

# Exploring volunteers' role in healthcare service ecosystems: value co-creation, self-adjustment and re-humanisation

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Laura Di Pietro, Veronica Ungaro and Maria Francesca Renzi  
*Department of Business Studies, Roma Tre University, Rome, Italy, and*  
Bo Edvardsson  
*CTF, Karlstads Universitet, Karlstad, Sweden*

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## Abstract

**Purpose** – The paper investigates how the engagement of a group of actors (the volunteers), previously unexplored in service ecosystems literature, contributes to generating new co-creation activities and well-being outcomes in the healthcare service ecosystem (HSE). Moreover, the study analyses how the provision and integration of volunteers' resources help to explain the HSE self-adjustment favouring the re-humanisation of service.

**Design/methodology/approach** – The article zooms in on the volunteers' activities in an HSE. A qualitative approach is adopted, and an empirical investigation is grounded in data gathered from Kids Kicking Cancer (KKC) Italia, a volunteer association operating in the paediatric oncology ward of Italian hospitals. Data are collected and triangulated through in-depth interviews, volunteers' diaries and observations. The analysis is conducted by adopting an interpretative thematic analysis technique.

**Findings** – The study provides a conceptual framework explaining how volunteers' value co-creation activities influence the HSE's self-adjustment by leading to a re-humanisation of services. The paper also contributes to the state of knowledge by identifying seven categories of volunteers' value co-creation activities, two of which are completely new in the literature (co-responsibility and empowerment).

**Originality/value** – The paper contributes to the service research literature by identifying empirically grounded value co-creation activities extending the understanding of self-adjustment and re-humanisation of the service ecosystem.

**Keywords** Volunteer, Healthcare service ecosystems, Value co-creation activities, Well-being, Self-adjustment, Service re-humanisation

**Paper type** Research paper

## Introduction

The healthcare context represents one of the most complex service systems, as it involves multiple groups of actors, is very regulated, driven by knowledge and technology, and involves interactions between various human actors around patients. Also, health is of central concern for the patient, family, community and society's well-being (Chen *et al.*, 2020). As observed by Frow *et al.* (2016, p. 25), the healthcare setting represents a fertile field to study "how co-creation practices shape an ecosystem" because there is a general agreement that actors' integration and collaboration are vital for enhancing health outcomes.

At the same time, the healthcare sector is characterised by a scarcity of resources, including economic, human and technological resources, and an ongoing imperative to

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control costs and enhance quality (Melman *et al.*, 2021; Asandului *et al.*, 2014; Beirão *et al.*, 2017; Pereno and Eriksson, 2020).

To comprehend the healthcare service ecosystem (HSE), it is essential to analyse further actors involved, understanding how they collaborate to combine their resources to co-create value (Frow *et al.*, 2016; Berry *et al.*, 2006), and how this change produces adaptive behaviour.

In this regard, the current study aims to draw attention to a group of actors that has received limited attention in the literature regarding its potential to contribute to the value co-creation within an HSE and its capacity to generate positive well-being outcomes. Indeed, a volunteer is an actor who freely chooses to perform tasks for social welfare without receiving payment (European Youth Forum, 2012). In particular, in the healthcare sector, volunteering activities support traditional medicine (Guglielmetti Mugion and Menicucci, 2020) through the cooperation among multiple actors (such as hospitals, patients and voluntary associations), who pool their resources to reduce the negative emotions associated with the disease and improve the well-being of patients and families.

As widely recognised, healthcare services are characterised by a high level of complexity affected by many-to-many interactions and collaboration among networks of actors (Patrício *et al.*, 2021). Adopting the service ecosystem lens to study healthcare helps “to understand the complex multilevel social/human/organisational processes” (Brodie *et al.*, 2021, p. 227). Service-dominant logic (SDL) and the service ecosystem view serve as foundations for investigating networks of relationships and interactions that integrate resources for value co-creation (Vargo and Akaka, 2012; Ng *et al.*, 2012). Indeed, Vargo *et al.* (2015) pointed out that value co-creation is driven by dynamic resource integration and shaped by institutional arrangements forming the basis for service-for-service exchange.

In light of this evidence, the present study investigates the dynamics of and contribution to value co-creation that volunteers can generate within the HSE by zooming in on the volunteers' activities provided to hospitalised patients. Despite this potential contribution to the HSE, service research has only begun to pay attention to the volunteers' contribution to the value co-creation processes (Mulder *et al.*, 2015; Rosenbaum *et al.*, 2011). Accordingly, studying the dynamics, processes and outcomes of value co-creation in the HSE engaging volunteer actors is particularly relevant. More specifically, the study zooms in to analyse how a specific category of actor - the volunteer - engaged in the HSE adds and integrates resources leading to new value co-creation activities generating value-in-social-context for all engaged actors in the service ecosystem.

Based on the premise that HSE is dynamic and continually evolves through the integration of resources and actors (Brodie *et al.*, 2021), the paper contributes to the service research literature by identifying empirically grounded value co-creation activities extends the understanding of how the ecosystem self-adjustment (Vargo and Lusch, 2017).

Moreover, service research is crucial in fostering positive change in the world, especially when focused on healthcare (Bowen *et al.*, 2023). In particular, healthcare represents a pivotal service for enhancing individual and collective well-being (Ungaro *et al.*, 2022; Gustafsson *et al.*, 2015), and it is considered a priority sector for studying transformative outcomes (Ostrom *et al.*, 2015). In this context, it becomes essential to understand how this transformation takes place in practice (Ostrom *et al.*, 2010; Previte and Robertson, 2019). This study analyses the effects of volunteer engagement and the ecosystem's capacity to self-adjust. The paper zooms in on how volunteers' activities are initiated and results in well-being outcomes for patients and other engaged actors in the ecosystem (Leo *et al.*, 2019).

To achieve this aim, the research empirically examines the co-creation activities resulting from volunteer engagement and the related outcomes for the HSE actors at multiple levels (micro-, meso- and macro-levels). Against the above backdrop, a qualitative approach is adopted, and an empirical investigation is carried out by examining the experience of Kids Kicking Cancer (KKC) Italia, a volunteer association operating in the paediatric oncology ward of Italian hospitals. Empirical data were collected through the triangulation of in-depth

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interviews with volunteers, the analysis of volunteers' diaries and the observation of volunteering practices. The data analysis is conducted by adopting an interpretative thematic analysis technique (Lipkin and Heinonen, 2022) to explore the role played by volunteers in the HSE from the direct perspective of the primary actor.

To summarise, the paper offers multiple contributions to the current literature. First, it recognises the co-creation activities and outcomes that arise from the volunteer's participation across multiple levels of the HSE. Subsequently, a conceptual framework is proposed to illustrate how resource repurposing, prompted by volunteer activities, influences the self-adjustment of the HSE by leading to a re-humanisation of services.

The article is organised as follows: first, an overview of service ecosystem research (including co-creation, self-adjustment and humanisation) is provided, followed by an analysis of the literature concerning HESs and volunteers. Second, the research design is described, including data collection and analysis. Third, study results are presented, discussed and compared to the existing literature to clarify the research contribution. Finally, theoretical contributions and managerial and policy implications are presented. Furthermore, limitations are discussed, and suggestions for future research are outlined.

## Theoretical framing

### *Value co-creation, self-adjustment and well-being in the service ecosystem*

According to SDL, interactions between collaborating actors form the basis for resource integration with the intention of creating value for all engaged actors (Vargo and Akaka, 2012). Vargo and Lusch (2016) argue that interactions are shaping collaboration between actors during resource integration and co-creation processes and refer to "mutual or reciprocal action or influence" (Patrício *et al.*, 2021, p. 75) driven by the application of competencies (Vargo *et al.*, 2008). This is done in the context of service ecosystems, defined as "relatively self-contained self-adjusting systems of resource-integrating actors connected by shared institutional logics and mutual value creation through service exchange" (Vargo and Lusch, 2016). The service ecosystem view provides a lens to study the "system of service systems" through the analysis of interactions and value co-creation between a multitude of actors/service systems (Vargo and Akaka, 2012). In addition, the service ecosystem lens is capable of considering interdependent analytical levels of aggregation: micro-, meso- and macro-levels (Vargo and Lusch, 2017; Chandler and Vargo, 2011). Thus, within a service ecosystem, value is a system-level construct with four characteristics: phenomenological, co-created, multidimensional and emergent (Vargo *et al.*, 2017).

When actors interact and share resources, the ecosystem evolves (Letaifa *et al.*, 2016). Accordingly, the ecosystem "is changed in every instance of resource integration and value co-creation" (Beirão *et al.*, 2017, p. 228). Changes in actors' behaviours and available resources trigger the need to adjust and adapt the ecosystem value co-creation practices to generate resonance and ensure viability (Polese, 2018; Mele *et al.*, 2023). In line with this view, it becomes pivotal to understand how changes in actors and resource integration practices can generate adaptive behaviours (Barile *et al.*, 2016), provoking the self-adjustment process. According to Mele *et al.* (2023), the self-adjustment of service systems refers to "the adaptation process to changing conditions to remain viable or improve the viability" (p.2). However, there is a need for additional empirical studies to examine how service ecosystems self-adjust, particularly by focusing on multi-actor interaction and collaboration. Indeed, empirically studying the dynamic of the self-adjustment concept can advance the theoretical understanding of value co-creation and ecosystem viability.

Furthermore, existing literature on service ecosystems suggests the necessity of comprehending the nature of actors' interactions and how value is co-created, including how changes affect well-being (Frow *et al.*, 2016, 2019; Vargo *et al.*, 2008). Co-creation activities not only influence the well-being of the individual but can impact the well-being of all those related to it

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(Sweeney *et al.*, 2015). Identifying practices and innovations that foster the transformation of complex ecosystems and allow the development of human-centred solutions is a fundamental challenge (Sangiorgi *et al.*, 2019). Thus, empirical studies are needed to understand the co-creation practices (suggested by Skälén and Gummerus, 2023) that can support service ecosystems, making them more human-centred. Furthermore, these evidence and study gaps are highly consistent with recent transformative service research (TSR) advancements. TSR is defined as “the integration of consumer and service research that centres on creating uplifting changes and improvements in the well-being of consumer entities: individuals (consumers and employees), communities and the ecosystem” (Anderson *et al.*, 2011, p. 3), contributing to the “reduction of human suffering” (Nasr and Fisk, 2019). The concept of service ecosystem transformation can be comprehended as an intervening construct that generates favourable well-being outcomes (Blocker and Barrios, 2015). In line with this view, Chen *et al.* (2020) highlight that well-being co-creation is generated by the coordination of resource integration activities of multiple actors in service ecosystems. Hence, it is crucial to understand how the engagement of further actors affects the ecosystem’s ability to self-adjust and how this phenomenon triggers the service transformation leading to the development of well-being outcomes.

Among the multiple actors of the HSEs could be included different professional actors, such as nurses, medical doctors and physical therapists, as well as volunteers providing “extra” resources. We, therefore, next discuss what we know about HSEs and volunteering.

#### *Healthcare service ecosystem and volunteering*

Over time, the healthcare industry has changed dramatically (Russo Spena and Cristina, 2020; Osei-Frimpong *et al.*, 2018). The coronavirus disease 2019 (COVID-19) pandemic has made the provision of services even more difficult (Berry *et al.*, 2022), exacerbating the traditional scarcity of resources in the health sector. The healthcare ecosystem is composed of systems being highly regulated through institutional arrangements aimed at enhancing efficiency and effectiveness (Mele and Russo-Spena, 2019). This is further argued by Beirão *et al.* (2017, p. 231) when highlighting that effectiveness (i.e. economic impacts, quality of life and well-being) and efficiency (amount of combination of used resources) are both critical to guarantee the viability of the HSE.

HSEs are characterised by great degrees of complexity, regulations, continual evolution and specialised actors (Frow *et al.*, 2019; Chandler and Vargo, 2011). Within the HSE, service system entities (i.e. patients, families, organisations, etc.) interact and co-create value. Hence, various actors are involved in co-creating value by combining and recombining resources and developing coordinated collaboration mechanisms at operational, political, social, economic, legal or ethical levels (Polese and Capunzo, 2013). As service ecosystems, HSEs are overlapping and nested (Vargo, 2021), with sets of actors and resources that regulate the roles and responsibilities of different actors. The numerous actors involved have varied purposes and needs, which may converge and favour value co-creation but may also produce value co-destruction (Plé and Chumpitaz Cáceres, 2010; Patrício *et al.*, 2021). Co-creation activities positively affect the response to medical treatments by improving patients’ well-being and quality of life (McColl-Kennedy *et al.*, 2012; Sweeney *et al.*, 2015). This aligns with the suggestion of developing experiences where patients can be engaged in customising their hospitalisation experience (Prahalad and Ramaswamy, 2004). Every actor involved in the HSE shares the responsibility to co-create value (McColl-Kennedy *et al.*, 2022). Consequently, when examining the process of value co-creation within the HSE, it is imperative to consider not only the value outcomes experienced by patients but also those of physicians, service providers and families (McColl-Kennedy *et al.*, 2017; Pinho *et al.*, 2014). Nevertheless, most studies focus only on the patient perspective, thus neglecting to analyse how the other engaged actors affect the system, both by fostering resource integration but also inhibiting

processes leading to innovative co-creation of value and reshaping the HSE (i.e. [Russo Spena and Cristina, 2020](#)). Likewise, [Lam and Bianchi \(2019\)](#) noticed a paucity of studies focusing on ecosystem actors' impact on patient value outcomes.

In light of this evidence, volunteers emerge as an important group of actors already engaged in the healthcare field. However, the recognition of their contributions to value co-creation highlights a gap in the service ecosystem literature. According to the European Volunteering Chart ([European Youth Forum, 2012](#)), a volunteer is "a person who carries out activities benefiting society, by free will. These activities are undertaken for a non-profit cause, benefiting the personal development of the volunteer, who commits their time and energy for the general good without financial reward". The volunteer engages in altruistic endeavours of their own volition in favour of the community's well-being. In this regard, [Haski-Leventhal et al. \(2018\)](#) introduce the notion of "volunteerability", namely the individual's ability to overcome obstacles and volunteer, linking it to willingness, capability and availability.

Accordingly, by adding additional resources to the HSEs, volunteers can significantly improve services for vulnerable hospitalised patients.

For this reason, the present paper zooms in on the volunteer's role and resource contributions within HSEs to better understand the resources and value co-creation activities provided by volunteers. The aim is to examine how volunteer engagement contributes to the well-being of HSE actors. Previous authors have already delineated a set of value co-creation activities performed by consumers in the context of health services ([Table 1](#)).

Value co-creation activities	Description	References
Cooperating	Compliance with basic requirements and acceptance of the service provider information	<a href="#">McColl-Kennedy et al. (2012)</a> , <a href="#">Lam and Bianchi (2019)</a> , <a href="#">Sweeney et al. (2015)</a>
Compliance with basic requirements	Searching for and putting together information	<a href="#">McColl-Kennedy et al. (2012)</a> , <a href="#">Sweeney et al. (2015)</a>
Collating information	Associate traditional medicine with the complementary one (i.e. diet, exercise and meditation)	<a href="#">McColl-Kennedy et al. (2012)</a> , <a href="#">Lam and Bianchi (2019)</a>
Combining complementary therapies	Collect and share information from different sources about our own situation	<a href="#">McColl-Kennedy et al. (2012)</a> , <a href="#">Lam and Bianchi (2019)</a>
Co-learning	Manage long-term adaptive changes and be involved in activities to take your mind off the situation	<a href="#">McColl-Kennedy et al. (2012)</a> , <a href="#">Lam and Bianchi (2019)</a>
Changing ways of doing things	Creation of relationships with other people (friends, supportive groups and patients)	<a href="#">McColl-Kennedy et al. (2012)</a> , <a href="#">Sweeney et al. (2015)</a> , <a href="#">Lam and Bianchi (2019)</a>
Connecting with others	Work with the medical staff and be involved in the redesign of the treatment programs considering their own needs	<a href="#">McColl-Kennedy et al. (2012)</a> , <a href="#">Sweeney et al. (2015)</a> , <a href="#">Lam and Bianchi (2019)</a>
Relationships with family and friends	Develop a positive attitude, accept the situation and control one's own emotions	<a href="#">McColl-Kennedy et al. (2012)</a> , <a href="#">Sweeney et al. (2015)</a>
Interaction with clinic staff	Adopt coping strategies and self-management	<a href="#">Sweeney et al. (2015)</a>
Co-production proactive involvement in decision making	Adopt a healthy diet to support their own well-being and health	<a href="#">Sweeney et al. (2015)</a>
Cerebral activities (spiritual relationship, emotional regulation, positive thinking)	Distract yourself to take your mind off the situation	<a href="#">Sweeney et al. (2015)</a>
Managing the practicalities		
Healthy diet		
Diversionary activities		

Source(s): Created by authors

**Table 1.**  
Customer value co-creation activities recognised in service research literature

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We use the above (Table 1) activities as a theoretical framework to identify value co-creation processes and outcomes performed by volunteers. Specifically, the paper aims to investigate how the volunteers bringing their resources affect the actors' resource integration and what value co-creation activities they generate within the HSE. From the aforementioned, the following research question is formulated:

*RQ1.* What are the co-creation activities triggered by volunteers in the HSE?

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Furthermore, volunteers and volunteering organisations directly participate in transformational service activities (Mulder *et al.*, 2015), benefiting society in the long term. This is emphasised in healthcare services, which are considered transformative by design (Rosenbaum *et al.*, 2011). Besides, human and social interactions (humanity) between patients and providers are crucial and distinguish healthcare services from other service settings (Oben, 2020; Hurst and Peabody, 2011). Indeed, addressing patients' humanity is central to pursuing the patient-centred approach (Oben, 2020). Mulder *et al.* (2015) described the transformative charitable experiences as a triadic relationship among volunteers, service providers and the community. However, the authors focalised the analysis mainly on the well-being generated by the volunteer, demonstrating how this actor is simultaneously a consumer and provider of the charitable service experience.

In contrast, it is apparent that volunteers yield favourable outcomes even for the other engaged actors and the HSE. Accordingly, the present study aims to explore volunteer involvement's effect on the HSE. Hence, the subsequent research question is formulated:

*RQ2.* What outcomes are generated within the HSE at micro-, meso- and macro-levels by voluntary activities?

### Research design

Venkatesh *et al.* (2013) argue that qualitative methods are adopted to gain a comprehensive understanding of a phenomenon and inductively generate new theoretical ideas (Punch, 1998; Walsham, 2006). Given the aim of this paper, an explorative qualitative study was selected. Qualitative methods allow for studying new and complex phenomena and people's feelings about specific concerns (McCusker and Gunaydin, 2015; Boulay *et al.*, 2014). More specifically, an inductive methodology is used during coding the data to identify and categorise volunteers' value co-creation activities in HSEs. Then, each category was compared with existing findings in the literature (Mele *et al.*, 2023; Glaser and Strauss, 2017). Accordingly, to answer the research questions, we move between our empirical analysis and the theoretical level using a reflexive approach (Lipkin and Heinonen, 2022; Dubois and Gadde, 2002).

KKC Italia, a volunteering association, was chosen to conduct the empirical study. KKC was founded in the United States in 1999 and was established in Italy in 2011 as a non-profit organisation to support children with cancer and severe chronic conditions and their families to cope and better manage the disease by teaching martial arts. These activities are developed with a supportive therapeutic aim to help patients deal with their illnesses. The reasons for selecting this volunteer association are as follows: the vulnerability of the volunteer program's beneficiaries (children with oncologic disease), the innovative nature of the proposed activity (martial arts practice and breathing exercises), the spread of the service in multiple Italian regions (i.e. Lazio, Campania, Umbria, Piedmont, Lombardy, etc.) and the involvement of several hospital structures (i.e. Bambino Gesù, Policlinico Gemelli, Policlinico Umberto I, etc.).

To map the HSE actors affected by the volunteering service activities, identify the co-creation activities and detect the value outcomes, multiple qualitative tools were implemented: volunteers' diaries, in-depth interviews and observations. As recognised by several authors, the combination of multiple methods facilitated the understanding of a phenomenon (Lipkin and

Heinonen, 2022; Barratt *et al.*, 2011; Mingers and Brocklesby, 1997). The triangulation of data coming from different sources allows for increasing reliability (Boyer and McDermott, 1999; Hyer *et al.*, 1999) and strengthening the detected constructs (Di Pietro *et al.*, 2018; Bowen, 2009).

*Data collection*

The empirical data were collected at the micro (individuals) level in HSEs. The three data collection methods (diaries, in-depth interviews and observations) have been combined to maximise the data’s accuracy and promote the analysis’s rigorousness and validity (Table 2). The cross-cutting aspects investigated throughout the three methods were the understanding of the activities performed by the volunteers within the hospital, the identification of the actors engaged in the activity, the resources integrated by each actor and their interactions, and the outcomes generated. In addition, each method allows investigation of specific aspects.

The diary technique enables *in situ* data collection of a large amount of information about daily activities (Bolger *et al.*, 2003), self-reflections and opinions (Guglielmetti Mugion and Menicucci, 2020). Diaries are effective in collecting data in a non-intrusive way (Lipkin and Heinonen, 2022). The researchers have analysed diaries describing the volunteers’ experiences carried out during 2019 and 2021 (due to COVID-19, no activities were performed in 2020 and the first part of 2021). KKC Italia volunteers, at the end of each day of volunteering experience, report in one/two pages: general information, activities performed (i.e. physical exercises, breathing techniques and meditation), emotions and feelings.

A total of 18 in-depth, semi-structured interviews were conducted between 2021 and 2022. This technique can gather insights into the phenomenon under investigation (Ungaro *et al.*, 2022; Dean and Indrianti, 2020; Lam and Bianchi, 2019; Di Pietro *et al.*, 2018; Edgar *et al.*, 2017). Interviews were used to gain a holistic understanding of the association and its values and to

	Diary	In-depth interview	Field observation
Data collection description	Volunteers’ diaries were written after the volunteering activity – 2019: 12 months (720 reports) – 2021: 4 months (100 reports)	18 in-depth interviews (1-h duration) – founders of KKC US – founders of KKC Italy – 3 Italian volunteers responsible for coordinating activities with hospital – 12 Italian volunteers – a mother of a young patient	1 researcher followed volunteers for 10 work days in the hospital and participated in national meetings of KKC Italia
Cross-cutting aspects investigated	– Understanding of the voluntary work performed – Identification of the main actors involved, the resources deployed and the type of interactions – Resulting outcomes		
Specific aspects investigated	Emotions and feelings	Deep personal introspection (guided by the interviewer) Semi-structured interview guide – main sections – profiling – actors and partnership – activities and responsibility – effects and outcomes – Covid-19 impact	Non-participatory and unstructured observation

**Table 2.**  
Summary of the qualitative methods adopted for data collection

Source(s): Created by authors

learn about volunteers' work and responsibilities, involved actors, hospital partnerships and perceptions of transformation on themselves, other actors and communities. The respondents were purposively selected (Lipkin and Heinonen, 2022; Golafshani, 2003), and the data collection was stopped once the data saturation principle was reached (Francis *et al.*, 2010; Saunders *et al.*, 2018; Ungaro *et al.*, 2022). The interviews were conducted using online platforms such as Zoom and Microsoft Teams, with an average duration of about one hour. All interviews were video-recorded and transcribed.

The field observations followed the unstructured and non-participatory approach. Unstructured observation is suitable for studying deeply a phenomenon, recognising the value of context and the collaborative development of knowledge between the researcher and the study subject (Mulhall, 2003). A researcher followed the volunteers during 2019 and 2021 (excluding lockdowns) delivering the martial arts therapy during the observation. In line with the non-participatory approach, the researcher acted as an outside actor (Busetto *et al.*, 2020) and took extensive field notes to gather additional information for integrating the data collected through diaries and in-depth interviews (McCull-Kennedy *et al.*, 2012). Observation is able to analyse the whole social setting and context in which the activity is performed (Mulhall, 2003).

### *Data analysis*

Diaries, in-depth interview transcriptions, and observation notes were analysed using interpretative thematic analysis (Lipkin and Heinonen, 2022), a qualitative method widely adopted to detect and interpret key concepts following a structured approach (King, 2004; Renzi *et al.*, 2022). We implemented Braun and Clarke (2006)'s six phases (Figure 1). First (*Familiarising with data*), data were set for the analysis. Second (*Generating initial codes*), the data were imported into MAXQDA Analytics 2020 software, and the recurring topics were counted and coded to summarise and simplify the data collected (Renzi *et al.*, 2022). In the third phase (*Searching for themes*), the 24 identified codes were analysed and grouped into themes (Braun and Clarke, 2006; Charmaz, 2001) representing the co-creation activities and the related outcomes. Then, comparing the detected co-creation activities with the relevant literature (patients' co-creation activities summarised in Table 1) and related outcomes, connection and shared meaning were detected to address the research questions (Braun and Clarke, 2006; Charmaz, 2001). To guarantee the study rigour, multiple researchers carried out the second and third phases separately (Lipkin and Heinonen, 2022; Di Pietro *et al.*, 2018; Côté and Turgeon, 2005; Lincoln and Guba, 1985). Fourth (*Reviewing Themes*), codes and consequent themes were jointly reviewed to verify the rigour and ensure exhaustiveness and consistency with the research objective. In the fifth phase (*Defining and naming themes*), names and meanings of the volunteer co-creation activities and outcomes were released. The process ended with a report on the findings and interpretation (*Producing a Report*). Quotes from participants were reported to explain the results (King, 2004).

### **Results**

The analysis of KKC volunteering activities delivered within Italian hospitals allowed the identification of multiple categories of actors involved in the co-creation process: volunteers, hospital staff (i.e. physicians, nurses, administrative and teachers), patients and family members, healthcare service providers (HSPs) and volunteering association. The martial arts therapists (MAT) offer young patients different kinds of activities. Physical activity (when



**Figure 1.**  
Steps in data analysis

**Source(s):** Created by authors



feasible) serves the dual purpose of facilitating light movement among inpatients and giving them a chance to direct anger and sadness against appropriate hitters. Psychological exercises, including various techniques such as breathing, mindfulness and meditation, provide the patient with tools to manage the pain and stress associated with illness and treatment. Each actor contributes to the value co-creation process by sharing resources and combining them with others. Table 3 shows the actors engaged in the HSE, their shared resources and the interaction among actors.

Actor	Resources	Interaction
Volunteer (KKC Italia)	<ul style="list-style-type: none"> <li>Free time</li> <li>Skills, knowledge and competences (martial arts, breaths exercise and meditation)</li> <li>Emotional commitment</li> <li>Personal history (background)</li> </ul>	<ul style="list-style-type: none"> <li>Patients</li> <li>Family members</li> <li>Volunteering association</li> <li>Hospital Staff</li> <li>Volunteers of other associations</li> </ul>
Volunteering association (KKC Italia)	<ul style="list-style-type: none"> <li>KKC volunteers</li> <li>Material for volunteers (uniforms, taps, mats)</li> <li>Material for patients (uniforms, belts, gadgets)</li> <li>Founds for supporting the volunteering activities</li> <li>Training and updating courses</li> <li>Agreement with hospitals/ healthcare structures</li> </ul>	<ul style="list-style-type: none"> <li>Volunteers</li> <li>HSPs</li> <li>Hospital Staff</li> <li>Patients and family members (interaction limited to a few particular situations)</li> </ul>
Hospital Staff	<ul style="list-style-type: none"> <li>Time for the treatment and the care of the patients</li> <li>Professional skills and competences</li> <li>Time for the management of family members</li> <li>Emotional management</li> </ul>	<ul style="list-style-type: none"> <li>Patients</li> <li>Family members</li> <li>Volunteers (in some circumstances)</li> </ul>
Healthcare Service Provider	<ul style="list-style-type: none"> <li>Availability of physical space inside the building</li> <li>Availability of time slots for volunteer activities</li> <li>Personal safety devices</li> <li>Psychological support for volunteers (only in one structure)</li> <li>Rules and guideline</li> </ul>	<ul style="list-style-type: none"> <li>Volunteering association</li> <li>Medical/no medical staff</li> </ul>
Patients (young oncology patients)	<ul style="list-style-type: none"> <li>Time to dedicate to martial arts therapy</li> <li>Attention and commitment</li> <li>Emotional involvement</li> <li>Willingness to learn and share what they learnt</li> <li>Desire for distraction</li> </ul>	<ul style="list-style-type: none"> <li>Volunteers</li> <li>Family members</li> <li>Other patients and their families</li> <li>Hospital Staff</li> <li>Volunteers of other associations</li> </ul>
Family members (i.e. parents, grandparents uncles, brothers and sisters)	<ul style="list-style-type: none"> <li>Acceptance/approval</li> <li>Emotional support and endorsement</li> <li>Availability to be directly involved in martial arts therapy activities</li> <li>Availability of time</li> </ul>	<ul style="list-style-type: none"> <li>Patients</li> <li>Volunteers</li> <li>Medical/non-medical staff</li> <li>Volunteers of other associations</li> <li>Other patients and their family members</li> </ul>

Source(s): Created by authors

**Table 3.** Actors engaged in the HSE, resources and interaction

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When considering why people become volunteers, the most common response is based on personal experience, such as having a relative with a severe chronic illness or having experienced one in the past. Subsequently, there is a noticeable urge to feel valuable to society and other people, as well as a need to add significance to their own lives. These final two reasons appear to be connected to a time of crisis or suffering that the individual went through. A general attitude of empathy and the desire for personal fulfilment is further enablers.

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#### *Value co-creation activities of volunteering in HSE*

The data analysis enabled the identification of seven key value co-creation activities characterising the volunteering activity provided as Martial Arts Therapy in the hospitals: *connecting with others, co-production, co-responsibility, combining complementary therapies, compliance with requirements, empowering and co-learning* (Table 4).

The co-creation activity *Connecting with others* refers to the interactions that volunteers have to develop and manage with other ecosystem actors. The volunteer must possess specific characteristics that allow them to perform the activities in the best way and enable the establishment of relationships such as sensitivity, the ability to understand the delicate situation in which they operate, to be a companion and to provide a distraction for hospitalised young patients with limited contact with the outside world.

Our role is to be able to communicate with children who sometimes do not want to communicate at all and are even aggressive. Our task is to propose ourselves every time in a way that is as confidential as possible. (E.)

First, the volunteer tries to create a connection with the patient to gain trust for starting the activities (i.e. physical activities, meditation, play, etc.) without pushing too hard for participation. At the same time, the experience helps the patient build relationships and connect with other actors.

Sometimes I start by talking about cartoons, other times I try to get involved in the activities they are doing alone (drawing, colouring, watching a video . . .). It is crucial to find the right key to open the door and establish a channel of interaction with the patient. (R.)

Volunteers create a connection with family members who actively participate in the volunteer's sessions or become facilitators in establishing a relationship between volunteer and patient. Sometimes, it may occur that the volunteer has to handle parents that are worried about the vulnerable condition of their children and therefore refuse any kind of activity.

The parent is the first one who would need support. Even just talking to us. He/she can give us a lot of information not only about the psycho-physical state of the patient but also about the parent condition and the family situation that is greatly impacted in these situations. Families are severely challenged, so parents are both our targets and our conduit. (T.)

The volunteer also needs to interact with medical staff to gather information about patients and their health conditions. Volunteers can have connections with other volunteers to understand how to alternate or (in a few cases) to collaborate in "multidisciplinary" activities. Less frequently, they encounter teachers who can share information about patients, or psychologists who can provide support to avoid burnout.

The *Co-production* activity explains that volunteers provide input to the medical staff and families to redesign the patient's care program by considering individual needs. Indeed, they propose to combine traditional therapy with complementary care. Volunteers bring their specific resources, such as professional skills and time, to teach young patients how to use relaxation techniques during hospitalisation to help patients cope with the medical treatments.

Volunteer's value co-creation activities	Codes	Description
Connecting with others	Family members: complicity with the volunteer, reluctant, participate in activities Patients: relationship building, play, trust Staff: collaboration, sharing information, support/obstacles Volunteers of other associations: shift schedule, collaboration Volunteer's characteristics: understanding, be a companion, provide distraction/relief, patience	Volunteers establish connections with all parties involved. To carry out the activities and achieve the desired results they interact with the ecosystem's multiple actors
Co-production	Volunteer: time, emotions, professional skills Patient: coping strategies during treatment	Volunteers who carry out the activities co-produce with patients, families, and medical staff, by being engaged in the redesign of the treatment and performing complementary care
Co-responsibility	Patients: disease and emotion management Family members: transfer of patient responsibility to volunteers, participation Staff: patient and family management COVID-19 consequences	During the activities, volunteers take responsibility for managing patients' emotions and time They assist in patient care and address related issues, providing support to both families and medical staff during hospitalisation
Combining complementary therapies	Patients; playing, coping with negative emotions, stress reduction, pain management Medical staff: patients' predisposition to traditional care	Volunteers encourage patients (and families) to incorporate both traditional therapy and alternative methods, which include physical and mental exercises. This type of care is not directly linked to the specific disease but assists in managing the illness and pain
Compliance with requirements	Covid-19 rules Training and coaching Voluntary association rules HSP rules Families' rules	Volunteers accept the regulations established by the HSP, families and voluntary associations regarding how to manage patients and the use of the spaces
Empowering	Family: motivation and stress reduction Patient: pain alleviation, distraction, spiritual and mental healing, reaction to illness Volunteers: internal transformation	Volunteers motivate and empower patients and families facing illness, demonstrating that they can react positively to whatever happens. They teach how to embrace inner strength and provide patients and families with a sense of purpose to move forward. Simultaneously, volunteers undergo an internal transformation
Co-learning	Learning process The patient becomes "teacher"	Volunteers teach patients and family members how to become ambassadors of the techniques they have learnt

**Table 4.**  
Volunteer co-creation activities in HSEs

**Source(s):** Created by authors

Certainly, for a hospital, having a child who is slightly relaxed, less aggressive towards the medical staff and readier to take therapy is a benefit. (F.)

The volunteers collaborate with the medical staff, bringing their time, constancy and skills. They also have the ability to be empathetic and are willing to accept the emotional baggage that came from

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the experience, whether it is positive, negative or indifferent, or even the anger from child and parents. (S.)

The theme *Co-responsibility* highlights that volunteers indirectly collaborate and support doctors/nurses in patient management. Indeed, volunteers, physicians, nurses and families share the responsibility for patients' psychological and emotional well-being during the activities. Often, volunteering activities allow the parent(s) to take a moment off. They can go out for coffee or relax by entrusting the emotional handling of the relative to the volunteer's care. Other times, family members, supported by the volunteers, can decide to participate in the activity with his/her child, feeling the need to do something positive together. Moreover, volunteering allows the physicians to deal only with medical treatment, leaving the management of emotions, anger and stress to another actor.

I think the main benefit for parents is to have a moment where they are not responsible for their child's emotional state because someone else is trying to manage it. Sometimes they do the same activities as their children participating in martial arts therapy; in this way, they have a moment of fun and can play, and for adults, it's not something that happens frequently. (S.)

Because the world of healthcare is truly under-staffed, the role of the volunteer becomes crucial in the specific operation of the healthcare facility. And this benefits the healthcare system, the hospital itself, the families and therefore the community (F.)

This aspect became more evident during the COVID-19 pandemic and lockdowns when volunteers were forbidden access to hospital wards. Respondents stated that hospital staff and parents suffered from lacking volunteers during lockdowns.

After the first stop of the activities due to the Covid-19 pandemic, we were greeted with great affection by patients and families but especially by doctors and nurses. They told us about the difficulties they had faced in managing children for 24 hours a day, not only for the care but also to provide emotional support. (S.)

*Combining complementary therapies* shows that volunteers encourage patients to combine alternative therapies (such as meditation, physical exercises and breathing) with traditional care. Therefore, therapeutic activities not related to the specific disease are carried out, helping the patient and family to manage the treatments and the staff to find a more collaborative patient. The volunteer carries out the activities in agreement with the patient, considering his physical and psychological conditions.

The hospital is an environment extremely saturated with pain and therefore through the martial arts approach the patient can have an impetus to take on a different consciousness towards his/her illness. Facing a small obstacle every day in order to increase his/her competence and through this find himself/herself naturally transformed. (E.)

The theme *Compliance with requirements* describes that volunteers (and other actors) have to accept the rules, norms and habits established together with the HSP, the voluntary association and the families. These rules define the correct way to manage spaces and patients but also protect volunteers from the risk of burnout.

Volunteering in hospitals cannot be disconnected from a hospital hierarchy that has to authorize you to do activities. We as volunteers must still have an interface in the hospital. Then there are all the problems regarding privacy. We only know the child's name; we don't know the surname for example. (G.)

The volunteer attends training courses to understand their role, how to carry out activities, how to relate to and manage the actors in the ecosystem (doctors/nurses, patients and relatives), the procedure to follow, and the rules regarding safety and privacy. New volunteers are required to undergo an initial shadowing period with more experienced

volunteers. The volunteer has to sanitise and change clothes, and to minimise the risk of contamination. These procedures became even more restrictive with the COVID-19 pandemic. Before entering patients' rooms, on-duty volunteers must interface with nurses/doctor coordinators to gather information on the patients in the wards. Sometimes, it is necessary to coordinate with other volunteer associations to share rooms or to create collaborations.

So, we get ready with our uniforms, put on our shoes and gloves, mask, and kimono, and we go right into the ward and check in with doctors and nurses, who explain to us where we can go, how to behave, and we organize ourselves accordingly. We disinfect our hands; we get ready and then we go and meet the children who can receive us. (D.)

We are in a hospital setting and must strictly adhere to the association's instructions and diktats, starting from the simplest things such as do not go to the hospital and take photos because it is absolutely forbidden. (F.)

*Empowering* co-creation activities displays the change experienced by the actors. Positive changes in family members and patients were observed. Volunteering activities allow relatives to experience a moment of happiness together with their child and to feel relieved in seeing the patient smiling and doing "normal" activities, determining a positive outlook toward the hospitalisation. Patients feel fulfilled because volunteers provide goals to achieve, motivate and force them to focus only on what they are doing by putting aside their condition and negativity.

So, we give patients this chance to find his/her strength to believe in himself/herself and if all goes well in the right direction to give them a goal, and therefore a motivation, something that makes you get out of bed in the morning and face the day with a bit of a charge. (M.)

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The volunteer concurrently undergoes a personal transformation during and after performing the volunteering. Conducting Martial Arts Therapy stimulates internal reflection, and as a result of the encounters with patients and family members, they develop a feeling of well-being and a charge in facing life. Individuals feel good about themselves, drained of energy but at the same time strengthened by the experience.

I feel like when I was a child doing confession, cleansed of all the negative things. There's this kind of inner washing, being in a place like that and doing these activities, it gives you the charge and the feeling that you've done something extraordinary even if you actually went to see a child and proposed a simple activity. (A.)

The change has an impact on the volunteer's perception of the outside world as well. After volunteering, participants seem to appreciate their life more.

When you enter such a place you realize what is really important. What you may have been placing more emphasis on than it is placed lower and where it deserves. Volunteering has made me simplify my life. I think it has given me more benefits than anything else. (T.)

Finally, *Co-learning* themes explain the continuous learning process that is generated by the volunteer's collaboration with patients and family members. The knowledge acquired by patients can be passed on to other patients even in the absence of the volunteers, creating a beneficial circle.

I was very excited hearing the story of a 17-year-old boy who told me - yesterday I was at school in the ward and a boy started acting crazy because they had to give him a shot. So, I told him I know a martial arts teacher and she taught me breathing and when I do it, I feel better. We all started doing this breathing activity and then we opened our eyes, feeling better and the child then got the shot. (T.)

#### *Volunteering value co-creation outcomes*

Finally, the authors identified the outcomes of the volunteers' value co-creation activities considering each involved actor: patients (*self-acceptance, fun and distraction and pain extraction*), families (*relaxation and motivation*), volunteers (*satisfaction and realisation, empathy, personal growth and burnout*) hospital staff (*relief, and work-related stress reduction, experience*) and HSPs (*re-humanisation of service environment and sustainable patients' management*) (Table 5).

The respondents state that the children feel good and can express emotions and feelings. Patients are often angry because they do not understand the situation they are experiencing, and Martial Arts Therapy helps to lower the stress, be more peaceful and master the disease (*Self-acceptance*). Moreover, the activities allow the young patients to grow apart from the treatment routine and hospitalisation, have fun, and have a moment of joy, happiness and relaxation (*Happiness and joy*). There may also be benefits on a physical level, as patients do slight physical activity and get out of their beds. Additionally, patients acquire skills to manage pain during treatments and are able to share what they have learnt with other vulnerable actors (*Pain extraction and purpose identification*). Considering family members, volunteering grants a moment of relief. They don't have to manage the young patients' emotional state, which allows them to take a few minutes to take care of themselves (*Relax*). Moreover, they can participate in the activity together with patients with positive effects on the way in which they deal with the disease (*Motivation*). Volunteers feel satisfied with their work, experience an increase in their self-esteem and become able to manage their emotional states (*Satisfaction and realisation*). Similarly, they feel enriched by the encounter with other actors perceiving a personal development (*Personal growth*). Volunteers encounter very difficult realities, and this determines a change in the way they relate to others (*Empathy*). Operating in hospital departments is hard and complex, especially when the patients are children. It can happen that sometimes the patient cannot win the battle and these failures can weigh heavily on the volunteer mind. Hence, a negative outcome can occur when the volunteer experiences an inability to cope with negative emotions and feelings (*Burnout*). As pointed out, the hospital staff also take advantage of volunteers' presence and value co-creation activities. They help nurses and physicians manage the patients, thus easing their workload and allowing them to use their time better (*Relief and work-related stress reduction*). Volunteering activities help to lighten the heavy air in the hospital, and thanks to the techniques they teach and the distraction they provide, the patient seems to be less nervous and more responsive to medical treatments, and this has positive effects on the hospital staff motivation (*Experience - cognitive and behavioural response*). Even the HSP benefits from volunteering because it helps in creating a more transformative environment and in allowing a sustainable service provision (*Re-humanisation of the service environment, Sustainable patient management*).

#### **Findings and discussion**

The present research is among the first empirical studies highlighting the value co-creation contribution of volunteer actors to the HSE. By examining the volunteer actors within HSEs,

Actor	Outcomes (volunteer's perspective)	Description	Quotes
Patients	Self-acceptance	Volunteers and martial arts practices support patients in coping with their emotions and feelings	<p><i>"Hospitalised children are bored, afraid, angry and sometimes even aggressive. Punching the hitter helps patients kick out these negative emotions and turn them into purposeful attitudes."</i> (E.)</p> <p><i>"... helps the mind to cope with critical moments..."</i> (G.)</p>
	Fun and distraction	Participation in volunteers' activities allows patients to be distracted, have fun, and get out of their daily routine	<p><i>"Alessandro began to laugh and seemed not to want to stop playing this game, his shots in the meantime had become so powerful that the shooter hit Roberto and me in sequence. Then he wanted to use the striker as a sword and threw himself into an epic battle".</i> (Diaries)</p>
	Pain extraction and purpose identification	Martial art therapy empowers patients by giving them tools they can use to overcome pain even in the absence of the volunteer. It also provides a purpose that transforms the patients into ambassadors of the techniques learnt	<p><i>"Martial Arts techniques, such as breathing and meditation, can stimulate stronger determination and greater endurance in the young patient, helping him, for instance, in managing the fear of the needle."</i> (A.)</p> <p><i>"It means learning to embrace one's strength through breathing, pushing away pain by finding inner peace and having a purpose to move forward, positively influencing the people around and the world"</i> (F.)</p>
Family members	Relaxation	Volunteering gives relatives the opportunity to briefly transfer patient responsibility to the volunteer	<p><i>"In the final meditation, aimed at removing the bad thoughts, even the mother falls asleep finding for a moment relieved".</i> (Diaries)</p> <p><i>"They are the first to need support, distraction, listening and understanding for the experience they live"</i> (T.)</p> <p><i>"... for a few minutes they do not feel responsible for their child's emotional state."</i> (S.)</p>
	Motivation	Observing patients engage in volunteering activities motivates relatives to cope with the disease	<p><i>"When they see their child relaxing and falling asleep after days of tension ... you can see deep gratitude in their eyes..."</i> (S.)</p>

**Table 5.** Outcomes generated by volunteer engagement in the HSE  
(continued)

Actor	Outcomes (volunteer's perspective)	Description	Quotes
Volunteer	Satisfaction and realisation	Engaging in these activities brings a sense of satisfaction and fulfilment to volunteers	<i>"I like to see the father's gloomy face lie down slowly and also the smile of the son". (Diaries)</i>
	Empathy	As a result of the experience, volunteers perceive an increase in their level of empathy	<i>"... you feel more sensitive to the needs of others, especially people in difficulty." (D)</i>
	Personal growth	Volunteering and managing difficult relationships with other actors contribute to enhancing volunteers' sense of self, providing better awareness of their abilities	<i>"... Knowing that you are able to do something for those in difficulty helps to increase self-esteem by providing a better perception of yourself" (S)</i> <i>"The activity makes you feel purified, and that you have done something extraordinary, beautiful and fun ... all these sensations make you feel good and give you the energy to face the day and the life." (A)</i>
	Burnout (negative)	Volunteers can experience negative feelings influenced by the inability to manage the strong emotions connected with patients'/ families' relationships	<i>"Feelings are very strong and sometimes it is better to take breaks to overcome the negative feelings that you experience during volunteer activities". (G.)</i> <i>"A risk is the occurrence of personal projections while performing activities on the ward. Projections are dangerous for the patient but above all they are dangerous for the volunteer's well-being." (R)</i>
Hospital staff	Relief and work-related stress reduction	Sharing the responsibility for patient management allows medical staff to free up resources, such as time, reducing the stress associated with their work and providing a sense of relaxation	<i>"Doctors and nurses are relieved by the presence of volunteers, because they feel supported in the emotional management of patients and their families" (S)</i> <i>"Maybe the staff relaxes a bit when we are there. They have a moment of rest because they know that at that moment, they pass the management of the children to people who have specific skills" (P.)</i>
	Experience (cognitive and behavioural response)	After interacting with the volunteer, patients and families are more willing to undergo treatments. This facilitates the work of the medical staff, making their activities more effective and efficient	<i>"For the healthcare staff, our presence is definitely a help, we are a support, someone who distracts the child from a negative situation at that moment, who calms the child down and lets him or her vent their anger is a huge help and allows care to be managed more effectively." (A)</i>

Table 5.

(continued)



Actor	Outcomes (volunteer's perspective)	Description	Quotes
Healthcare Service Provider	Re-humanisation of the service environment	Development of a more relaxing and positive work environment where physicians, nurses and administrative staff can operate	<i>"The MAT with their coloured uniforms and their smiles help to create a lighter environment, to break the rigid rules of the ward, lightning the difficult and heavy days of patients, families, doctors and nurses"</i> (G.)
	Sustainable Patients Management	Free support and introduction of new resources into the system that allow for better management of long-term care	<i>"Considering that health is a sector that works under staff, the role of the volunteer is also an important figure integrated in the operations of the health facility. And this clearly benefits hospital, patients, families and therefore the community".</i> (F.)

Source(s): Created by authors

Table 5.

the employed resources, and how they are integrated with other actors, it was possible to pinpoint the co-creation activities produced (RQ1) and the well-being outcomes generated for each actor (RQ2).

The comparison of empirical findings and literature enables the detection of seven value co-creation activities triggered by the integration of volunteers in the HSE, showing new insights and similarities with the previous studies (Table 6). In particular, the analysis revealed two new co-creation activities specifically connected with volunteers: co-responsibility and empowerment. The other five detected categories coincide with those already recognised in the healthcare service literature concerning other actors: Connecting with others, Co-production, Combining complementary therapies and Co-learning.

Co-creation refers to the customers' engagement in reshaping services (McCull-Kennedy *et al.*, 2012; Sweeney *et al.*, 2015). In the healthcare setting, it involves multiple actors in redesigning care programmes, assisting in service delivery and therapy administration, adhering to doctor's prescriptions and combining complementary therapies (Lam and Bianchi, 2019). The results highlight that the interaction with others represents a form of

Volunteer co-creation activities	Integration between literature and study contribution
Connecting with others	Adapted from the literature (McCull-Kennedy <i>et al.</i> , 2012; Sweeney <i>et al.</i> , 2015; Lam and Bianchi, 2019)
Co-production	Adapted from the literature (McCull-Kennedy <i>et al.</i> , 2012; Sweeney <i>et al.</i> , 2015; Lam and Bianchi, 2019)
Co-responsibility	New category detected through the empirical analysis
Combining complementary therapies	Adapted from the literature (McCull-Kennedy <i>et al.</i> , 2012; Lam and Bianchi, 2019)
Compliance with requirements	Adapted from the literature (McCull-Kennedy <i>et al.</i> , 2012; Lam and Bianchi, 2019; Sweeney <i>et al.</i> , 2015)
Empowering	A new category detected through the empirical analysis
Co-learning	Adapted from the literature (McCull-Kennedy <i>et al.</i> , 2012; Lam and Bianchi, 2019)

Source(s): Created by authors

Table 6.  
Categories of co-creation activities performed by volunteers in HSEs

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instrumental and emotional support that can lead to an increase in the patient's and family's well-being (Duhachek, 2005; Blake-Mortimer *et al.*, 1999; Lam and Bianchi, 2019; Sweeney *et al.*, 2015). All the actors contribute to set norms, rules and habits influencing the institutional arrangement of the HSE: doctors, nurses and other staff (Sweeney *et al.*, 2015); families (Lam and Bianchi, 2019); patients, volunteering associations and volunteers. As recognised by several authors (i.e. Berben *et al.*, 2012; Sweeney *et al.*, 2015), non-compliance can have negative effects on healthcare costs and patient health, while responsible behaviour affects patients' participation, his/her perceived value (Yi and Gong, 2013), sense of achievement and satisfaction with the service (Dellande *et al.*, 2004). Moreover, sharing information among actors fosters a virtuous circle in which the acquired knowledge can be passed to other actors. Thus, this co-learning can enhance satisfaction, quality of life and the capacity to master the illness (Ennew and Binks, 1999; McWilliam *et al.*, 2000; Michie *et al.*, 2003; Lam and Bianchi, 2019). Volunteer's presence allows families and hospital staff to share the responsibility of the time and emotional management of the patient. Volunteers' activities help in developing a fighting and optimistic spirit, which is useful for coping with stressful situations and managing emotions (Sweeney *et al.*, 2015; Duhachek, 2005; Fagerlind *et al.*, 2010; Cordova *et al.*, 2003). A positive attitude, emotional involvement and acceptance of the situation are practices that may have positive effects on patients' well-being (Sweeney *et al.*, 2015). The empirical findings revealed a volunteer's ability to support the empowerment of patients and families. This is consistent with the idea that the aid from the ecosystem actors helps the patient create a vision of the future and manage frustration (Lam and Bianchi, 2019). At the same time, this study contributes by empirically describing the epistemological change experienced by volunteers identified by Mulder *et al.* (2015), namely the transformation of their perception and view of the world.

Moreover, the present study contributes to the existing literature by highlighting the transformative impact of volunteering activities performed in hospitals on the various actors (patients, families, hospital staff, HSP and volunteers). Previous investigations in healthcare services demonstrated that there is a positive connection between value co-creation and well-being (i.e. Lam and Bianchi, 2019; McColl-Kennedy *et al.*, 2012; Sweeney *et al.*, 2015). The current results show that the volunteers' value co-creation activities performed by the volunteers affect the well-being outcomes of the HSP actors through various dimensions. Some of them are already recognised in the previous literature as well-being-related dimensions - self-acceptance, happiness and joy (patient), motivation (family), satisfaction and realisation, self-esteem and personal growth (volunteer) - while others are new outcomes categories that emerged from the data analysis - pain extraction and purpose identification (patient), relax (families), burnout and empathy (volunteers), experience and relief and work-related stress reduction (hospital staff), re-humanisation of service environment and sustainable patient management (HSPs) (see Table 7).

Considering patients, volunteering activities support them in self-accepting the hospitalisation, meaning the development of a positive attitude toward oneself (Ryff, 1989; Ryff and Keyes, 1995; Lam and Bianchi, 2019); the value co-creation allows them to develop a sense of happiness and joy interpreted as a state of feeling good (Anderson *et al.*, 2013); volunteers teach to the patients techniques to fight the pain (mental and physical) and give them purpose in life pushing individuals in believing that they can react and go beyond the illness. Referring to family members, the value co-creation activities performed by volunteers allow to see the young patient do something "normal", which results in giving parents/uncles/grandparents the motivation to face the difficulties (Ryff, 1989; Ryff and Keyes, 1995; Lam and Bianchi, 2019). Moreover, sharing the patient's emotional management with someone else gave them a moment of relief.

Volunteers experience a personal transformation through participation in the activities, indeed they change how they see the world, and in helping others in need, individuals feel

Actor	Outcomes (volunteer's perspective)	References
Patients	Self-acceptance	Ryff (1989), Ryff and Keyes (1995), Lam and Bianchi (2019)
	Happiness and joy	Anderson <i>et al.</i> (2013)
Family members	Pain extraction and purpose identification	A new category extracted from the qualitative analysis
	Relaxation	A new category extracted from the qualitative analysis
	Motivation	Ryff (1989), Ryff and Keyes (1995), Lam and Bianchi (2019)
Volunteer	Satisfaction and realisation	Mulder <i>et al.</i> (2015)
	Empathy	A new category extracted from the qualitative analysis
	Personal growth	Ryff (1989), Ryff and Keyes (1995), Lam and Bianchi (2019)
	Burnout (negative)	A new category extracted from the qualitative analysis
Hospital staff	Relief and work-related stress reduction	A new category extracted from the qualitative analysis
	Experience (cognitive and behavioural response)	A new category extracted from the qualitative analysis
Healthcare Service Provider	Re-humanisation of service environment	A new category extracted from the qualitative analysis
	Sustainable patient management	A new category extracted from the qualitative analysis

**Table 7.**  
Actor's outcomes deriving from the volunteer activity

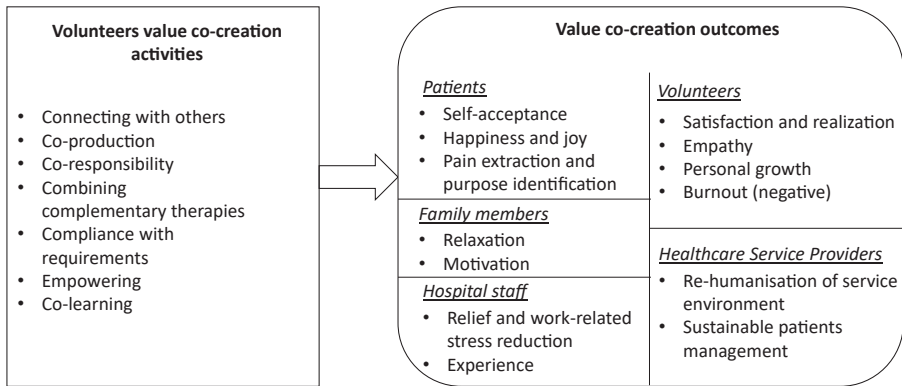
**Source(s):** Created by authors

satisfied (Mulder *et al.*, 2015). Volunteers experience personal growth by improving their lives and being open to new experiences (Ryff, 1989; Ryff and Keyes, 1995; Lam and Bianchi, 2019). Moreover, they get in touch with other people's pain, developing more empathy. However, at the same time, volunteers can experience burnout, which occurs when they cannot cope with the negative feelings and the suffering.

Benefits can be highlighted for the hospital staff, too. The scarcity of resources represents one of the main problems in the healthcare sector (Denier, 2008). It can worsen the situation due to different factors such as ageing populations, pandemics and chronic diseases (Sasso *et al.*, 2019). Therefore, staff is subjected to severe stress, and volunteers help them manage the patient's emotional state and fill their time with positive experiences, creating a place where it is easier to work.

Finally, the positive impacts of volunteering co-creation activities on the actor's well-being determined benefits for HSP. Specifically, they allow for building an attractive work environment and more sustainable management of the patient's hospitalisation, helping put humanity at the centre of the service (Oben, 2020).

To conclude, the paper's contribution lies in explaining how a specific actor (volunteer) performs value co-creation activities, deepening the understanding of value-in-social context (Edvardsson *et al.*, 2011). The dynamics originated by the collaboration of the volunteer with the other actors and the consequent resource integration processes allow identifying specific co-creation activities. Moreover, the research demonstrates the transformative potential of the volunteer's value co-creation activities, showing their effects on the well-being of the involved actors and contributing to creating a more resilient HSE. Accordingly, the research contributes to the existing literature by presenting the framework of volunteer value co-creation activities and outcomes in HSE, responding to RQ1 and RQ2 (Figure 2). The volunteer framework responds to the call of Brodie *et al.* (2021)



Source(s): Created by authors

Figure 2. Framework of volunteers' value co-creation activities and outcomes in HSE

to show how new resources and practices enhance the resource density of the HSE, generating well-being outcomes.

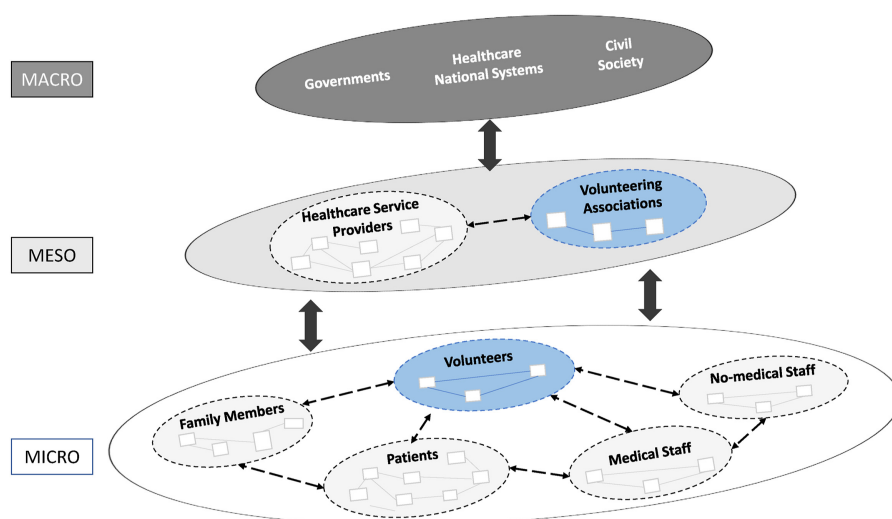
### Theoretical contributions and implications

Through empirical research on the volunteer's contribution to the healthcare services, the current study reveals significant findings that inform service ecosystem literature. The research allows recognising the volunteer as a keystone actor, which complements the HSE activities through its resources and co-creation activities and enhances the resilience of the ecosystem (Brodie *et al.*, 2021). Zooming out, the volunteering activities performed inside HSPs can be described as a nested ecosystem (Vargo, 2021; Spohrer *et al.*, 2012), which may be understood as resulting "from interactions within complex and dynamic contexts" (Vargo *et al.*, 2023, p. 51), as is the healthcare case. The analysis has gone beyond the dyadic relation between the customer/patient and the firm, addressing other actors in the network. Previous studies have investigated the value co-creation between patients and service providers (Lam and Bianchi, 2019). However, as identified in the literature, patients/consumers can co-create value by integrating resources beyond the traditional healthcare context with different sources, which can be private (i.e. family), market-facing (i.e. firms, alternative medicine practitioners) or public (i.e. government) (Vargo and Lusch, 2011; McColl-Kennedy *et al.*, 2012). Some authors have paid attention to the role of other actors in the ecosystem (i.e. family - Lam and Bianchi, 2019). However, few empirical researchers have analysed the volunteers' role in co-creating value in the HSE and the effect on actors' well-being, and the current study addresses this gap.

In this regard, starting from the multidimensional representation of the healthcare ecosystem proposed by Beirão *et al.* (2017), the findings in this study allow the depiction of the healthcare ecosystem after the introduction of the volunteer actor by considering the three levels of aggregation: micro-, meso- and macro-levels (Figure 3).

At the micro-level, the actor volunteer is included among the individual actors (patients, family members, health professionals and no medical staff). This level focuses on individuals (Meynhardt *et al.*, 2016; Brodie *et al.*, 2021). The actors' integration creates a direct and reciprocal service-for-service exchange effect (Beirão *et al.*, 2017) generating value-in-social-context (Edvardsson *et al.*, 2011).

The meso-level embodies aggregates of actors and their interactions (Frow *et al.*, 2019), namely HSPs (e.g. hospitals and clinics) and health support organisations (Beirão *et al.*, 2017),



Source(s): Created by authors

**Figure 3.** Multidimensional representation of the healthcare service ecosystem considering the volunteer actor

including the volunteering association that makes possible the integration of volunteer practices within the HSE and, accordingly, the co-creation activities. This level interconnects micro- and macro-level (Meynhardt *et al.*, 2016). Indeed, the macro-level includes formal organisations leading the changes by laws, norms, and rules from and for the other layers (Letaifa *et al.*, 2016). In HSEs, the macro-level includes government and healthcare authorities involved in defining national health policies (Beirão *et al.*, 2017; Brodie *et al.*, 2021) and civil society.

The study introduces a wider and more comprehensive view of value co-creation by drawing on the co-creation activities generated by the volunteers. The analysis revealed that the volunteer actor enables seven value co-creation categories in the HSE, where two are completely new in the literature (co-responsibility and empowering). At the micro-level, volunteer integration directly affects the ecosystem by breaking the routine dynamics (Mele *et al.*, 2023) and generating new outcomes and interaction with and among engaged actors. This also indirectly affects the HSE by allowing the repurposing of available resources. The repurpose concept is well-known in the circular economy literature. It refers to the strategy of using discarded products (or parts) in new products (Kirchherr *et al.*, 2017; Potting *et al.*, 2017) and services. Based on this definition and in light of the results, we propose a reconceptualisation of the repurpose concept in service ecosystem literature. We define it as the utilisation of previously untapped resources to develop new ecosystem activities and services that can generate additional value for the HSE. The empirical findings show that volunteers' engagement repurposes existing resources from other actors, including doctors, nurses and families leading to learning and adaptation processes within the HSE. In the case of co-responsibility, for example, doctors having to spend less time on the emotional management of patients are able to use the "unlock" time to focus on the care pathway or on other activities (i.e. development of new projects, increase the communication with the patient's family, take care of more patients). Similarly, nurses could repurpose the "freed up" time in other endeavours that benefit the ecosystem as a whole (i.e. enhancing the quality of their work, starting family support programs, and streamlining the patient management process). Considering the empowerment, patients and family members are more relaxed and

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cooperative through the volunteer activity, requiring less attention from the physicians and facilitating more productive collaboration with the nurses, who can then use those resources for other value-adding activities within the HSE. It is not a coincidence that the importance of volunteer activity was strongly manifested during the Covid crisis. Indeed, the volunteers' absence from the hospitals emphasised the scarcity of resources and determined the difficulty of hospital staff to manage patients alone, jeopardising the viability of the ecosystem. Similarly, the volunteer, through combining complementary therapies, can enhance patients' (and family members') experience and reduce the resources and engagement requested from the HSP. Indeed, the productivity of the HSE is negatively affected by the presence of difficulties and criticalities in the patients' (and families') experience (Gallan *et al.*, 2019). By enhancing those experiences, the ecosystem may repurpose and use the available resources more efficiently and effectively.

In this frame, the study reveals that due to the direct and indirect effects resulting from the volunteer introduction, the existing integration dynamics are broken and transformed, producing new co-creation activities and repurposing the available resources.

The present research shows how changes in actors and resource integration generate adaptive behaviour (Barile *et al.*, 2016) in the ecosystem throughout value co-creation, confirming tight connections among the ecosystem levels (Letaifa *et al.*, 2016). The volunteer generates a reconfiguration of the ecosystem at the micro-level that produces a repurposing of the existing resources even at the meso-level (HSP). Thus, by identifying this relationship, the paper contributes to partially explaining how self-adjustment occurs in the service ecosystem and enhances the viability of the HSE. As recognised, the self-adjustment generates value-in-use (Wieland *et al.*, 2016) and allows the ecosystem to dynamically cope with changes across the different nested levels (Frow *et al.*, 2019), but few contributions attempt to explain how it occurs. The dynamic nature of the self-adjustment concept is poorly understood and rarely analysed (Mele *et al.*, 2023), especially when adopting the service ecosystem lens. Against this backdrop, the present research complements extant literature, providing a better understanding of the self-adjustment concept in the service ecosystem.

Furthermore, the study reveals that, through the self-adjustment resulting from the volunteer value co-creation framework, the outcomes for the actors involved are enhanced at the micro-, meso-, and macro-level, supporting the theoretical foundation that self-adjustment reinforces the well-being and resilience of a system (Brodie *et al.*, 2021). The connection between micro-, meso- and macro-levels of well-being and how it contributes to the whole well-being is still understudied and more research is required (Leo *et al.*, 2019). First, since volunteering has no financial benefit, it enables the introduction of additional resources without costs (micro-level), strengthening the economic sustainability of the HSP (meso-level). Besides, volunteering facilitates the way of managing the patient experience, avoiding those difficulties that, as pointed out by Gallan *et al.* (2019), could affect the productivity of HSE. Indeed, the analysis reveals that volunteer collaboration with other actors results in positive outcomes in terms of patients' (and family) management, enhancing the healthcare service humanisation and social sustainability. In this way, the research contributes to explaining the existence of a connection from micro- to meso-level (Gallan *et al.*, 2019). Moreover, the study seeks to meet the demand for an in-depth examination of social sustainability under the lens of the service ecosystem and S-D logic (Vargo and Lusch, 2017). Similarly, this result suggested that the systematic institutionalisation of volunteering practices in the national healthcare ecosystems would satisfy the widely recognised need to increase cost efficiency (i.e. Asandului *et al.*, 2014; Beirão *et al.*, 2017; Pereno and Eriksson, 2020; Frow *et al.*, 2016; Melman *et al.*, 2021) of the ecosystem, ensuring its viability (macro-level). The volunteer's efforts allow for putting humans first in the healthcare setting and fostering trust, agility and resilience, as requested by Field *et al.* (2021). The results are also consistent with the Gallan *et al.* (2019) study, which highlighted the significance of linking patients with other actors and

resources in the wider ecosystem to improve the well-being of society significantly. Thus, the study highlights that volunteer activities produce transformative value through the exchange of resources and multi-actor collaboration to generate value for all (Freeman *et al.*, 2020; Sebhatu and Enquist, 2022) in all the HSE levels.

Accordingly, the study provides a first response to the need to understand factors that explain social sustainability in service research (Vargo and Lusch, 2017) and contributes to answers to research priorities related to the re-humanisation of service and co-creation of transformative value (i.e. Field *et al.*, 2021; Rosenbaum, 2015a b; Ostrom *et al.*, 2015; Baron *et al.*, 2014; Ostrom *et al.*, 2010; Sangiorgi *et al.*, 2019). This means that volunteering activities integrated within the HSE can support service providers in delivering high-level experiences to patients and staff and optimising care costs (economic sustainability). Volunteering can, therefore, contribute to healthcare's Quadruple Aim (enhancing patient experience, reducing costs, and improving the healthcare team experience and population health) (McCull-Kennedy *et al.*, 2022; Bodenheimer and Sinsky, 2014).

In conclusion, the present paper contributes to the existing literature in multiple ways. The study shows that voluntary activities introduced with the primary purpose of generating psychological well-being for patients and their families (direct impact) can produce much wider effects on the HSE. The well-being outcomes are also generated for the other engaged actors, and with the repurposing of the resources (indirect impact), the paper partially explains the self-adjustment of the service ecosystem.

Finally, through the self-adjustment resulting from the volunteer value co-creation activities, insights on the enhancement of social and economic sustainability of the HSE are revealed in advancing knowledge on how to pursue the re-humanisation of the service ecosystem (Figure 4).

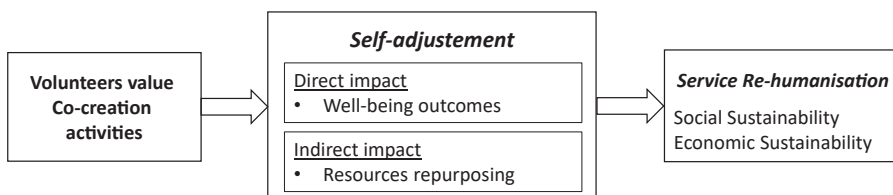
The framework provides fruitful insights into the need highlighted by Brodie *et al.* (2021) to identify activities and outcomes ensuring a stronger resilience and flexibility of HSE.

### Managerial and policy implications

The paper focused on the role of volunteers in the healthcare setting. However, the research contribution lies in the potential to understand how to engage volunteers in other service ecosystems, in which vulnerable customers are involved; for example, the vulnerable categories identified by Rosenbaum *et al.* (2017), such as refugees, elderly people, disabled, victims of discrimination, but also, victims of violence and people with economic difficulties.

In line with Sweeney *et al.* (2015) our study aims to understand how customers/patients and other actors in the service network can collaborate to enhance value for all. Indeed, the findings help explain how to create transformative changes to increase individual and collective well-being. Furthermore, the study provides helpful information for policymakers and service providers about how to integrate volunteering activities to improve economic and social sustainability, re-humanise the service and support a more effective co-creation.

Starting with policy *implications*, the research findings can be used to design regulations that integrate complementary medicine activities into healthcare settings (i.e. hospitals and



Source(s): Created by authors

**Figure 4.** Self-adjustment and re-humanisation of HSE resulting from the volunteer engagement

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health clinics) to become formal practices. Policymakers can also help voluntary associations and HSPs form partnerships through simplified regulations and processes.

Service providers can use these value co-creation activities to inform volunteers, families and medical staff on how to properly manage the long-term hospitalisation of young patients. Volunteers' presence in HSP helps reduce negative feelings and stress, making the patients more collaborative. The findings provide useful insight to HSP for implementing volunteer programs in their service design. Indeed, the study shows that volunteering in the healthcare service leads to re-humanisation with positive effects on treatment management and health processes. HSP should provide more space within the health facility to carry out activities, allowing children to leave their room (if physical conditions permit) to fill the time they spend in the hospital and giving them the feeling of performing normal activities. The hospital should regularly include volunteer activities by creating a weekly or monthly schedule, filling one or two hours of patient time daily. HSP should better inform patients and families about the possibility of participating in volunteering activities, providing adequate information about the correct behaviour to follow and the benefits of participation. Volunteering is currently implemented in long-term wards (oncology and chronic diseases), mainly for children and young people. Instead, it should be extended to other departments and developed for other categories of individuals, such as parents and the elderly. Volunteering activities are innovative and free-of-charge services that can be easily integrated into the HSE. Indeed, the findings show that volunteering can be defined as a "frugal innovation" (Bianchi *et al.*, 2017), namely a novel solution implemented under resource scarcity (i.e. lack of funds and human resources), which contributes to using resources efficiently and redesigning processes to improve ecosystem quality and sustainability. Volunteering has no economic impact on the healthcare company but can positively influence the actor's outcomes.

### Limitations and future research

The study represents a pivotal contribution to extend the understanding of transformative (Anderson *et al.*, 2013), sustainable (Field *et al.*, 2021) and human-centred (Sangiorgi *et al.*, 2019) volunteering co-creation activities in the service ecosystem. The paper is not without limitations, which could, however, represent opportunities for further research.

First, the empirical level of the paper is confined to the volunteering experience of KKC Italia; therefore, future research should include further volunteer settings, expanding the sample of hospitals involved and extending the research to other countries. Similarly, the study could be expanded to include further kinds of volunteer associations.

Second, co-creation activities and outcomes are generated from the perspective of a single actor, the volunteer, so data collection from more actors at different ecosystem levels and over a longer time may be helpful to validate the results.

Third, even if the qualitative method is consistent with the need to inductively investigate the phenomenon, including in the research design a quantitative phase may help to infer the results.

Moreover, the paper's findings open up a wide range of potential directions for service research to examine how volunteers co-create and integrate resources within other professional services (i.e. education, financial, social services, etc.) (Sweeney *et al.*, 2015). Similarly, as suggested by Huang and Lin (2020), future research should delve into the antecedents such as actors' personal factors and attitudes that might enable or inhibit volunteer value co-creation activities and outcomes.

Furthermore, patients' medical outcomes can benefit from volunteering activities (Bluth *et al.*, 2016; Hinic *et al.*, 2019; Hehr *et al.*, 2022; Marusak *et al.*, 2020), thus another relevant aspect for future investigation entails the inclusion of medical parameters to evaluate the impact on the treatment responses. It might be carried out throughout longitudinal research.



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Future research aimed to compare co-creation practices and outcomes both within and between public and private healthcare organisations in different countries can be developed.

As observed by [Patricio et al. \(2020\)](#), healthcare presents huge opportunities for service design research; therefore, future studies aimed to analyse different designs of HSE and the resulting value of co-creation practices and well-being outcomes, with or without paying attention to volunteering.

Further research is needed to deepen the understanding of the service re-humanisation ([Smith and Jones, 2020](#); [Meneses-La-Riva et al., 2021](#)), specifically to investigate how it can be fostered and in which way the value created can be understood as value-in-social-context ([Edvardsson et al., 2011](#)). Technologies represent an important tool that can be used to support volunteering activities. Hence, further studies should analyse how digital platforms can foster information sharing and simplify the organisation's activities. Individuals' motivations to become volunteers should be further analysed, as well as the role of the service providers in becoming facilitators of such initiatives. Finally, more empirical research about self-adjustment ([Mele et al., 2023](#)) in other service ecosystems should be developed, focusing on the connection with sustainability and circularity.

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#### About the authors

Laura Di Pietro is Assistant Professor at the Department of Business Studies, Roma Tre University. She earned her PhD in Commodity Science and Quality Management in 2014. She teaches Corporate Social Responsibility and Digital Innovation and Production. Dr Di Pietro's research interests pertain to three main areas: *Service Innovation, Service Ecosystem and Value Creation; Sustainability and Transformative Service Research*; and *Quality Management and Continuous Improvement*. She studies those topics in different sectors (e.g. healthcare, transport, cultural heritage and tourism). She has published her research in a number of international journals, including the *Journal of Service Management, The BMC Health Services Research, the Journal of Service Theory and Practice, the Journal of Cleaner Production*, and others. Dr Di Pietro won three Best Conference Paper Awards and an Emerald Outstanding Paper in 2016. She is involved in national and international research projects in the public and private sectors. She is part of the "SDG 12 -Agenda 2030" working group of the Italian Alliance for Sustainable Development (ASviS). She is a member of the Italian Academy of Commodity Science (AISME) and the Italian Academy for Business Economics (AIDEA). Laura Di Pietro is the corresponding author and can be contacted at: [laura.dipietro@uniroma3.it](mailto:laura.dipietro@uniroma3.it)

Veronica Ungaro is Assistant Professor at the Department of Business Studies, University of Roma Tre, Italy. She holds a PhD in Quality, Innovation and Sustainability. She teaches Circular Economy and Technology and Production. She is interested in Transformative Service Research, Circular Economy, Sustainability, Corporate Social Responsibility, Service Quality and Innovation applied in different sectors such as healthcare, transport, tourism and education. She was involved in several research projects related to these themes. Dr Ungaro has published her research in several international journals



such as *International Journal of Retail and Distribution Management*, *International Journal of Quality and Service Sciences* and *Journal of Service Theory and Practice*. She is part of the Rome Technopole where she is carrying out research on the sustainability of medical devices. She is a member of the Italian Academy of Commodity Science (AISME) and the Italian Academy for Business Economics (AIDEA).

Maria Francesca Renzi is a Full Professor in the Department of Business Studies at Roma Tre University. She teaches Quality Management, Corporate Social Responsibility and Quality Systems. Her areas of interest involve quality management in the public and private sectors, service quality, quality and environmental management systems and corporate social responsibility. In these fields, she has published 92 scientific contributions. She has published her research in a number of international journals, including the *Journal of Service Management*, *the Journal of Service Theory and Practice*, *the TQM journal*, *Total Quality Management and Business Excellence*, and others. She serves as coordinator of many national and international research projects related to TQM diffusion. She won two Best Conference Paper Awards and an Emerald Outstanding Paper in 2016. She is part of the Rome Technopole where she is a research coordinator in the field of sustainable production and consumption in the digital era. She is a member of the Italian Academy of Commodity Science (AISME) and the Italian Academy for Business Economics (AIDEA).

Bo Edvardsson is a Professor and Founder of CTF-Service Research Centre, Karlstad University Sweden, and a visiting Professor at Inland Norway University of Applied Sciences. Bo is the former editor of the *Journal of Service Management* and co-editor of the *Palgrave Handbook of Service Management* published in 2022. His research includes the logic of service, new service development and innovation, customer experience, complaint management, service ecosystems, and the transition from product to service in manufacturing. He has published more than 170 articles in scholarly journals including the *Journal of Service Research*, *Journal of the Academy of Marketing Science*, *Marketing Theory and Technovation*, and on the review board for several journals including the *Journal of Service Research*, *Journal of Service Management* and *International Journal of research in Marketing*. He is often invited to give keynote presentations at research conferences and participate in leadership development programs. His research impact in January 2023 shows 25.800 Google Scholar citations. In 2008, he received the RESER Award "Commendation for lifetime achievement to scholarship" by The European Association for Service Research, and in 2004 The AMA Career Contributions to the Services Discipline Award.

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