role of ICTs intensifies the interaction between consumers and restaurateurs, whose relationship is more and more dynamic and participative, thanks to online reviews. As in other fields (Yang and Fang 2004; Stringam and Gerdes 2010; Ye et al. 2011), particular attention is given to online reviews, which represent the way for users to express their opinions and customer satisfaction.

Literature argues that online reviews bring benefits to both restaurateurs and consumers. Concerning restaurateurs, websites in which users post reviews can be seen as a tool for creating a loyal customer base and monitoring customer satisfaction expressing by online reviews (Pantelidis 2010). Concerning users, reviews produce a twofold advantage: cognitive benefits as they gain information about the restaurant and the customers' experience; and benefits about personal integration, motivation and self-esteem when they write them (Nambisan and Baron 2009; Yoo et al 2016).

Finally, it is possible to affirm that the internet takes advantage and opportunities both for restaurateurs and customers that obtain benefits during the dining experience. In line with this consideration, Kimes (2008) argues that technology allows to take advantage for consumers in terms of convenience and control, and for restaurateurs in terms of service speed, cost reduction, increased volume of revenue, improved service and product quality, more access to customers. And with specific reference to effective websites, they allow restaurateurs to achieve profit and consumers satisfaction.

## 3. Research Methodology

The research is based on a qualitative approach; particularly it adopts a case study methodology, which represents an ideal approach when a holistic analysis is required (Yin 2003; Feagin et al. 1991; Tellis 1997). The case study allows the researcher to study the "dynamics present within a single setting" (Eisenhardt 1989), examining in depth the phenomenon characteristics within its context. This research strategy can involve many levels of analysis, many cases and many points of

view (Yin 1984), then is characterized by the combination of different research techniques and the consequent comparison between them (Yin 2003).

Our study uses an exploratory case study analyzing a restaurant booking website which also allows users to leave reviews: TheFork. We chose TheFork for two reasons: firstly, because it is a website in which the four components of the service systems are combined, in fact, it is a website where organizations and people share information through the use of technology. Secondly, because of the growing popularity of the website that increased the number of hosted restaurants, from 5,000 to 40,000 in the last two years.

In line with the case study approach, we analyze TheFork both from theoretical and practical points of view.

From a theoretical point of view, we first analyze the website as a network system involving customer's and restaurateur's collaboration to co-create value, identifying the similarities between Service Science key concepts and TheFork main features. Then, we re-configure it as a smart service system through the lens of Service Science (Spohrer et al. 2012).

From a practical point of view, we conduct 7 interviews to reveal restaurant owner's point of view to find the existence of a possible gap between theoretical and practical level and to understand whether TheFork is seen as a smart service system by the restaurateurs. We ask them about the four components of the service science, as shown in the appendix.

Since this study adopts an exploratory case study, our goal is not to reach definitive empirical evidence but to suggest insights for encouraging further studies about restaurant booking websites.

## 4. The re-conceptualization of TheFork as a smart service system

To re-conceptualize TheFork as a smart service system, we highlight the similarities between TheFork and smart service system's main features.

Firstly TheFork is a social network in which different actors interact, so it can be considered as a system (Pignatti and Trezza 2000). Within the system, *organizations* are represented by restaurants that share different kinds of information on themselves. *People* are represented by users/consumers looking for restaurant information that also review restaurants. *Shared information* among the actors of the system can vary depending on the kind of actor: organizations share information about the menu, location, offers, photo, price, address, services, opening time, whereas users share opinions, preferences and experiences, through reviews. Finally, the website itself and its cloud system, by allowing to access to the platform and to book online from anywhere, anytime, in a fast way, coincides with the *technology* idea proposed by SS.

Moreover, literature considers that online reviews can generate benefits both for customers and for restaurateurs, from a value co-creation perspective. The customers get value in terms of reputable crowdsourcing, social influence, behind-the-scenes information, social interaction, collaboration (Yoo et al. 2016). On the other hand, restaurants get value in terms of image, if reviews are positive, in terms of monitoring customer satisfaction and the possibility to recover the relationship with a dissatisfied customer, if reviews are negative (Pantelidis 2008).
In Table 1, the main elements of The Fork.it are classified into 4 macro-dimensions corresponding to the principal components of smart service systems.

**Table 1- TheFork as a smart service systems**

| **Smart Service Systems** | **TheFork** |
|---|---|
| Organization | Restaurant |
| People | Users/Customers |
| Shared information | From restaurants: menu, location, offers, photo, price, address, services, opening time.<br>From users: online reviews opinions, preferences, experiences. |
| Technology | Online booking |

Ultimately both TheFork and smart service systems are two systems in which different actors interact, sharing knowledge that can lead to value co-creation. Both the systems provide horizontal administration, in which all users have the same rights to express their views (principle of democratization). Lastly, the existence of technology increases system vitality for both of them.

## 5. Interviews with restaurateurs

The interviews with restaurateurs have been conducted to verify if TheFork could be re-configured as a smart service system in practice, too. For this reason, specific questions were asked to the restaurateurs about the following topics: *technology*, *shared information*, the relation between restaurateurs (*organizations*) and users/consumers (*people*).

### *Technology*

As regards technology, questions about online bookings were asked. Particularly, it was asked "What do you think about restaurant online bookings?", "How do you manage online bookings with TheFork?", "Do online bookings change customer relationship?" (see appendix). All respondents

admit that online bookings are “the future” and a restaurateur points out that they are an effective way to manage the table management. He says that online bookings managed through TheFork are:

“A great system for managing the restaurant and the tables, we use it for this [...] you can decide about the number of the discounted seats, you can decide the times according to your restaurant needs, according to the place where you are, the offices you have, the clientele that you have… everything with a very simple app to use. The night that (my restaurant) is empty I open (the possibility to book) places at 50% at 9 p.m., or at 8.30 p.m, while the night I'm full, I close the online bookings. The total management of your restaurant and discount are absolutely in your hands!”.

***Shared information***

Shared information between restaurant and consumer, as above-mentioned, can be found in online reviews. As a result, restaurateurs was asked if they find useful to read online reviews, how they manage them, if they read and/or respond.

We discover that every interviewee reads the reviews, giving them a different importance: someone affirms to start his working day by reading reviews, someone else says to take a more relaxed approach. Regarding the responses to reviews, even if everyone reads them not everyone responds. Two restaurateurs admit that they voluntarily do not respond.

It was also asked whether reading reviews brought restaurateurs to change something in the restaurant, following advices or criticisms by users. No unanimous answer was made to this question. Three restaurateurs admitted they did not change because of reviews. One of these interviewee states:

“I do not change because they say good things […] someone tells me that the restaurant is old, but I like it like that.”.

This testimony highlights how reluctance to change can derive also from the customers themselves as they ask too much, such as for example building renovation, or point out something not related to the dining experience. The other four restaurateurs admitted to take into account reviews and to make changes whether they needed. About customers advices an interviewee says:

"..the most useful were about the wine list. From the managerial point of view, it is obvious that some small details in the day-by-day can elude, so those reviews were helpful to make us more focus on the wine list, wine selection, or something like that, absolutely!"

The analysis of interviews data shows how the willingness to open and to change depends not only on the TheFork itself but also on the type of person you are. As it was suggested by an interviewee, "it's about attitude!".

***People - Organization Relationship***

About the relationship between restaurateurs and consumers, it was asked whether the restaurateurs could better manage customer relationship through TheFork and whether the restaurant management was changed after TheFork enrollment.

The analysis of the responses highlights that TheFork provides benefits as it provides a database containing customers data. However, it is not the most suitable tool to manage customer relationship, as customers often book through the web-site only to get a discount. The answers to these questions have therefore highlighted that:

"The (customers) relationship does not manage through the portal, it creates [...] The portal is useful to attract people… the restaurateur does the rest".

However, in two cases, respondents admitted that TheFork helped them a lot in their relationship with clients, instructing them "to take and order". But most of all, they said that TheFork allowed them to promote themselves among people who become regular customers.

**6. Discussion**

Starting from the considerations discussed above, concerning the re-configuration of TheFork as a smart service system, in this section we compare theoretical and practical analysis to verify the existence of a hypothetical gap.

To do so, we intend to highlight the main elements emerged from practical analysis and see if they confirm what is emerged in theory.

As regards *technology*, analysis of interview data confirms that ICTs are crucial elements to optimize restaurant management and also to facilitate the creation of relationships between restaurateurs and customers.

The *shared information* component is also confirmed, too. The exchange of information involves several areas on TheFork's website: the restaurateurs share information about the menu, offers, etc., while consumers share opinions, preferences, and criticisms, through online reviews. All restaurateurs admit to read reviews to get the knowledge they could not have in another way. Most respondents admit to take advantage of consumers advices and criticisms, as they offer insights that give the possibility to co-create value. However, co-creation does not always occur, especially in the case of negative comments that do not concern the dining experience but concern other elements, such as restaurant's owner or employees, who sometimes do not feel protected by the system. In these cases, the principle of democratization fails.

Finally, concerning the relationship between *organizations* and *people*, restaurateurs state that it does not change using TheFork. TheFork is an effective tool to be known, but customer care management depends on restaurateur, and not on the websites that often attract consumer engaged mostly thanks to the discount. However, TheFork makes available a database with customer information to restaurateurs, so they get contact details.

## 7. Implications and conclusions

Recent advancement in ICTs, engaging every service, lead to speeding up the exchange of information among the actors of a system and in some cases can turn into value co-creation (Maglio and Spohrer 2008). This is also true in restaurant management, where technology plays a crucial role, allowing both restaurateurs and consumers to benefit during every stage of dining experience (Kimes 2008). These premises, in line with Service Science (Spohrer and Maglio 2008), allowed us to reconfigure TheFork as a smart service system.

Two types of analysis, both theoretical and practical, were conducted to verify if the TheFork can be understood as a smart service system, both in a theoretical and a practical way, or if a hypothetical gap between the two levels exists.

At theoretical level, TheFork can be reread as a smart service system, as every element of smart service systems is found on TheFork's website. It is, for all intents and purposes, a network where actors exchange knowledge through the use of technology, particularly, through online bookings and online reviews that help to create value for all players in the system.

At practical level, interviews data reveal that TheFork allows restaurant managers to optimize restaurant management (i.e. allowing to better organize tables management or to get information from consumers by reviews). However, value co-creation does not always happen as it is due to reviews content and restaurateurs' willingness to change.

Finally, the results of both the analyses lead to the following considerations: TheFork can always be considered a smart service system in theory, while in practice it is not always confirmed as it depends on a willingness to engage of both customers and restaurateurs.

The present work proposes theoretical and practical implications. From a theoretical point of view, the reinterpretation of TheFork as a smart service system can contribute to Service Science and restaurant management advancements, given that a restaurant booking website was never before configured by any other authors as a smart service system. Research on technological platforms can advance Service Science in terms of clarification of the interplay between the smart service system abstraction, the value co-creation and knowledge exchange between actors. The work can be ascribed to a series of contributions aimed at identifying and measuring concretely value co-creation activities and practices recently proposed (McColl- Kennedy et al. 2012; Botti et al. 2017b).

From a practical point of view, the results of the study can address restaurateurs to identify the most adequate strategies for managing relationships with consumers in order to enhance value co-creation. TheFork's conscious management, especially online bookings' and online reviews' management, can lead to value co-creation which is only possible if restaurateurs show willingness to change and openness to consumer engagement.

Limitations of this paper are related to the type and the context of research, only referred to an Italian city: Milan. Using an exploratory case study, our goal is not to reach definitive evidence but to suggest insights for encouraging further studies about restaurant booking websites. These two elements do not allow us to generalize the results. Future works could try to extend interviews to other Italian cities to find out whether the results to which they came here also correspond to overall Italian context.

**Appendix - Interviews with restaurateurs**

***Opening questions***

What's your relationship with TheFork?

How long have you been member of TheFork?

***People -Organization Relationship***

Do you better manage your relationship with customers through TheFork?

How did the restaurant management change with TheFork?

***Technology***

What do you think about restaurant e-bookings?

How do you manage online bookings with TheFork?

Do online bookings change customer relationship?

***Shared information***

Do you find useful to read online reviews?

How do you manage online reviews?

Do you read or respond to online reviews?

Reading reviews brought you to change something in the restaurant?

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