



How do cross-sector partnerships enable the participation of small retailers in urban food recovery and redistribution? Evidence from Italian cities

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Abstract

Surplus food recovery and redistribution (FR&R) have gained prominence as a strategy to improve food access and reduce food waste. Urban areas offer favourable conditions for implementing collaborative FR&R practices due to the spatial proximity of surplus food donors, food-insecure people, nonprofit organizations, public authorities, and other relevant actors. Among these, small retailers – i.e. neighbourhood shops and vendors operating within indoor food markets – may possess unique resources that could contribute to cross-sector partnerships (CSPs) aimed at surplus food valorisation and social inclusion. However, unlike large retailers, they remain largely underrepresented in FR&R networks and in international scientific literature. To address this gap, this study adopts a Resource-Based View to investigate seven CSPs across the cities of Genoa, Milan, Rome, and Turin, in Italy. Findings reveal that small retailers may provide as distinctive and valuable resources for urban FR&R fresh and nutritious surplus food and trust-based, territorially embedded relations with local communities and nonprofit organisations. However, they struggle with variable surplus food quantities, the lack of appropriate equipment to handle perishable products, limited time and knowledge to properly handle donation tasks and low economic incentives. The study reveals that CSPs may mitigate these barriers by pooling, combining and deploying a unique set of partners' tangible and intangible resources that complement those mobilized by small retailers. In this context indoor food markets emerge as strategic public assets that aggregate vendors supplying fresh nutritious surplus food, non-profit organizations and food poor citizens and attract resources from various stakeholders in the same place, enabling the diversification and enhancement of urban FR&R.

Keywords Food access · Food waste · Retailers · Urban food markets · Food governance · Resource-based View · Urban food systems

Introduction

The global food system is a major source of environmental degradation, significantly contributing to biodiversity loss (Benton et al. 2021), water scarcity (Hajer et al. 2016) and greenhouse gas emissions (IPES-Food 2023), while simultaneously failing to ensure universal food security (Fao et al. 2025). Despite the intensive use of resources, nearly 2.2

billion people worldwide experience moderate or severe food insecurity, with around 1.7 billion residing in urban and peri-urban areas (Battersby et al. 2024). At the same time, around one-third of all food produced is lost or wasted annually (UNEP 2021). The food waste–food insecurity paradox (Asghar and Khalid 2024) reveals a structural flaw in the current food system, underscoring the urgency of moving towards more sustainable and equitable pathways (Fao et al. 2023), in line with SDGs 2 and 12 (United Nations 2021). To mitigate the food system paradox, initiatives focused on surplus food recovery and redistribution (FR&R) have gained prominence in recent years, also in high income countries (Chauhan et al. 2021; Cicatiello et al. 2016). Recognized as the preferable option for managing surplus food after prevention of its generation (Papargyropoulou et al.

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2014), FR&R practices aim to valorize edible surplus food for helping food insecure people. Although FR&R has been criticized for failing to address the structural causes of food insecurity (Papargyropoulou et al. 2022, Galli et al. 2018; Caraher and Furey 2018), they have emerged as the most widespread practice of food assistance across multiple countries in the last decades (Akkerman et al. 2023; Gentilini 2013; Rizvi et al. 2021).

The effective establishment and management of FR&R initiatives require governance models capable of overcoming fragmentation and enabling coordinated action (Quaglia 2025; Garrone et al. 2014a). Among these, cross-sector partnerships (CSPs) have emerged as instrumental arrangements for fostering a mutual coordination among diverse actors – e.g. public authorities, retailers, non-profit organizations (NPOs) - aligning priorities, pooling resources, and achieving shared goals through collaboration (Berti et al. 2023; Sibbing and Candel 2021). Within such collaborative arrangements, retailers and food service operators – which account for around 16% of total food waste in Europe (Eurostat 2023) – can play a key role in advancing FR&R (Cicatiello et al. 2017). In this regard, small retailers – here understood as neighbourhood small-sized shops and vendors operating in indoor food markets – represent a relevant category of potential surplus food donors as part of FR&R networks given territorial relevance.

Small retailers account for 39% of food retail sales in major Italian cities - the context investigated in this study, aligning it with the national average, but represent 72% of all the retail establishments, indicating their dense presence in highly populated areas (ISTAT (2022)). This concentration strengthens their influence on local food environments, serving not only as commercial actors but also as sites of social interaction and community cohesion (Guy and Duckett 2003; Parvez 2017). Their spatial proximity, perceived flexibility, and authenticity, often position them as more accessible and trusted than larger retailers (Ekström and Jönsson 2022). Food markets similarly are central nodes in local food systems, functioning as distribution hubs for wholesalers and market vendors as well as informal spaces of community exchange and inclusion (Evers and Seale 2015). Therefore, small retailers, whether scattered across neighborhoods or concentrated within food markets, potentially represent key actors as part of CSPs for FR&R due to their deep community embeddedness, logistical capacity to handle surplus food, and ability to create relationships within CSPs. This potential has been increasingly acknowledged at the policy level. The European Union's Green Deal, for instance, places the "proximity economy" at the core of its agenda, highlighting the role of small and micro-enterprises in generating local environmental, economic, and social value (European Commission, 2024). These

enterprises are seen as key to creating place-based value through dense interactions between people, resources, and territories (Zurlo and D'Ambrosio 2024; Confcommercio-Imprese, 2023).

However, while scientific literature calls for empirical investigation into processes and outcomes of collaborative food governance (Sonnino and Milbourne 2022; Moragues-Faus and Battersby 2021) – including CSPs focused on FR&R - the role of small retailers in surplus food management and food waste reduction has been poorly explored by scholars, particularly when it comes to understand their contribution to CSPs for FR&R. Indeed, existing studies primarily provide insights on the engagement of large retailers (Bartezzaghi et al. 2024; Sundgren 2022; Sert et al. 2018). Little attention has been paid to the role of small retailers in FR&R, despite their high concentration in urban areas, leaving unexplored the contribution and underpinning motivations of their participation to FR&R collaborative practices and networks. To address this knowledge gap, this study investigates the barriers that hinder small retailers from engaging in urban FR&R and assesses possible factors mitigating such barriers, unveiling the potential of CSPs in enabling their participation. Taking steps from these literature gaps, this exploratory study aims to respond to the following research questions focusing on the Italian context: RQ1: What are the barriers experienced by small retailers that prevent them from engaging in urban FR&R?; RQ2: What is the distinctive contribution of small retailers in urban FR&R partnerships?; RQ3: How do CSPs foster the participation of small retailers in urban FR&R? To answer research questions, the study adopts a Resource-Based View (RBV, Clarke and MacDonald 2019; Clarke and Crane 2018) lens to analyse seven cases of urban CSPs for FR&R across four Italian cities, each involving small retailers in different capacities and with diverse outcomes. By focusing on these overlooked actors, this research aims to shed light on the valuable, rare, inimitable and non-substitutable resources (Barney 1991) brought by small retailers to FR&R and the complementary resources that foster their participation and are mobilized by other partners in these CSPs. Moreover, this study wants to contribute to the scientific debate on FR&R, offering empirical evidence on the role played by small-size neighborhood retailers and vendors operating within indoor food markets. To do so, this article is structured as follows. Section "Theoretical background" presents the theoretical background on which the study is based and the specific research questions guiding it. In section "Materials and methods" the methodology adopted, including the description of case studies selected, is illustrated. Next, in section "Results" the study's findings are provided and, finally, discussion of main results and conclusions are drawn in section "Discussion and conclusions".

Theoretical background

Food recovery and redistribution as a model of food assistance

In recent years, the provision of food assistance through FR&R has been widely discussed in scholarly and policy debates (see, among others, e.g. Galli et al. 2018; Rosenthal and Newman 2019; Brunori et al. 2017). While several authors emphasise FR&R's role in meeting the immediate needs of vulnerable populations when other measures fall short (Clare et al. 2023; Cloke et al. 2017; Miroso et al. 2016), critics argue that such practices, often relying on NPOs' limited resources (McEachern et al. 2024), offer only a temporary relief to food-insecure people and fail to address the structural drivers of food insecurity and socio-economic inequalities (Spring et al. 2022; Arcuri 2019; Caraher and Furey 2017; Papargyropoulou et al. 2022). Some contend that FR&R may even function as an "escape route" for businesses, enabling them to avoid confronting waste prevention at its source (Lohnes 2021; Messner 2020; Mourad 2016). Others, however, suggest that surplus food donation is more commonly adopted within broader corporate sustainability strategies (Valentini et al. 2025; Sundin et al. 2022; Albizzati et al. 2019).

In this context, while recognising the importance of above debates, an analysis of the organisational configurations of urban FR&R initiatives shows that they are commonly implemented by NPOs, including food banks, food pantries, and other organizations delivering food aid to vulnerable groups, often in collaboration with private food donors (Baglioni et al. 2017; Galli et al. 2018). These NPOs recover surplus fresh and dry food from a wide range of suppliers, including food manufacturers, retailers, and food service providers, adopting collaborative protocols to manage FR&R processes to deliver assistance to those in need (Sundgren 2022; Garrone et al. 2014b).

Food banks, in particular, operate within national and international networks (Galli et al. 2018) and function as intermediaries between food suppliers and front-line NPOs that directly serve beneficiaries (Garrone et al. 2014b). They generally rely on long-standing agreements with food companies (e.g. producers, retailers) to secure food donations and, in the European Union, also benefit from institutional support such as the European Social Fund Plus (ESF+), which since 2021 has incorporated the Fund for European Aid to the Most Deprived (FEAD) to provide food and material assistance to food-insecure individuals. While food banks primarily engage in back-end recovery – i.e. collecting surplus food from upstream actors - front-end redistribution models have increasingly gained momentum alongside traditional soup kitchens that transform recovered surplus

food into meals (Vander Vennen and Parizeau 2023). These models include solidarity stores, which enable users to access groceries using a point-based card system (Bernaschi 2020), as well as initiatives that transform surplus food into value-added or shelf-stable products, which are then redistributed to beneficiaries (Vander Vennen and Parizeau 2023; Rondeau et al. 2020).

Looking at urban contexts, FR&R are usually managed by food banks and front-line NPOs that leverage their capillary presence in and around cities to reach a wide range of donors and beneficiaries (Garrone et al. 2014a). These NPOs usually collect surplus food from large, conventional retailers and food service operators (Bartezzaghi et al. 2022). Some scholars have investigated urban FR&R operations involving wholesale and indoor food markets (Borrelli et al. 2021; González-Torre and Coque 2016; Warshawsky 2015), as well as street markets and urban farmers markets (Alfiero et al. 2020; Moggi et al. 2018). Among these, indoor food markets are particularly recognized as key social nodes of food exchange (Borrelli et al. 2021; Moragues-Faus et al. 2020) and as inclusive food places experimenting with surplus food redistribution practices for vulnerable communities (Fattibene et al. 2020; Machell and Caraher 2012).

Drivers and barriers for FR&R: retailers' perspective

Scholars have focused their attention on investigating the participation of large retailers, particularly large-scale and conventional retailers, in food donation programs, while small neighbourhood stores and vendors operating in indoor food markets have received limited attention. In this light, it is useful to recall the main drivers and barriers highlighted by existing studies that motivate or constrain the participation of large retailers to FR&R initiatives.

Concerning drivers, large retailers are keen to engage in food donation to align with public expectations and regulatory requirements, which can enhance their brand image and reputation (Sert et al. 2018; Hermsdorf et al. 2017). For these companies, food donation has been largely integrated into the corporate food waste prevention and reduction strategies (Viscardi et al. 2023; Buseti and Pace 2022; Sert et al. 2016). Large retailers might be driven to donate also by altruistic motivations and employee commitment to social responsibility initiatives (Bartezzaghi et al. 2022; Sert et al. 2018). Moreover, the cost savings generated by avoiding food waste disposal through surplus food redistribution, along with an internal more efficient resource management, encourage large retailers to participate to donation programs (Bartezzaghi et al. 2022; Sert et al. 2018).

Furthermore, surplus food monitoring along the supply chain and at store level may facilitate the execution of food waste reduction strategies (Corrado and Sala 2018;

Cicatiello et al. 2017), which can be pushed by digital technologies (Quaglia et al. 2024; Ciulli et al. 2020). Trust-based relationships among corporate food donors and NPOs and formalized collaborative agreements enhance the commitment to food donations (Sundgren 2022; Garrone et al. 2014a). Moreover, fiscal incentives for surplus food donors incentivize retailers' donations (Bartezzaghi et al. 2022; Baglioni et al. 2017).

Despite the favourable position toward surplus food donation, large retailers still face multiple barriers to deploying FR&R practices (Bartezzaghi et al. 2022). Among recurring barriers, large retailers struggle in donating highly perishable products, which rapidly become waste (Buisman et al. 2019). These challenges are intensified by perceived reputational risk associated to the effects of a possible mismanagement by food-rescue NPOs (Akkerman et al. 2023; Alexander and Smaje 2008). These obstacles inhibit retailers from donating fresh food, limiting the nutritional balance mix offered to beneficiaries (Bartezzaghi et al. 2022). At the same time, NPOs contend of the scarce quality of recovered products, which typically have very short residual shelf-life (Busetti 2019; Alexander and Smaje 2008). Further barriers originate from the variability and discontinuity of surplus food supply and demand, as well as the additional costs associated to donations, which make it inconvenient in comparison to alternative surplus food management strategies (Busetti 2019; Sert et al. 2018). Barriers also arise when donors lack adequate monitoring systems or when FR&R agreements with NPOs are not well formalized (Bartezzaghi et al. 2022; Sert et al. 2016).

Based on existing literature, we can therefore observe that the barriers and drivers influencing the propensity to donate surplus food from the perspective of small retailers remain largely unknown, with the exceptions of few studies on food safety risks and operational challenges incurred by market vendors in handling fresh products (González-Torre and Coque 2016; Alexander and Smaje 2008). Advancing knowledge on these factors is particularly relevant, given also their context-sensitive nature and the likelihood that they vary across different urban environments.

The role of cross-sector partnerships for urban FR&R

Cross-sector partnerships (CSPs) emerge as effective arrangements to steer collective FR&R efforts in cities (Bartezzaghi et al. 2024). Such collaborations involve actors from different sectors – e.g. public and research institutions, companies, and NPOs – extending the traditional bilateral agreements engaging solely food-aid charities and private food donors (Bartezzaghi et al. 2024, 2022; Dentoni et al. 2016).

According to Resource-Based View theorists, diverse partners collaborate to gain access to critical complementary resources they could not dispose of by acting alone (Clarke and MacDonald 2019; Jamali and Keshishian 2009; Selsky and Parker 2005), which embrace human capital, physical assets, and financial resources, as well as organizational capital, including formalized organizational processes and expertise provided by individual partners (Clarke and MacDonald 2019). These resources mobilized by the CSP may be valuable, rare, inimitable and non-substitutable (Barney 1991), generating a strategic value for partners (Clarke and MacDonald 2019; McDermott et al. 2018).

Moreover CSPs do not only pool and combine together diverse resources from different partners, but they are able to dynamically manage them and generate novel capabilities towards the achievement of partners' common objectives (Deken et al. 2018; G et al. 2011), also to tackle sustainability issues (Stadtler et al. 2024; Pache et al. 2022). While being originally formulated to analyse private for-profit companies' competitive advantage (Eisenhardt and Martin 2017; E et al. 2007; Barney 1991), the RBV theory has been applied more recently to explain the dynamics of strategic inter-firm alliances (Das and Teng 2000), and in the last years also to CSPs (Clarke and MacDonald 2019; McDermott et al. 2018) as well as to partnerships in hybrid and nonprofit settings (such as Chowdhury and Audretsch's 2024; Buonomo et al. 2020).

In the context of FR&R, food banks and front-line NPOs that establish territorial and long-lasting relations with different suppliers may gain a sustained advantage by delivering a better food redistribution service relatively to other food-aid peer organizations or alternative public measures (Haynes Stein and Brinkley 2023). In particular, trust-based relations among food-aid NPOs and donors represent a strategic intangible asset that enhances donations by lowering transaction costs and mitigating logistical barriers (Haynes Stein and Brinkley 2023; Sundgren 2022). In this vein, urban areas represent an optimal scale for examining the functioning of CSPs for FR&R and the role of small retailers involved. Indeed, the spatial concentration and proximity of urban actors - including public institutions, large and small retailers, food markets, food service providers, and NPOs – create enabling conditions for collaboration and coordination (Herens et al. 2022; Moragues-Faus and Battersby 2021). However, despite these favourable conditions, urban CSPs for FR&R are not consolidated yet in practice. This limited development is often linked to neoliberal urban agendas, which constrain the financial resources available to such socially oriented initiatives, and reinforce the reliance of NPOs on private funding to sustain their activities (Vasile 2022). Moreover, only few contributions have begun to explore the potential of CSPs for urban FR&R, shedding

light on the distinctive resources and capabilities underpinning their formation and deployment (Bartezzaghi et al. 2024, 2022), but leaving unknown the resource contribution of small retailers to these partnerships.

Materials and methods

To answer research questions, this exploratory study is drawn on a multiple case study research design (Yin 2014), focusing on urban CSPs for FR&R involving small retailers across four major Italian cities: Genoa, Milan, Rome, Turin. This methodological approach was chosen as it allows for an in-depth examination of real-life contemporary phenomena in their natural settings (Woodside 2010) and provide a cross-case comparative perspective enhancing the accuracy and reliability of findings (Eisenhardt 1989). Driven by research questions, the CSP cases to be investigated were selected using purposive sampling, i.e. a deliberate choice of information-rich cases (Patton 2002), based on four criteria: (i) initiatives had to be located in Italian cities with a population of at least 500,000 inhabitants; (ii) FR&R practices needed to be managed by multi-actor CSPs engaging partners from public, private, profit and non-profit sectors; and (iii) partnerships had to involve small retailers actively participating in FR&R; (iv) partners were available to interact with researchers. As shown in Table 1, seven cases were selected to fulfil the study's objectives. When information was available, two cases were chosen per city. Five cases out of seven (i.e. Ricibo, Refoodgees, Recup, Carovana Salvacibo e SOSpesa) involve small-sized retail stores and urban market vendors, while two cases engage only with indoor food markets (Ricibo) and farmers' markets (La Rotonda).

The selected cases are embedded in the Italian context. In Italy the FR&R practice led by food banks and other charitable organizations is widespread (Arcuri 2019), being supported by favourable legislation (Baglioni et al. 2017). According to recent data, 4.9 million people – equal to 8,4% of total population over sixteen – were unable to afford a complete meal every two days, and the demand for food aid has increased by 40% over the past five years, reaching 2.91 million recipients (ActionAid 2024).

Data collection

Primary and secondary data were gathered using a qualitative research design to conduct an in-depth analysis of the seven selected case studies. Secondary data were retrieved from various sources, including scientific articles, technical reports, websites, and newspapers, to provide background information on the FR&R initiatives under investigation.

The analysis of these documents provided key insights into the structures of the FR&R practices encompassing their mission, operational and management models, activities implemented, and target beneficiaries. Beyond offering a comprehensive overview of each case, this preliminary analysis was instrumental in guiding the formulation of interview questions.

Primary data were collected through 31 semi-structured face-to-face interviews conducted between September 2022 and July 2023. The interviewees were selected from diverse sectors involved in CSPs for FR&R, encompassing representatives of small retailers, including food market managers, NPOs members, and scholars (see Table 2). The initial contact with interviewees was established via email or phone by the authors, who provided them with the background information and a clear statement of the study's objective. The questionnaire used was designed to comprehensively explore different aspects of the FR&R initiatives selected, organized in two main sections: the first focused on the organizational and operational aspects of the initiatives adopting a CSP lens, while the second explored the specific role and resource contribution of small retailers within these partnerships through an RBV lens.

To complement the self-reported data, field observations were conducted at sites where the FR&R initiatives were implemented, including indoor food markets and neighborhood shops. These observations, particularly during interviews with key informants, provided valuable insights into the organizational and operational models of the initiatives, the interaction modalities between actors, and the contributions of small retailers and the other partners. Extensive field notes were compiled to document relevant phenomena. In addition, data gathered from conferences, seminars, and project meetings attended by the authors were incorporated, where appropriate, to support the triangulation of interview data.

Data analysis: coding and dimensions

Coding was conducted adopting an abductive approach (Eisenhardt and Graebner 2007), drawing on RBV theory in the context of CSPs (Clarke and MacDonald 2019) as theoretical lens to interpret the observed phenomena. An initial round of coding was conducted by two research assistants, resulting in a preliminary set of concepts. One of the authors then revised the coding and triangulated it with other primary and secondary data collected to generate first-order codes. Through an iterative, theory-informed process, the same author aggregated the first-order codes into second-order themes, which were further consolidated into three overarching dimensions: CSP Resources; CSP Actors; and drivers and barriers of small retailers' involvement. The

Table 1 Description of the case studies selected

City	FR&R initiative	Description of the initiative
Genoa	Ricibo	Established in 2017 by six NPOs to reduce food waste and food poverty in Genoa, this initiative currently involves over 90 NPOs committed to recovering surplus food from local small retailers stores (i.e. bakeries and market vendors), promoting the adopting of circular food practices. The network, comprising both public and private actors, recovers an estimated 200 tons of surplus food annually, redistributing it to approximately 2,500 beneficiaries.
Milan	SOSpesa	Initiated in 2022 with funding from <i>Polisocial</i> , the social responsibility program of the Politecnico di Milano, the project aimed to establish a network of local solidarity actors - including third-sector organizations, neighborhood stores and food market vendors, and scholars - to collaborate in supplying food at reduced prices, redistributing recovered food to vulnerable individuals, and processing surplus food for resale in local shops to support fundraising activities. The initiative adopts a place-based approach, centered on Milan's NoLo (North of Loreto) neighborhood, with its core operations located in the Crespi municipal market.
	La Rotonda	Started in 2010 in collaboration with a local faith-based organization, public institutions, and private foundations, this project aims to support those in need by providing a wide range of welfare services for addressing food poverty, unemployment, and material deprivation. Since 2021, a social market offering dry and fresh food products, as well as personal care items and supplies for infants, has been established. Surplus food is recovered from diverse suppliers, including large retailers, solidarity purchasing groups and farmer's markets.
Rome	RECUP	This initiative was launched in Milan in 2016 and expanded to Rome in 2021. In Rome, the project involves 13 indoor food markets where surplus food is collected by volunteers and redistributed to those in need in collaboration with several local NPOs. Every week, approximately 1.5 tons of fruits and vegetables are recovered and redistributed thanks to RECUP.
	RE:foodgees	Established in 2017, this project aims to recover surplus food through collaboration with public institutions, indoor food market vendors, and small bakeries. After its first year of operation at the <i>Alberone</i> city market, the initiative was expanded to the <i>Nuovo Mercato Esquilino</i> , where every Saturday volunteers, including immigrants and asylum seekers, recover approximately 1 ton of unsold food. In addition to food, second-hand toys and clothes are also collected, and cultural and recreational services are provided as part of the initiative.
Turin	Repopp Carovana Salvaccio	Both food recovery and redistribution initiatives were established, in 2016 and 2020, respectively, by <i>Eco dalle Città</i> , a digital journalistic agency and association committed to promoting circular food practices. These initiatives engage vulnerable young people FR&R activities, partnering with food market vendors and NPOs. While <i>Repopp</i> focuses its FR&R activities within indoor food markets, <i>Carovana Salvaccio</i> has expanded its operations to include collaborations with the local wholesale market and small retail stores located nearby the markets.

Table 2 List of interviews conducted

FR&R Initiative		Interviewed Partners				
City	Name	No	Code	Interviewees' role	Period	
Genoa	Ricibo	5	A	Vendor of dairy and grocery products in indoor market	June 2023	
			B	Owner and vendor of bakery shop		
			C	NPO - Founder of the FR&R initiative		
			D	NPO - Manager		
			E	NPO - Manager		
Milan	SOSpesa	4	AH	Vendor of fruit & vegetables (F&V) in indoor market	February 2023	
			AI	Vendor of bakery shop inside municipal indoor market		
			AL	University - Researcher and volunteer		
			AM	University - Professor and volunteer		
	La Rotonda	3	AD	Founder and volunteer of solidarity purchasing group	July 2023	
			AF	NPO - Project manager		
			AG	NPO - Project manager		
	Rome	REfoodgees	9	F	Vendor F&V municipal indoor market 1	June 2023
				G	Vendor F&V municipal indoor market 1	
				H	Director municipal indoor market 1	
I				Vendor F&V municipal indoor market 2		
L				Vendor bakery products municipal indoor market 2		
M				Director municipal indoor market 2		
N				NPO - Manager and volunteer		
O				NPO - Manager and volunteer		
P				NPO - Founder of the FR&R initiative and volunteer		
Recup		3	Q	NPO - Worker in FR&R operations	July 2023	
			R	Director municipal indoor market 3		
			S	NPO - Founder of the FR&R initiative		
			T	Vendor F&V in indoor market		
Turin	Repopp	3	V	NPO - Founder of the FR&R initiative	June 2023	
			AA	NPO - Worker in FR&R operations		
			U	Director wholesale agrifood market		
Carovana Salvacibo	4	Z	NPO - Founder of the FR&R initiative	June 2023		
		AB	NPO - Worker in FR&R operations			
		AC	Other NPO - Manager			

final coding structure (see Annex A) was jointly reviewed by all authors.

Having to go around five or six stores once a week to pick up almost nothing did not make sense anymore. (Interviewee O, July 1, 2023)

Results

Barriers faced by small retailers in urban FR&R

Our analysis reveals several interrelated barriers that limit the involvement of small retailers in urban FR&R initiatives. These challenges can be reframed and understood through the RBV lens in terms of critical tangible and intangible resources that small retailers often lack, preventing their involvement in FR&R. Results may partly differ between small-sized retail stores and vendors in food markets.

Unlike large retailers, small retailers face a primary operational constraint related to the limited quantity of surplus food generated. This limitation makes the recovery efforts inefficient and economically unviable for NPOs tasked with collection, particularly when these efforts involve scattered small-sized stores.

This issue is further worsened by the discontinuity in surplus food demand from NPOs, particularly during the summer months when many food-aid activities are temporarily suspended.

In August, there is the opposite problem, too much food and too few people in need [...] and several third-sector organizations have a break in August: they cannot carry out activities. (Interviewee AA, June 9, 2023)

Another major barrier, or “missing resource”, is the lack of adequate infrastructure and equipment, such as cold rooms and mobile coolers, to properly handle, store and redistribute the fresh and perishable products, e.g. fruit and vegetables and gastronomy products, typically sold by small retailers, including urban marketers and owners of small

stores. This problem is further exacerbated during warmer seasons, as refrigeration capacity becomes insufficient to prevent spoilage.

In winter, the waste is a bit less because refrigerators can mitigate it, but in summer, it's a lot. Also, summer fruits are more delicate to handle. Apricots, for example, are not good the day after. (Interviewee M, June 30, 2023)

The issue with pastry or gastronomy is that most of the products need to be refrigerated. So, sometimes, we are concerned that if they are not stored correctly, they might potentially cause harm. (Interview B, June 13, 2023).

Furthermore, the lack of control over product quality, especially in bulk purchases, creates additional inefficiencies.

The perishable goods are a loss [...] when we purchase fruits and vegetables, we can't choose it; we buy it in crates. So, there might be some damaged items underneath. (Interview F, June 30, 2023).

Logistical and cost-related barriers are also significant. To a higher extent than for large retailers, the spatial dispersion of small retailers and the cost of transport can make food donation logistically complex. This barrier is less perceived by vendors in indoor markets that aggregate volumes in the same place, where food-aid NPOs and in some cases final beneficiaries pass through to recover available products. These costs are rarely offset by public incentives, and the lack of accessible fiscal benefits further discourage small retailers, both small stores and urban marketers, from participating in FR&R initiatives, similarly to large retailers. Although some municipalities in Italy - e.g. Milan, Turin, Rome (Busetti 2019) - have introduced tax reductions on waste disposal for food donors, these measures often remain ineffective for small retailers.

Since 2018, theoretically, there is a discount on the tax, but no one has done it because it is too complex ... In our case, the system was badly designed because the discount is not proportional to the quantity donated. If you reach two tons, you receive a thirty percent discount, whether you are a bakery or a large retailer. The bakery will never reach that amount. (Interviewee C, June 13, 2023)

This situation is worsened by small retailers' scarce knowledge concerning the legal framework regulating food

donation and FR&R processes. As a result, small retailers rarely take advantage of the available fiscal incentives, often delegating administrative tasks to accountants who may not prioritize food donation.

They are discouraged by their accountants. Clearly, it's not them personally asking for VAT reduction, a reformation of the waste tax, or other available benefits. The accountants say it's not worth the discount you'll receive. So, are the accountants themselves who are unwilling. (Interviewee Z, June 9, 2023)

In addition, the absence of a measurement and monitoring system of surplus food further widens this knowledge gap and poses challenges to streamline FR&R processes. Indeed, surplus food measurement is often perceived as an additional workload, which is frequently delegated to NPOs.

I can't tell you about the volume, I mean, associations will be the ones to tell me. (Interviewee A, June 13, 2023).

Therefore, similarly to larger retailers, small retailers perceive FR&R activities as burdensome tasks that are difficult to integrate into their daily operations due to limited time and staff availability.

There are many aspects behind a small business like ours that require time. I mean, if you add up all these aspects, you can't also donate. (Interview B, June 13, 2023)

This operational challenge is particularly acute for sellers of small sized stores, whereas it is generally mitigated for market vendors through the intermediation of the enterprises responsible for managing indoor markets, which often establish and share internal protocols for surplus food management with vendors.

Interviewees emphasize also that small retailers' primary goal is to offer fresh and high-quality products to attract customers while minimizing surplus and waste, practices that inherently reduce the availability of food for donation. In this regard, when surplus cannot be prevented, alternative management strategies are often preferred, particularly those perceived as more economically advantageous than food donation, including the usage of secondary channels to sell surplus food at discounted prices.

Since the pandemic, many small retailers have become familiar with Too Good to Go and prefer to prepare boxes than donating [...]. This solution benefits us. (Interviewee O, July 1, 2023)

Additionally, some of the small retailers interviewed opt for non-human reuse pathways.

There are sellers in the market who have animals, so they utilize the surplus food to feed them. (Interviewee H, June 30, 2023).

Csps as enablers of small retailers’ participation in urban FR&R

The distinctive resource contribution of small retailers in urban FR&R partnerships

Small retailers can offer a set of unique resources and capabilities that enhance urban FR&R initiatives, as illustrated in Table 3. Unlike large food donors, they provide not only surplus food but also local knowledge, relational capital, and flexible operational models, all of which strengthen FR&R partnerships and related practices. Their involvement is often driven by personal empathy and moral commitment to food redistribution initiatives, further reinforcing the social capital they bring to these collaborative arrangements.

Among these resource contributions, the provision of fresh surplus food is particularly significant. Such food is nutritionally valuable for beneficiaries and difficult to substitute with alternative items. Fresh produce is often scarce in food-aid initiatives due to the challenges of recovering and handling perishable items and is imperfectly imitable, as its recovery depends on efficient and trust-based relations with donors.

Their collaboration is of value added for us and for our final beneficiaries because objectively we do not usually have fresh food of this quality. The quality is excellent. (Interviewee A, June 13, 2023)

Evidence collected from the cases in Milan, Rome and Turin shows that the engagement of small retailers in FR&R is particularly effective when they operate within indoor food markets. In these contexts, the recovery and redistribution processes occur in the same place, improving operational efficiency.

The stallholders inside the market are about a hundred and most of them sell fruit and vegetables. Around 50% of those sellers decided to join the initiative, bringing us the surplus food. (Interviewee S, June 30, 2023)

Nevertheless, the role of small retail stores may remain limited in urban contexts with multiple alternative supply sources, such as larger retailers that generate higher volumes

Table 3 Distinctive resources mobilized by small retailers to urban FR&R

CSP Partners (Coding II)	CSP Partners (Coding I)	Resources (Coding I)	Resources (Coding II)	Type of resource
Small retailers	Small-sized stores (e.g. neighbourhood retail shops, small grocery stores, bakeries) Vendors in indoor and farmers’ markets	Recovered surplus food Network ties Trust-based relations with clients and NPOs Moral commitment	Fresh, high-quality food Social capital Social capital Social capital	Physical Human Human Human

of surplus food. In these cases, participation often relies on direct, trust-based relationships with local NPOs.

The engagement of micro-enterprises is quite marginal and relies on the direct relationship with the associations active on the territory. (Interviewee C, June 13, 2023)

Small retailers also mobilize their *social capital* that is rooted in these relationships, as well as connections with clients and vulnerable people in their neighborhoods.

I must say that luckily we have always encountered a great response from the vendors of the food markets where we operate. (Interviewee P, July 1, 2023)

We manage surplus food also through donations to the customer, let's say the trusted customer, the loyal customer, but sometimes also the last-minute customer ... And we do it particularly when we know they are disadvantaged people. (Interviewee A, June 13, 2023).

Moreover, small retailers also leverage neighborhood networks of traders to coordinate activities, raise awareness on FR&R and share good practices.

We got to know the food donation initiative by word of mouth and through the neighborhood committees of the traders. Without those relations I do not think we will be where we are today. Today almost all the neighborhoods have those committees to coordinate activities for instance during celebrations and for neighborhood collaborations. (Interviewee B, June 13, 2023)

As emerged from the cases analyzed, trust-based and place-based relationships are particularly valuable for FR&R processes since they enable smoother coordination between donors and charitable organizations, mitigate perceived food safety risks of food donors and improve perceptions and responsiveness from the side of both donors and final beneficiaries. Those relationships are rare, inimitable and non-substitutable in the way they are embedded in a specific territory and culturally specific, reflecting histories of long-term interactions, reputational capital, and shared social norms among stakeholders.

Finally, moral commitment to the cause of valorizing surplus food for people in need drives the participation of small retailers in urban FR&R, independently from being market vendors or sellers in small-sized shops. Empathy can

be considered as a valuable, not necessarily rare but imperfectly imitable intangible resource.

The main motivation is personal, to do good things for someone who might be in need. (Interviewee L, June 30, 2023)

There are many people in poverty who cannot move forward and cannot make it to the end of the month. (Interviewee AH, February 10, 2023).

Additionally, direct visibility of the problem arises ethical concerns around food waste. Indeed, concerns about food waste coupled with growing ecological attention spur small retailers to donate surplus food rather than disposing of it.

Working in the market we see food waste daily and my heart suffers from that. (Interviewee L, June 30, 2023).

CSP-driven mechanisms enabling small retailers' participation in FR&R

Despite their resource potential, small retailers might not be able to participate in FR&R initiatives. Our findings reveal that small retailers are driven to commit to urban FR&R thanks to the mediation and collaboration of other CSP actors. The distinctive resources mobilized by such actors, once combined in the CSP, trigger operational efficiency, and relational and reputational gains that facilitate small retailers' entry into FR&R initiatives. In other words, each individual partner mobilizes complementary resources that are pooled together and managed by the CSP to sustain operations and generate shared social value and outcomes for all the CSP partners, including small retailers.

CSP partners' complementary resources mobilized to FR&R Large donors, including large retailers, provide packaged products and complementary products, which complement the fresh and smaller quantities provided by small retailers. This combination enables NPOs to diversify their supply and ensure the continuity of redistribution flows.

The diversification of the suppliers, including various levels such as large-scale distribution, manufacturers, and small-scale donors, provides a certain comfort. (Interviewee AF, June 12, 2023).

In the case of La Rotonda in the Metropolitan area of Milan, solidarity purchasing groups also act as an alternative supplier, further broadening the network of food sources.

Food-aid NPOs, in turn, contribute unique resources to collaborative FR&R. They provide resources that are crucial for the functioning of CSPs, including operational know-how, trained personnel, equipment, and robust local connections with beneficiaries. Furthermore, the adoption of surplus food measurement systems supports small retailers in improving their internal management of unsold products, thereby facilitating food donation processes. These activities are sometimes outsourced to NPOs engaged in surplus food recovery, resulting in cost savings for small retailers. Moreover, food-aid NPOs may also adopt digital tools such as software for FR&R management, along with mobile applications, to track food donations and coordinate FR&R operations.

Besides food-aid NPOs, also other NPOs may contribute with unique expertise in various fields, - e.g. psychological and legal assistance, language courses, job placement and social housing, childcare, and recreational activities – delivering a more comprehensive and multifaceted support to vulnerable individuals.

NPOs leading FR&R initiatives consistently seek to establish partnership with public institutions in order to gain support and institutional legitimacy.

The initiative also originated thanks to the efforts of previous assessors who aimed to create something more extensive. Small associations have their limits. A larger structure provides the opportunity to offer more support. (Interviewee V, June 9, 2023)

Local governments, particularly municipalities, can have a prominent role in CSPs for FR&R by bringing a variety of resources and assets. These include the free allocation of public spaces – e.g. public venues repurposed as storage facilities or equipped with vans for food logistics, access to municipal market infrastructure, and the assignment of dedicated stalls within municipal markets to NPOs engaged in FR&R. Many indoor markets are also equipped with furnished kitchen and refrigerated storage units that allow perishable surplus food items to be temporarily stored, reducing the risk of spoilage. These facilities often provide opportunities for value-adding activities such as food processing and meal preparation.

Moreover, when available, small retailers might benefit from fiscal incentives granted by local governments as a reduction in the waste tax proportionate to surplus food donations, according to the so called Gadda Law (Law no.166/2016). In this regard, the municipality may adopt novel strategies for economically supporting local FR&R initiatives. For example, municipalities can provide personnel to support the staff of NPOs. Additionally, companies responsible for cleaning and waste management services

in municipal indoor markets may support food-aid NPOs as part of their service contract with the municipality. This form of public-private collaboration enables food-aid NPOs to transfer their FR&R action into other markets across cities, expanding their territorial coverage and outreach.

Finally, case studies examined show that also academic institutions can play a critical role in CSPs for FR&R by providing technical expertise and spurring knowledge exchange and dissemination on food donations along and beyond the FR&R chain. For example, in the case of SOS-PESA in Milan the university enrolls researchers as volunteers in FR&R operations, providing technical know-how to NPOs and dialoguing directly with market sellers and surrounding small-sized stores to encourage donations. Table 4 summarizes individual partners' resources mobilized to FR&R CSPs.

CSP-level capabilities mitigating barriers suffered by small retailers Our cross-case analysis unveils the resource management capabilities by which CSPs steer the complementary resources of partners towards the achievement of shared FR&R goals. In doing so, CSPs contribute to mitigating the barriers to FR&R involvement faced by small retailers, fostering their participation, as shown in Table 5.

Across the analyzed cases CSPs *shorten FR&R chain leveraging the spatial proximity* among small retailers and NPOs to prevent fresh products from deteriorating, and to minimize operational costs. This applies particularly to FR&R activities occurring in urban indoor markets, which maximize the quantity of recovered surplus food conferred by vendors within the same space, while shortening the distances to NPOs and final beneficiaries who collect surplus food directly from the market.

The goal is to create a network of local actors through trust-based relations through the market which allows us to collect and redistribute surplus food immediately. (Interviewee AM, September 29, 2022).

Associations may also select small-sized retail stores operating close to urban markets to streamline operations and to diversify surplus food supply sources.

We collaborate with those small stores that operate near the markets, recovering the surplus of products that we cannot find in markets. (Interviewee Z, June 9, 2023).

Indeed, spatial proximity reduces perceived food safety risks and drives trust among small retailers and NPOs, that is an important relational motive driving small retailers to engage

Table 4 Partners' complementary resources mobilized for urban FR&R

CSP Partners (Coding II)	CSP Partners (Coding I)	Resources (Coding I)	Resources (Coding II)	Type of resources	
Large food enterprises	Food manufacturers	Recovered surplus food Other donated food (not surpluses)	Food donations	Physical	
	Large retailer chains	Recovered surplus food Other donated food (not surpluses)	Food donations	Physical	
	Retailer logistics platforms	Recovered surplus food	Food donations	Physical	
	Management enterprises of indoor food markets	Trust-base relations with NPOs Management protocols of market vendors	Social capital Internal management protocols	Human Organizational	
Other non-food enterprises	Logistics companies	Van Scooters	Equipment	Physical	
	Information and (bio) technological companies	Warehouse	Facilities	Physical	
		Bags and other packaging Volunteers	Equipment Workforce	Physical Human	
	Banks and private foundations	Communication and marketing skills Private grants Private investments	Specialized knowledge Funding	Human Financial	
Food-aid organizations	Food banks	Indirect financing through service contract	Other forms of funding	Financial	
		Recovered surplus food Donated food products	Food donations	Physical	
		Volunteers Training of volunteers FR&R know-how Data collection and measurement	Workforce Specialized expertise	Human Organizational	
		Front-line food-aid organizations	Recovered surplus food Volunteers Employed Personnel Training of volunteers FR&R know-how Data collection and measurement	Food donations Workforce Specialized expertise	Physical Human Organizational
	Other non-profit associations	Other local solidarity associations	Van	Equipment	Physical
			Software for FR&R management	Digital tools	Physical
			Venue	Facilities	Physical
			Software for FR&R management Shared service map Social network	Digital tools	Physical
			Network ties	Social capital	Human
			Surplus food Volunteers Other welfare services provision	Food donations Workforce Specialize expertise	Physical Human Organizational
Solidarity purchasing groups	Solidarity purchasing groups	Network ties Venue for FR&R	Social capital Facility	Human Physical	
		Recovered surplus food Volunteers	Food donations Workforce	Physical Human	

Table 4 (continued)

CSP Partners (Coding II)	CSP Partners (Coding I)	Resources (Coding I)	Resources (Coding II)	Type of resources	
Public bodies	Municipalities	Public grant	Grants	Financial	
		Bills payment for utilities	Other forms of funding	Financial	
		Coverage of membership fees of IT tools			
		Prepaid cards for grocery in supermarkets			
		Fiscal incentives on food donations and waste management taxes			
		Personnel	Workforce	Human	
		Municipal market infrastructure	Facility	Physical	
	Municipal district directories	Public school canteens and cooking centers	Stalls inside urban market		
			Forklift	Equipment	Physical
		Van			
		Legitimacy	Social capital	Human	
		Municipal market infrastructure	Facility	Physical	
		Stalls inside urban market			
Academic institutions	Universities	Surplus food	Food donations	Physical	
		Cooked meals			
		Kitchen	Facility	Physical	
		Technical knowledge	Equipment		
			Specialized knowledge	Organizational	
	Volunteers	Workforce	Human		
	Public grants	Grants	Financial		

in FR&R. Through constancy and transparency of operations run by NPOs, these retailers feel confident donating.

In this vein, municipal markets facilitate the connection and aggregation of heterogeneous NPOs and vulnerable people in a specific place, fostering the combination of food-aid provision with other welfare services.

There are many associations around here that deal with migrants, rights and legal assistance, social assistance and even health care. Obviously, we do not provide this kind of services, but we act as a link between multiple local organizations that sometimes come to the market on Saturday afternoons, where there is this concentration of fragile citizens that meet in this square that we set up to intercept other needs than food access. (Interviewee S, June 30, 2023)

Additionally, cases also show that CSPs can handle perishable products supplied by small retailers and at the same time innovate their FR&R model through the *transformation of fresh surplus food into meals and value-added products with longer shelf-life* (e.g. juices and jams), that integrate the more conventional recovery of packaged products from supermarket chains and distribution centers. The latter is achieved through the mobilization and bundling of heterogeneous tangible and intangible resources brought by CSP partners, including equipped kitchens, specialized personnel, and local networks.

We started to transform recovered surplus food from vendors in indoor food markets into smoothies and fruit juice, then we got our hands on the oven, we bought two griddles, we started to transform surplus food into meals and provide it to homeless people and to the dormitories through other local associations. (Interviewee V, June 9, 2023)

Another example from the ReFoodgees case in Rome is the transformation of surplus food supplied by market vendors of the Esquilino market into meals for homeless people through the employment of vulnerable women in FR&R operations and the collaboration with a private neighborhood-based solidarity kitchen, as explained by Interviewee S (June 30, 2023).

Case studies reveal that alternative models of FR&R may be introduced to cope with the discontinuity of quantities and variety of surplus food recovered by small retailers through novel profit-nonprofit collaborative schemes.

Within a local systemic vision, since we realized by mapping the neighborhood that many small commercial entities wanted to support us but did not have sufficient quantities of surplus food to donate regularly, we devised a different configuration: surpluses recovered by food market vendors are supplied to the local neighborhood delicatessen and pastry shop and to the Emilian restaurant inside the local municipal market to be transformed and resold, disseminating

Table 5 CSP-level resource management capabilities

Barriers faced by small retailers	CSP-level capabilities for resource management	Mechanisms	Enabling complementary resources brought by other CSP actors
Limited quantities of surplus food	<i>Shortening the FR&R chain</i>	Spatial proximity (executing FR&R operations within the same space, aggregating FR&R actors)	Market facility with stalls (mobilized by the local municipality and municipal district directorates)
Logistics problems especially with long distances between the surplus food donor and NPOs	<i>Shortening the FR&R chain and Transforming surplus food</i>	Spatial proximity, Transformation of perishable surplus food into products with longer shelf-life	Market facility with stalls and kitchen for surplus food transformation (mobilized by the local government or private partners)
Perishability of products	<i>Shortening the FR&R chain and Structuring FR&R processes.</i>	Spatial proximity, Formalization of FR&R protocols, Measurement of surplus food, Streamlining processes	Specialized expertise, personnel and equipment (provided by food banks and front-line NPOs) FR&R agreements with food banks and front-line NPOs (fostered by managing operators of municipal markets)
Discontinuity of surplus food demand	<i>Shortening the FR&R chain and Structuring FR&R processes.</i>	Spatial proximity, Formalization of FR&R protocols, Measurement of surplus food, Streamlining processes	Specialized expertise and personnel (provided by food banks and front-line NPOs)
Difficult integration with daily operations	<i>Shortening the FR&R chain, Structuring FR&R processes, Building on relational and reputational capital, and Exchanging knowledge</i>	Spatial proximity (entailing reduced FR&R operational costs and place-based trust relations among FR&R actors), Knowledge generation and exchange, and Endorsement of public authority	Personnel of the local municipality supporting NPOs Market facility mobilized by the local authority. Fiscal incentives on surplus food donations provided by the local authority Other financial incentives in the food waste management contract Specialized expertise of the local university External legitimacy and visibility
Lack of surplus food measurement system			
Additional costs of food donations			
Limited knowledge on surplus food donations			

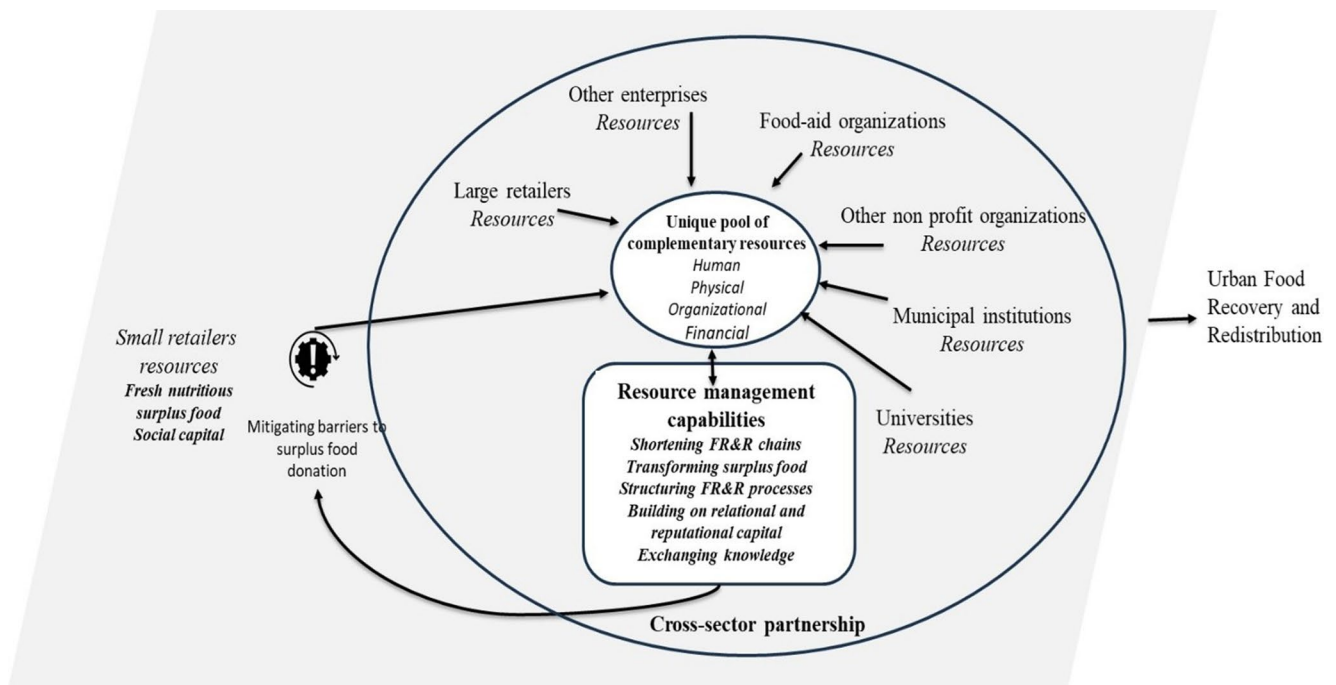


Fig. 1 Partners-resources interplay in CSPs and mitigation of barriers suffered by small retailers

the project and donating back a part of the economic proceeds to the project itself. (Interviewee AL, September 29, 2022)

Additionally, *structured partnership-level FR&R processes* driven by collaborative agreements between NPOs and small retailers drive operational efficiency, facilitating the integration of surplus food donation in small retailers' daily operations.

It was something new, which fits into the market mechanisms in a particular way: at five o'clock you have to give stuff away for free. The market would have closed at five with the risk of triggering negative reactions from the vendors. Therefore, we negotiated with them to find equilibrium points making them recognize that if that stuff is not sold immediately either is consumed or immediately becomes waste. (Interviewee R, June 30, 2023).

Indoor food market management companies play a facilitative role by adopting internal protocols for market stalls management that enhance coordination among vendors and build trust-based relationships between NPOs and market vendors, steering the adoption of shared FR&R protocols.

Furthermore, small retailers may benefit from the *reputational and relational capital* of the CSP, nurtured by the solidarity nature and the multistakeholder composition of the initiative, which attracts visibility and interest.

At the beginning, you did a lot of dissemination of the food donation initiative, so people see that and come. (Interviewee H, June 30, 2023).

The engagement of local institutions brings to the CSP public commitment and legitimacy and thus societal acceptance of the FR&R initiatives. In some cases, this public endorsement enables the CSPs to effectively integrate FR&R practices into local food and welfare policies' discourses, shifting the cultural narrative around surplus food redistribution.

With the municipality we have activated a real public service for all the people in difficulty who can go to each market of the city to get food for free. (Interview V, June 9, 2023).

This mechanism contributes to improving CSP's reputational capital and social perception, benefiting individual partners.

Finally, the *knowledge exchange* among partners bringing their specialized expertise and facilitated by the local universities contributes to filling in the knowledge gap on food donations and stimulates donations from small retailers.

Building on the main constructs of the coding and the unveiled CSP resource-management patterns, the theoretical framework depicted in Fig. 1 describes how small retailers can bring a set of distinctive resources to enrich the CSP and at the same time how the latter generates and deploys

novel capabilities of bundling together and orchestrating the complementary resources brought by individual partners to enhance urban FR&R, overcoming recurring limitations inhibiting retailers and particularly small retailers to donating surplus food.

Discussion and conclusions

Building on context-specific dynamics the cross-case analysis adopts the RBV lens to identify common and replicable patterns across different urban FR&R CSPs (Eisenhardt 1989), shedding light on the critical resources that influence the participation of small retailers in FR&R programs. In doing so, our study contributes both theoretically and practically to the international debate on urban food aid, while advancing RBV research in the context of CSPs by providing empirical evidence on urban FR&R collaborations. More specifically, drawing on previous studies focused primarily on large retailers, our cases highlight how the availability and scarcity of certain tangible and intangible resources shape small retailers' involvement in FR&R, offering new insights into the barriers and drivers of surplus food donation.

Concerning the barriers (RQ1), our findings highlight that the limited quantities and irregular availability of surplus food from small retailers, coupled with the variability in demand from NPOs, constitutes a structural impediment to the establishment of stable food redistribution flows. This challenge is particularly pronounced for individual, spatially dispersed small-sized stores, which struggle to achieve the scale and regularity required to sustain redistribution partnerships. While previous studies have identified similar logistical and coordination barriers among larger retailers (Bartezzaghi et al. 2022; Sundgren 2022), our study suggests that these constraints are exacerbated in the context of small retailers, where surplus generation is inherently fragmented and unpredictable. Moreover, the lack of material resources, such as cold storage rooms, to handle and donate perishable products typically sold by small retailers, discourages the latter from donating and NPOs from engaging them in their network (Akkerman et al. 2023; Alexander and Smaje 2008). Consistently with literature on the barriers to FR&R experienced by larger retailers, our study shows that small retailers struggle to find economic gains associated with donating surplus food, including fiscal incentives (Busetti 2019; Sert et al. 2018). This barrier is amplified by their limited knowledge of the norms and administrative requirements regulating FR&R (Akkerman et al. 2023; Bartezzaghi et al. 2022; Baglioni et al. 2017) and the difficult integration of donation activities, including surplus food measurement, in daily operations due to lack of

time and available and trained personnel, confirming studies by Busetti (2019) and Sert et al. (2018).

While showing the burden created by these barriers on smaller retailers, our study unfolds the unique set of resources and capabilities small-sized stores and urban market vendors can confer to urban FR&R initiatives (RQ2). These include the provision of nutritious fresh surplus food, and the mobilization of relational and social capital. Fresh surplus food is usually scarce and difficult to recover and secure for human consumption due to its perishability, yet it is nutritionally valuable for beneficiaries, as stressed by Akkerman et al. (2023) and Garrone et al. (2014b). Beyond the material dimension, small retailers also contribute social capital as added value embedded in their place-based social networks (Bhandari and Yasunobu 2009). These territorially based relations represent a valuable, rare, inimitable and non-substitutable intangible asset that small retailers bring to CSPs, fostering food donations, as pointed out by several scholars (Haynes Stein and Brinkley 2023; Sundgren 2022; Garrone et al. 2014b). Furthermore, small retailers often display a strong moral commitment to socio-ecological cause – i.e. valorizing edible surplus food for vulnerable people preventing food waste. This intrinsic motivation, as also observed by Sundin et al. (2023) and Sert et al. (2018), emerges as a critical intangible resource that facilitates their engagement in donation activities and in some cases differentiates them from larger, more profit-driven actors.

Small retailers' resource contribution is found to enrich CSPs for FR&R, while collaborative arrangements simultaneously help to mitigate the barriers to surplus food donation faced by such actors. Indeed, other actors involved in CSPs for FR&R play a complementary role by bringing a unique bundle of tangible and intangible resources that small retailers typically lack – e.g. spaces, infrastructure, and specialized workforce – thereby fostering their engagement in FR&R partnerships.

CSPs not only pool resources but also generate novel management capabilities through which these resources are bundled to optimize FR&R processes and to integrate FR&R with other social services. In this way, CSPs generate cost savings, as well as relational and reputational benefits for small retailers and other partners, while also advancing shared goals. These findings, summarized in the proposed theoretical framework depicted in Fig. 1, align with and extend RBV scholarship that explain sustainability-oriented multiactor partnerships in terms of mobilization and management of strategic resources (Clarke and MacDonald 2019; MacDonald et al. 2019), including application in the food sector (Perotti et al. 2025; Rivera et al. 2023; Dentoni et al. 2016) and in urban contexts (Bartezzaghi et al. 2024). Through the mobilization and combination of partners' resources, CSPs leverage specific resource management

capabilities (G et al. 2011; Sirmon et al. 2007), that enhance FR&R, generating shared value for both partners and the wider community (Clarke and MacDonald 2019; Dentoni et al. 2016). More in detail, CSPs *shorten supply chains leveraging spatial proximity* among vendors, NPOs and final beneficiaries, aggregating actors and surplus food quantities in the same place, thus overcoming logistic barriers, reducing transaction costs, and increasing trust. This finding is consistent with recent studies highlighting the advantages and sustainability implications of short food supply chains (Quaglia et al. 2024; León-Bravo et al. 2024), also in urban environments (Bartezzaghi and Caniato 2023). Second, CSPs *transform surplus of fresh products* supplied by small retailers into value added products with longer shelf-life, leveraging the knowledge, and facilities conferred by other partners. This capability turns out to be an effective strategy to handle and valorise perishable products, enhancing FR&R (Ghahremani-Nahr et al. 2025; Vander Vennen and Parizeau 2023; Bernaschi 2020). An additional management capability developed by CSPs is *structuring FR&R processes* through formalized collaborative protocols and supported by digital tools. In this regard, the study points out that this capability can drive persistency, efficiency and transparency of FR&R operations, stimulating trust and commitment by small retailers, supporting the arguments of Corrado and Sala (2018), Garrone et al. (2014a), and Sundgren (2022). Additionally, the *relational and reputational capital* associated with certain partners – particularly those embedded in solid local networks or endorsed by local governments – emerge as strategic assets that CSPs can build on and leverages for FR&R aims, benefiting individual partners (Wanner and Miljand 2025; Higham et al. 2024; MacDonald et al. 2019). Also, the *knowledge exchange* fostered within CSPs contributes to greater awareness, transparency, and mutual trust among partners (Dentoni et al. 2021; Mousavi and Bossink 2020; Clarke and MacDonald 2019), unfolding the pivotal role of universities in improving learning and capacity building in multistakeholder settings (Cvitanovic et al. 2025; Bartezzaghi et al. 2024). Therefore, CSPs manage to mobilize and orchestrate diverse strategic resources and assets conferred by private and public actors, strengthening the organizational and financial stability of FR&R interventions to a higher extent relatively to traditional bilateral agreements involving solely food aid NPOs and private donors (Bartezzaghi et al. 2024; Warshawsky 2023; Vasile 2022).

Our study unpacks the role of indoor food markets, typically managed by municipalities, as institutional and spatial enablers of small retailers' participation in FR&R partnerships. These public venues allow for the aggregation of volumes of fresh surplus food, spur the physical and relational proximity connecting market vendors, NPOs

and disadvantaged citizens. Indeed, our results suggest that indoor food markets are strategic urban food exchange nodes (Borrelli et al. 2021; Fattibene et al. 2020; Moragues-Faus et al. 2020), which municipalities mobilize to foster CSPs for urban FR&R (Fattibene et al. 2020; Machell and Caraher 2012; Morales 2009).

Other promising findings emerge from our study. Proximity-based FR&R chains, fostered by CSPs operating in municipal indoor markets, may enable the connection between actors engaged in FR&R with NPOs providing other forms of assistance to vulnerable people, creating fertile ground for hybridizing food aid with other assistance services, in the direction of a more integrated welfare policy approach (Arcuri 2019; Hebinck et al. 2018; Moragues-Faus and Carroll 2018). In this regard, the role of municipalities emerges as pivotal for fostering the formation and consolidation of urban FR&R collaborative practices, thus contributing to the debate on the governance of food assistance provision by adding empirical evidence on the potential of engaging the local public sector (Bartezzaghi et al. 2024; Arcuri 2019).

We believe that our study contributes to advancing scholarly and practical knowledge on FR&R models of food assistance in cities, while at the same time it enriches literature on RBV in the context of CSPs by providing empirical evidence through a cross-case analysis of urban FR&R CSPs.

This paper contributes to the scientific discourse on the role of the retail sector in FR&R, shedding light on the relatively underexplored contribution of small-sized retail stores and market vendors involved in FR&R initiatives. The paper fills this gap by unpacking the main barriers and drivers to surplus food donations experienced by these players in terms of critical tangible and intangible resources they dispose of or, on the contrary, lack, and that influence their participation in FR&R. These findings enrich previous studies focused on the involvement of large retailers in food donation programs (e.g. Huang et al. 2021; Busetti 2019; Hermsdorf et al. 2017; Sert et al. 2016).

Our study also emphasizes the strategic role of indoor food markets. By leveraging spatial proximity, they aggregate actors, surplus food and create trust-based connections among small retailers and food-aid NPOs. As a result, this paper also contributes to the stream of literature exploring aggregation models that foster economies of scale and empower small-sized agrifood actors and alternative food networks (such as Abraham et al. 2022; Ge et al. 2019, 2018), and existing contributions underlying the role of food markets as promising venues for food waste reduction policies (such as Borrelli et al. 2021; Fattibene et al. 2020; Machell and Caraher 2012). Building on the above-mentioned findings on the potential of small

retailers for urban FR&R, the paper also enriches studies which stress the role of small players in fostering social innovation place-based initiatives (Parwez 2017; Gherardi 2009) and sustainable local development (Allam et al. 2023; Zurlo and D'Ambrosio 2024).

Besides bringing evidence on the relevant role of small retailers in urban FR&R, the paper extends studies on CSPs as arrangements for surplus food valorization for human consumption in urban contexts by unfolding the interplay of partners and resources consistently with the RBV perspective. Indeed, despite the growing attention on collaborative arrangements as an effective approach to address urban food issues (Herens et al. 2022; Moragues-Faus and Battersby 2021), literature on CSPs for FR&R is still limited (Bartezzaghi et al. 2024). Therefore, the paper fills this void, providing a better understanding on how these collaborations play a critical role in terms of resource interplay for the functioning of FR&R activities, thus enriching literature on RBV in the context of CSPs (Riandita 2022; MacDonald et al. 2019) and especially in the food sector (Bartezzaghi et al. 2024; Dentoni et al. 2016). More in detail, in addition to providing evidence on the distinctive resources brought by individual players to the partnership (Clarke and MacDonald 2019), the paper unveils how the CSP manages such resources to generate value and pursue the CSP's goals (Bartezzaghi et al. 2024; Dentoni et al. 2016).

Finally, the paper provides two key insights for businesses, policymakers, and NPOs, providing empirical evidence and practical guidance for the operationalization of urban FR&R initiatives. First, the study unpacks the distinctive complementary resources that small retailers and other enterprises, NPOs, local governments, and universities, bring to form and deploy these collaborations and how these resources, if properly managed, can improve urban FR&R, while benefiting individual partners.

Second, the study unveils the pivotal role that municipalities can play by equipping CSPs with critical resources, such as urban market facilities, economic incentives, and legitimacy for private FR&R actors. These results may facilitate the design, implementation and long-term sustainability of collaborative schemes which engage businesses, NPOs, research centers and universities, and local governments, also providing NPO managers with stimuli for experimenting with the hybridization of food aid with other services through the extension of partnerships to other NPOs.

Concerning the study's limitations, our research is based on cases located within the same geographic and institutional context, which may constrain the generalizability and external validity of findings. At the same time, the focus on medium- to large-sized cities in a single country

represent a deliberate research design choice that allowed for a deeper investigation of the environment in which small retailers and CSPs for FR&R operate, thereby elucidating the conditions under which the observed phenomena occur and causal relationships hold (Beach and Pedersen 2016). Moreover, the cases' selection enables a cleaner comparison of empirical data across cases, thus providing a suitable ground for studying the conditions for small retailers' engagement in urban FR&R initiatives (Woodside 2010; Patton 2002; Eisenhardt 1989). Our empirical concentration on FR&R in the urban context of the Italian country is also a response to the need for overcoming existing limitations of current food assistance models leveraging FR&R that have widespread in high-income countries (Rizvi et al. 2021; Lambie-Mumford and Silvasti 2020; Gentilini 2013). Nevertheless, our study could be replicated in different urban environments to improve the findings' external validity findings and to strengthen innovation in the design of urban FR&R initiatives.

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Data availability Data from interviews are not accessible through an open repository for privacy reasons. The data are, however, available from the authors upon reasonable request.

Declarations

Conflict of interests The authors have no competing interests to declare that are relevant to the content of this article.

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