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Co-Producing Sustainability: Involving Parents and Civil Society in the Governance of School Meal Services. A Case Study from Pisa, Italy

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Abstract: There is a rising awareness of the power of the public sector in enhancing sustainable consumption and production practices, in particular related to food procurement and its social, ethical, economical and environmental implications. School meal services have a high resonance in the debate on collective catering services because of the implications on the education to sustainable dietary habits and the orientation of the production system. This contribution focuses on the reciprocal relationship between professionals and users of school meal services as a driver to mobilize new resources—according to the theory of co-production—that steer service innovation and a shift towards more sustainable practices. We illustrate this through a case study on the school meal system in Pisa (Italy), where the Canteen Committee represents an institutional arena for participation and empowerment of actors that has gradually gained a central role in shaping this school meal service. Despite the challenges and obstacles, the institutionalized co-production of services allows consolidation of trust among key players and the introduction of innovations in the service, in the form of several projects oriented to sustainability which would not take place without the joint effort of actors involved, parents in the first place.

Keywords: sustainable public procurement; school meals; co-production; sustainable diets; public private partnerships; civic food networks; social innovation

1. Introduction

There is a rising awareness of the power of the public sector in enhancing sustainable consumption and production practices by changing food procurement strategies [1,2]. Governments play a role as active participants in the market, by purchasing public works, supplies and services thus orienting consumers' behaviors and production practices [3–6]. The economic relevance of public services is undoubtedly high: public expenditure equals approximately 19 per cent of the European GDP [7]. In the UK, all levels of government together consume 18 per cent of GDP [8,9]. In the USA, the figure stands at 14 per cent [10]. The potential of public procurement as a means to foster economic, social and environmental development has been increasingly recognized at international level since the Johannesburg World Summit on Sustainable Development in 2002, and reinforced in 2012 at the meeting in Rio.

Public procurement as a lever to achieve sustainability objectives is at the center of a larger debate on the role of public institutions in society. Furthermore, compared to other sectors and industries, food entails a range of issues, which lie at the heart of current sustainability debates: from public health to social inclusion, from sustainable consumption to environmental implications [11]. The debate between “paternalistic” and “libertarian” approaches in policy becomes crucial when it comes to food and diet, for the impact that these have on human health and sustainability [12]. Revaluing public food procurement implies a transition in the public sector purchasing choices and has implications on the way services are oriented, structured, managed and monitored. The European Union reformed the European legal framework on public procurement by integrating the “lowest price”, as the main criterion to win a contract, to the “most economically advantageous offer”, which consists of contractual obligations to safeguard public interests, such as health, safety and environmental protection [13]. Moreover, it stimulated the diffusion of sustainable practices in public procurement by encouraging member states to adopt national action plans for greener public procurement [14]. Guidelines for public institutions at state level are developed for the different stages of the tendering procedures with the aim of qualifying supplies and services in environmental terms. Minimum Environmental Criteria for goods and services—priority categories in terms of environmental impact and volume of expenditure—can be inserted directly into the contracts. “Food and beverage” is responsible for 20 to 30 percent of the most significant environmental impacts in Europe [7] (p. 15), especially due to the use of polluting substances in the production, processing and transport of foodstuffs. Examples of baseline criteria for collective catering are the purchase of organic and seasonal products and the minimization of waste and packaging. Furthermore, freshness of food, reduction of the number of intermediaries, lower emissions, safe working conditions, re-use of energy, water and materials are considered to be preferential criteria [7]. Despite the increasing level of uptake throughout the European Union, the actual adoption of these criteria hasn't reached the objectives, varies much by country and is still quite limited in the food and catering sector [15]. Moreover, the

National Action Plans focus on integrating mainly environmental issues into public procurement processes thus leaving the social dimension of sustainable public procurement on the side [16].

The dynamics of public food procurement and collective catering services, schools and hospitals in the forefront (but also universities, care homes, prisons, *etc.*) represent a challenge and an opportunity for the implementation of sustainability practices. Public food procurement has the potential to orient towards healthier food products with a lower environmental impact—at the expense of (merely) cheaper food [17]—and become a driver in the process of change. In the words of Morgan [2] (p. 21), “(...)the story of public procurement is a tale of untapped potential so much so that the economic significance of procurement seems strangely out of step with its political status”.

Public school meals have a higher resonance in the public procurement debate than other public food services. This is linked to the implications on the production system and the education of children to sustainable consumption [17]. This relevance concerns both developed and developing countries with different nuances. In developing countries, the school meal is often the main, or only meal for children during the day, and school feeding programs—such as World Food Program agency within the United Nations—aim at raising school attendance rates and reduce illiteracy, contributing to development, stability and security [18–20]. In western countries, interest in school food has risen, especially in relation to unhealthy dietary habits and related diseases, which has also had an impact on the public health system [21]. These concerns have stimulated the rise and development of new relationships between the public sector, as a buyer and consumer of food, the chain of food provision, the final users, namely the children and their families and civil society in general, as a means to pursue sustainable development in different conditions and context [19]. It is worth mentioning the Farm to School (FTS) program, a popular movement in the United States, described as a complex network that includes federal, state, local, and household levels [22]. The aim is double: on one side to teach students about food, nutrition, and agriculture by connecting them with the sources of the food that they eat and on the other side to foster opportunities for farmers that seek market channel diversification. The essential condition for success of the Farm to School movement is the cooperation and partnership among the key players, namely farmers, sustainable agriculture advocates, community and school garden supporters, waste/recycling promoters, school administrators and teachers, parents, food/agriculture businesses, community development folks, farmland preservation advocates, government agencies, universities and cooperative extension, and food service [23].

The role of new “public-private” partnerships in fostering a shift towards more sustainable school meal services is gaining the attention also of the scientific community. Such new relationships may be fostered by promoting the transition management from existing practices and rules to new ones [24]. School procurement policies, school food gardens and “farm to school” programs, are examples of different ways to contribute to sustainable community design, food system localization, and better child health and nutrition (see Carlsson and Williams for a literature review, [25]). These different strategies encourage sharing of public responsibilities with the community in various ways, and indicate that collaboration/partnership among all actors can be a condition and/or a consequence of striving towards more sustainable food systems. School procurement policies of locally sourced foods is a recurring strategy to improve the sustainability of school meal systems, often associated to educational programs (e.g., school food gardens) centered on the agricultural, culinary, and nutritional qualities of local foods. Explicit collaborations/partnerships between farmers and other actors of the

school food supply chain are a condition in meeting schools' sustainable procurement goals and offer potential solutions to recurring procurement barriers [26,27]. Vice versa, the development of sustainable procurement practices can contribute to building more collaborative relationships between caterers and their local suppliers [28].

The present contribution explores the role of new public-private partnerships for the promotion of more sustainable school meal services by drawing from the theory of co-production [29,30]. Co-production is a viable solution in public service delivery to mobilize local resources that better fit local needs in the perspective of social innovation [31] based on a growing and reciprocal relationship between professionals, service users, their families and their neighbors [32]. This is illustrated with a case study of the school meal system in Pisa (Italy), where the Canteen Committee represents an institutional means for participation and empowerment of actors that has gradually gained a central role in shaping this school meal service. The case study provides evidence of how co-production processes address the planning, management and monitoring of the service. The institutionalized participation of all actors within Canteen Committees can be assimilated to a form of collaborative governance, that brings public and private stakeholders together with public agencies engaged in consensus-oriented decision making [33]. This allows a shift towards more sustainable practices in school meal services for the promotion of more sustainable dietary habits, in and beyond school canteens.

The following paragraph recalls the foundation of co-production in public services and develops a theoretical framework on co-production in school meals, by drawing from the literature on public education services. Paragraph 3 provides information on methodology and data collection. Paragraphs 4, 5 and 6 develop the case study by presenting respectively: the context, the role of different actors and the main innovations introduced in the school meal service in Pisa (Tuscany, Italy). Paragraph 7 concludes.

2. Co-Production of Sustainable School Meal Services: Role of Final Users

In the past forty years, the limitations of welfare state in terms of its ability to face inequalities, increasing demand, constrained resources and environmental degradation are becoming increasingly evident. Moreover, the downward pressure on costs faced by urban governments has exacerbated and at the same time, expectations of citizenry on the quality of services have risen. The dilemmas deriving from these trade-offs have stimulated research to identify possible avenues of solution.

Coproductio has emerged as a concept of the service delivery process, which envisions direct citizen involvement in the design and delivery of city services with professional service agents [32,34,35]. The principle of co-production of public services is bound to that of subsidiarity of public action in supporting the responsible participation of private action to creating value and innovation [36–38]. In fact the idea that consumers play an important role in the production of public services dates back to the 1970s, and generated considerable interest in the 1980s, when the first attempts to define this concept rigorously were made [39–43].

The potential of collaborative approaches to innovation and improvement of public services, as opposed to purely competitive forms of public procurement, continues to suggest new avenues for research also today [44–46]. The integration of different streams of literature, namely service

management and public administration, highlights new insights to the theoretical and practical development of the co-production perspective [47].

Ostrom [29] (p. 1073) provides a widely accepted definition of co-production, as “the process through which inputs from individuals who are not “in” the same organization are transformed into goods and services”. This has been narrowed with the term “institutionalized co-production”, as the provision of services through regular, long-term relationships between professionalized service providers (in any sector) and service users or other members of the community, where all parties make substantial resource contribution [48]. The rationale behind the co-production approach is the complementarity of inputs: “when inputs from the public administration and citizens are complementary, output is best produced by some combination of input from both sources and a potential for synergy exists. Actually a combination of input is needed rather than reliance on one part or the other” [29] (p. 1080). The artificial division between professionals and users has undermined the relationship that often makes the difference between success and failure in the realization of services. Co-production considers users and community as a pool of unexplored resources and highlights the mutual relationship existing between service users and professionals, as a possibility to significantly improve the effectiveness and quality of the service [32].

Contributions from the literature widely illustrate how co-production is put into practice and how it improves the quality of services—showing, in other terms what improvements cannot be achieved otherwise. Case studies from developing countries illustrate how the concept of co-production is operationalized into services often when the organizational power of the state is weak and thus unorthodox organizational arrangements become more suitable [49]. This happens, e.g., in police services in Pakistan and public transport in Ghana [48], forest management and protection in India [50,51], urban sewerage in Brazil [52]. Co-production has gained widespread attention also in developed countries, and it has been indicated as a crucial element in the reform of public services [53]. In the UK public service reforms undertaken since the late 1990s include a range of policy initiatives focused on service users more fully involved into the production of service outcomes, such as direct payments in social care, expert patient programs in the national health service, home–school contracts in education and a greater emphasis on community justice in policing [54]. In Scotland, the Government has developed policies, which specifically promote and fund co-production approaches in health and social care [55].

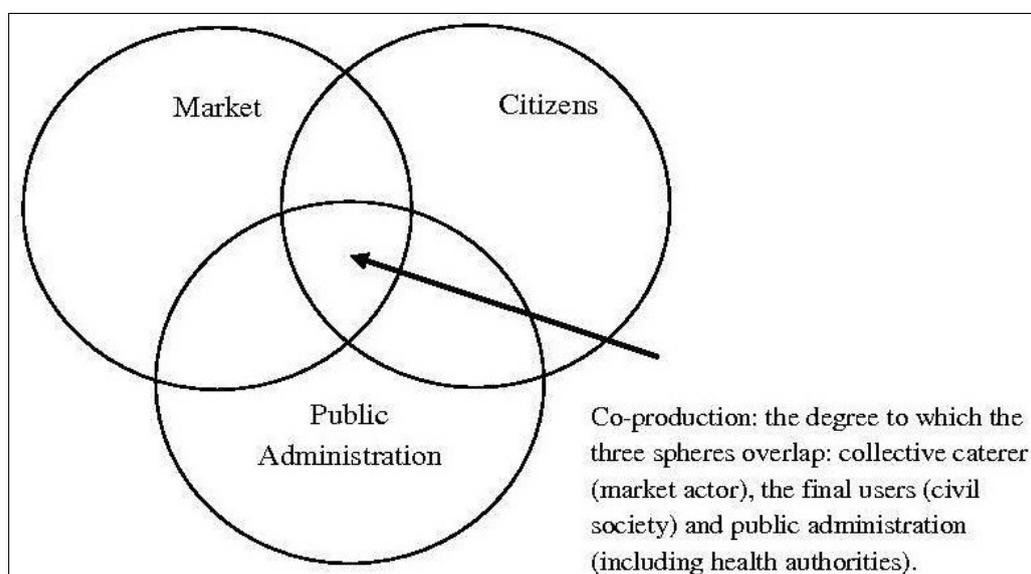
Several studies provide evidence on the role of co-production in adult social care [56] or parents’ participation in the provision of childcare services. Pestoff [57] carries out a comparative study across eight European countries identifying different levels of parent participation (namely economic, political, social and service specific) in pre-school services in different countries and in different forms of provision, (*i.e.*, public, private for-profit and third-sector preschool services). Similarly, a following study on the Swedish welfare state compares different forms of pre-school services in Östersund and Stockholm (parent and workers co-ops, municipal services and small for-profit firms) in terms of politics, parent-participation and service quality in preschool services [58]. Prentice [59] reviews Canada’s market-based childcare “system”, provided by the voluntary or commercial sectors and financed primarily through parent fees, because Canada federal government has declared its intention to build a national system of early learning and care, however the system as it is lacks policy, governance and service coordination. The author considers the limitations of co-production in

delivering universal services, when it is a consequence of the absence of public provision. Clearly, co-production is not a “panacea” in any way. Bovaird [35] (p. 856) summarizes effectively the benefits and limitations of co-production on the basis of six case studies that illustrate different forms of user and community relationships with professionalized public services. Beyond allowing mobilization of community resources not otherwise available to deal with public issues, widened choice and shift in power from professionals to users, co-production entails several limitations including conflicts resulting from differences in values, incompatible incentives to different co-producers, unclear divisions of roles, free-riders, burnout of users or community members and the weak capacity of the third sector to lobby for change.

Co-production of education services is a particular type of co-production [60] (p. 149). Literature on education services asserts that two uses of the concept of co-production are necessary for a full analysis of co-production in education. On a first level, the co-production function for education services requires input from teachers (traditional producer), students (traditional consumer) and the student-teacher nexus, thus the active participation of students is necessary for learning. In this sense, if co-production is omitted the service will not occur. On a second level, other contingent inputs deriving from parents, student peers, community organizations—private and public—and media, have impacts on the quality and quantity of education services. In this sense, if skillfully and regularly contributed, these inputs add quality to educational services, even if the service could be created anyway.

The present article contributes to the debate on co-production and education services, by illustrating how co-production occurs in school meal services. As it will be explained further in the following paragraphs, school meal services in Italy are increasingly assimilated to education services, as it is also recognized by recent legislation. Co-production in school meals is visualized in Figure 1, which represents co-production as the degree of overlap between three spheres: the citizens (*i.e.*, users of the service), the public actors (*i.e.*, who administer the service) and the market (*i.e.*, who provides the service).

Figure 1. Co-production of school meal services.



This process of co-production involves parents in a positive, voluntary and active interaction with the providers of the service [41]. Moreover, resource inputs provided by parents are either not included

in the municipal budget or are undervalued by the official providers [60]. Co-production may occur at different steps of the school meal supply chain, such as policy formation, planning, managing, coordinating and evaluation [29,60,61].

As for education services, a fundamental nexus is established during school lunch time between students, teachers and the personnel of the collective catering firm in charge of preparing and serving lunch. It is not enough to put lunch on the table if students do not eat it. Beyond the material preparation of meals by the personnel, teachers (especially in pre-primary and primary schools) play an important role in guiding children during lunch time and being an example for them. If co-production doesn't occur at this level, the lunch experience ceases to be an educational experience, and the levels of food waste are one of the consequences.

Furthermore, other contingent inputs originating outside the school canteen impact on the service, but usually none of the costs for these resources are included in the school budget. In the private sphere, the most important contribution derives from parents who imprint children behavior towards food. Beyond the family, other civil society actors engaged in food issues—associations, civil society organizations and media—have an influence. In the public sphere, the municipality defines the service features by commissioning the service through a contract. The local health authority is responsible for the enforcement of food safety standards, which have a strong effect on the way the service is delivered. As shown in the case study, this second type of co-production takes place within the Canteen Committee, a non mandatory body at municipal level, which enables different actors—including parents—to actively engage in the provision of the meal service from planning, delivering up to the monitoring phase. This represents an institutional means to favor the co-production of school meal services by orienting different stakeholders and perspectives towards the innovation of school meal services.

3. Methods

The present research is developed within a collaborative project funded by the Seventh Framework Programme of the European Commission, denominated Foodlinks (see acknowledgements for details). The project entails different themes related to sustainable consumption and production practices among which “revaluing public procurement”. Part of the project work is based on the definition and analysis of cases representing best practices in Europe. The timeframe covered by the present case study research is from 2011 to 2013.

The case of Pisa school meal service well fitted the objectives of the Foodlinks project for the effort towards sustainability practices and innovation. In fact the province of Pisa is the protagonist of a rising urban food strategy [62]: on one hand a policy called “Strategy for Food” aiming at creating synergies between different public domains related to food is currently being developed. On the other hand, a network among policy makers, civil society actors, firms and scientists is spreading in order to coordinate on themes related to food security and safety issues [63], including public procurement and school meals.

Exploratory semi-structured interviews were carried out addressing the main stakeholders involved in the school meal service in Pisa: the officer and its staff members responsible for the school meal service, together with the representatives of the catering company, allowed to obtain general information on the service and access to relevant documents (including details on the tender

documents, technical specifications customer satisfaction assessments performed by the catering company, the results of monitoring sessions performed by parents) and on the projects being developed (described in Paragraph 6). Throughout years 2011–2013, we participated directly to Canteen Committee meetings and this allowed us to gain direct insights on the features and challenges faced by this participatory body. Alongside in-depth interviews to the city councilor for education services were performed, explicitly focusing on the role of the Canteen Committee and its development. Parents nominated members of the Executive Board of the Canteen Committee were contacted several times, either directly or by e-mail, to elicit the amount of time and resources dedicated to fulfill the Canteen Committee duties. A regular observation of the functioning of the school meal service was facilitated by the ICT instruments available: the web log of the Canteen Committee, the school meal service website run by the municipality and the interactive website made available by the catering company, particularly aimed at direct contact with parents.

In the next paragraphs, after a brief presentation of the context, we illustrate how co-production is activated, put into practice and the main challenges encountered. We document the process through which the city authorities have engaged with the actors of the chain of school meals provision, and in particular parents who expressed a strong motivation to push the system towards sustainability, as a means to promote better dietary habits, in and beyond school canteens.

4. Case study

4.1. *Towards Sustainable School Meals: The Case of Pisa (Tuscany, Italy)*

Italy has quite a long history in terms of sustainable public procurement: the orientation towards organic food in the school meal system dates back to the mid 1980s and since then a priority towards local food, attached to seasonality and territoriality, has gradually gained ground [17,64]. In this regard, the Tuscany region can be considered a forerunner, due to its embedded food culture and also a political leaning towards the promotion of healthy food habits and support accorded to innovative sustainable production and consumption practices. Throughout the Tuscany region, the North West area of Pisa stands out as a territory where civil society has in itself a strong motivation to innovate and experiment with a broad range of consumer and producer initiatives oriented to sustainability, such as farmers' markets, solidarity purchase groups, collective farmers' shops [65–67]. Moreover, a rich cultural landscape, also due to intense immigration processes, poses further challenges, among others, on the school meal system and on the choice of foods served, in the attempt to make food an opportunity for integration, and not for conflict.

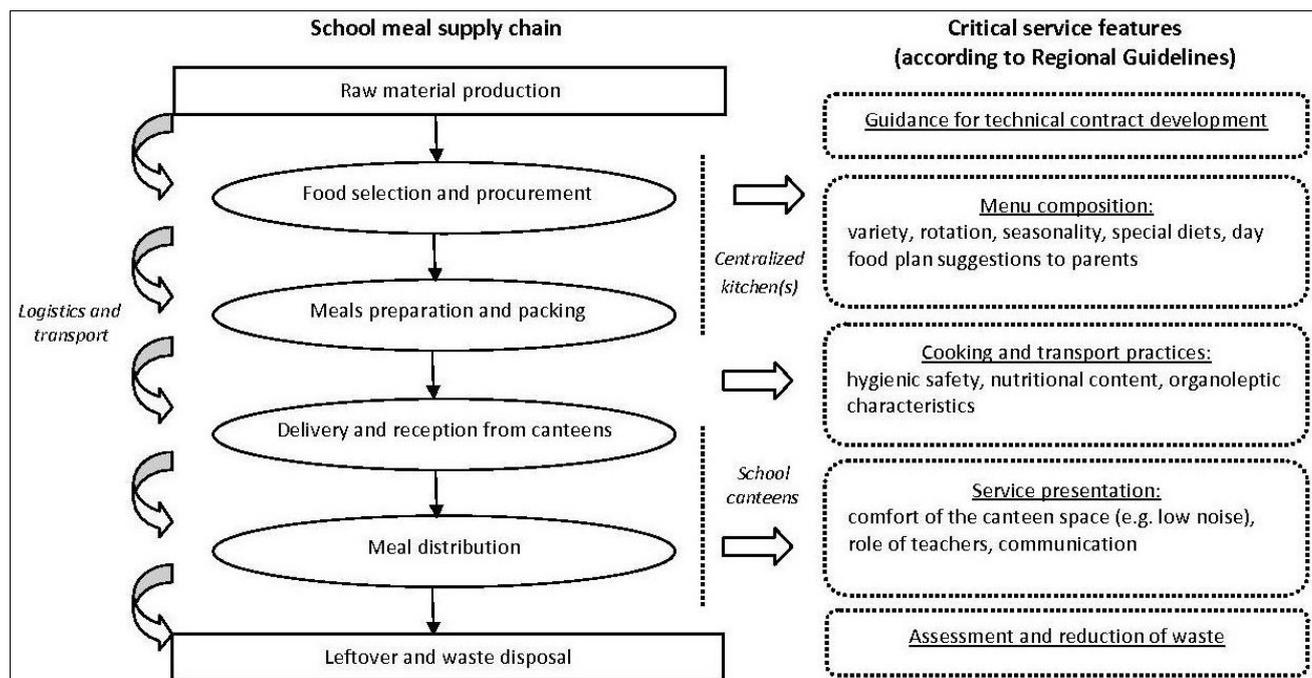
School meal services in Italy developed since the 1970s, when the school day in pre-primary school level (*i.e.*, nurseries and kindergartens), primary and secondary schools of first level gradually extended from the morning until the afternoon hours. The school meal service is provided by the municipality (there are more than eight thousand municipalities in Italy) and it can be organized according to different degrees of control: ranging from a completely direct control by the public administration, who owns the structures and equipment and runs the service, to a completely indirect control over the service, run by a collective catering firm with its own structures and personnel, on the basis of a tender contract. According to Bio Bank [68], the prevailing choice is to subcontract to

caterers, (74 per cent of municipalities), while 15 per cent opts for the direct management and the remainders choose a mixed solution.

The “Italian National Guidelines for School Catering Services” released in 2010 [69] provide indications to improve the nutritional quality of lunch eaten at school, to deal with organizational and management aspects of food service and educational aspects in the promotion of healthy eating habits in children. Tuscany Region rapidly endorsed the National Guidelines by releasing a regional policy document containing theoretical and practical directions to improve the nutritional and sensory quality of school catering, to organize and manage the catering service and to provide a proper meal suitable to the needs for different age groups.

Figure 2 visualizes on the left side the supply chain of school meals as the result of subsequent phases from procurement of ingredients to meal preparation in centralized kitchens, transport and delivery to school canteens and finally, leftover disposal. The right side indicates how the indications given by the Regional guidelines address each phase in order to improve the quality and sustainability of school meal services. The overriding aspects to be tackled with priority are:

- (i) Development of technical specifications in the call for tender: these are elaborated by the municipality and state the characteristics of the school meal service;
- (ii) Procurement and menu composition: preference should be given to seasonal and fresh products with reduced environmental impact (*i.e.*, organic farming or integrated production) and short food supply chain ingredients. These are generically identified by the Guidelines as products that have not travelled long distances (*i.e.*, 70 km) and have gone through few intermediaries before reaching the final consumer. Regions and local authorities are encouraged to explicitly define criteria that allow compliance with the free market principle within the European Community, at the same time protecting fresh, short chain and local products (not necessarily classified as typical or traditional). Moreover, typical and socially equitable products—namely Protected Designations of Origin (PDO), Protected Geographical Indications (PGI) and Fair Trade products—are to be preferred when substitutes are not available on the local market. Variety and rotation of menus during the year allow one to pursue the objectives of healthy nutrition and food education. Fruit instead of high calorie snacks in the mid morning are strongly encouraged. Great attention is to be given to special dietary needs of children affected, for example, by celiac disease or diabetes;
- (iii) Safeguard of hygiene, nutritional content and taste of food during cooking and transport. In fact, the quality of raw materials can be enhanced or undermined by the technological processes;
- (iv) Food presentation and comfort of canteens: it represents a condition to the appreciation of different types of food, for lunch to become a pleasant shared moment among children and teachers (e.g., noise reduction in the room). Other encouraged practices are the use of non-food products with limited environmental impact (reusable dishes, plates, napkins, *etc.*) and the use of tap water instead of bottled mineral water;
- (v) Monitoring and assessment of the quality of meal service, also in view of reduction of high levels of waste especially linked to some foods served (e.g., in particular fish and vegetable side dishes).

Figure 2. The supply chain of school meals: critical features indicated by the Regional Guidelines.

In fact, Tuscany anticipated times in 2002 with a Regional Law (L.R. n.18/2002) that aimed at compensating local authorities for the introduction of organic and traditional ingredients, by financing the price differentials. During the following years, the use of organic products in schools became more widespread (over a million organic meals in Italy today) [68] while the focus of the political discourse shifted towards the localization of food procurement. In 2007, the region launched the “Short Food Chains” project that introduced the possibility to finance several short food supply chain initiatives through the Regional Agriculture Plan and Forestry measures through the submission of special projects for the inclusion of short chain provisions and education on nutrition and food habits in school programs. This testifies a change of perspective from a merely economic concern (*i.e.*, covering higher costs) towards a wider educational approach on food matters, which legitimizes new procurement practices in the perspective of the encouragement of new and diverse food choices [69–71]. The educational concern is reflected in the integration of lunch time within the educational activities of the school day, as a way of strengthening the community by living lunch as an occasion to socialize but also learning the principles of a healthy diet and to appreciate traditional dishes.

Along this line, several municipalities throughout Tuscany successfully activated short chain contracts with local farmers, with the aims of improving the quality of dishes and at the same time supporting the local economies. The Region officially supported this ferment by signing a protocol in 2012 with farmers’ organizations, cooperatives and caterers, with the objective of supporting and activating a network to facilitate the introduction of local products (originated in Tuscany) into public canteens.

This issue was tackled also by the municipality of Pisa, whose school meal service covers 41 schools for a total of 3200 scholars daily, worth almost 4 million euro per year overall. 40 per cent of overall value is drawn from the municipality budget and 60 per cent from fees paid by families. Family fees per meal range from zero to 5.30 euro according to a synthetic income indicator—which combines ten

income intervals—associated to other wellbeing indicators. In the words of the councilor for education services, Maria Luisa Chiofalo:

“Making the service available to everyone is a crucial issue and, in perspective, this could also represent a challenge in providing a complete meal to children while the number of families facing difficulties due to the current economic crisis is increasing”.

The school meal service is completely outsourced on the basis of a competitive tender, subject to the European law on public procurement, to the multinational Elixir Restauration, who is in charge of the chain of delivery, from procurement to preparation and delivery of meals for five years. The last contract was assigned for the time frame 2011–2015 and was worth 16 million euros. The three award criteria for selection (and relative weights) were: service plan (65 per cent), price (35 per cent) and quality projects (5 per cent).

In terms of logistics, more than two thirds of overall meals are prepared in one of the two centralized cooking centers (situated in the hinterland, 20 minutes drive away from the city center), the remaining meals are prepared in the second centralized cooking center (situated on the coast), or in kitchens that are inner to each of the 17 nursery schools (as required by regional Tuscany law limitedly to nurseries). During the previous legislation, the municipality had to choose whether to invest in the refurbishment of the existing structures (*i.e.*, kitchens and equipment in each school) or to unify the cooking stage in one centralized kitchen and dismiss in-school kitchens. It was decided for the second option, according to a cost minimization criterion and with implications both on the environmental level (*i.e.*, the impact of transport of meals) and the conservation of food taste (*i.e.*, overcooking in the containers). However, it emerged that one centralized kitchen was not sufficient to cover all school needs, therefore it was decided to include among the requirements of the tender, the construction of an extra centralized kitchen. This requirement might in fact favor a competition among collective catering firms able to realize such an initial investment, and the municipality states to be considering different options for the future.

4.2. Co-Production of School Meal Services: The Role of Canteen Committees

As described in the previous paragraph, Tuscany region and Pisa municipality provide a favorable context, on the social and political level, in which school meal services can express their potential in educating children to sustainable consumption behaviors, thus re orienting production and practices (*i.e.*, the inputs needed and throughout the school meal supply chain). A necessary condition is given by the mutual relationship between the parties and a consolidated climate of trust that favors the positive contribution of different skills.

Within school meal services, the network responsible for different aspects of the service is composed of several actors. We recall the main ones:

- (i) The municipality or the private school, who decides the service features (through the technical document) and the extent of the investment;
- (ii) the catering firm, who provides the service according to local regulations, contractual commitments and quality standards;

- (iii) Teachers and school staff who participate to lunch time and play a key educational role in favoring its livability and appreciation;
- (iv) The final users, namely children and their families. These are crucial in shaping the food habits and behaviors of the young users of school meal services;
- (v) The food safety authorities (on the local and national levels) who provide surveillance on the hygienic and nutritional characteristics of food, in accordance with regulations (including inspections and audits on the basis of risk criteria) and support in food and nutrition education.

Several factors may hinder the development of a positive climate of trust: in economic terms, the down-pressure on resources (*i.e.*, the tradeoff between price and quality of the service), the consequent administrative approaches aimed at saving or the private interests of the collective catering firm in charge of the service. Other barriers are related to communication patterns: for example, the conflicting relationship between final users and the administrative office, or a negative attitude of teachers lamenting excessive workloads and the risk of the discussion being influenced by political parties objectives. Moreover, the feasibility of innovations in the service may be hindered by contradictions between nutrition/sustainability criteria and the appreciation of children (resulting in high levels of waste), and the possibility of faults and critical events in the service that, amplified by the media jeopardize the relationship of trust, even further.

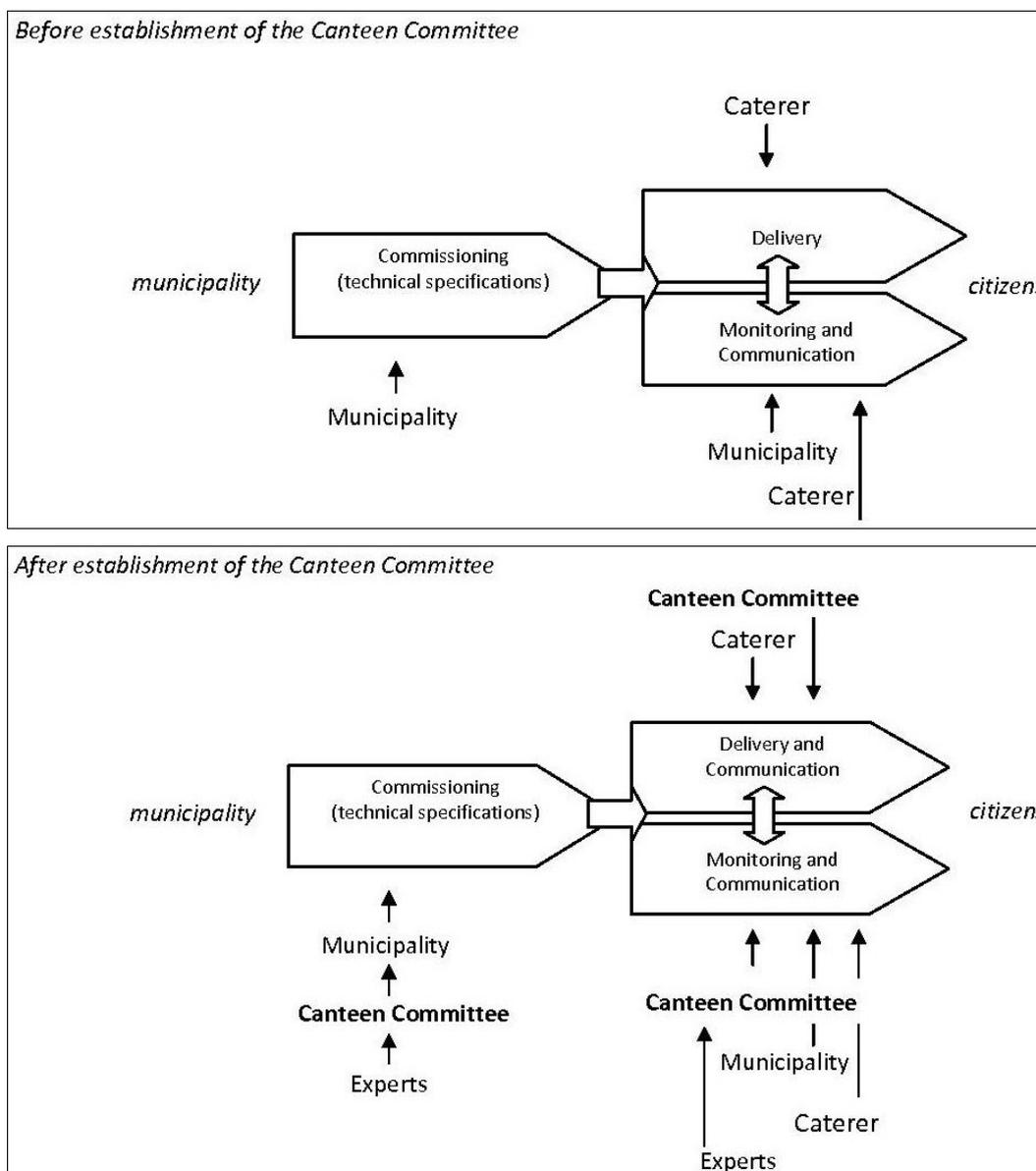
Canteen Committees are bodies of representatives at the municipal level that are not mandatory by law, but warmly suggested by national and regional guidelines on school catering services. These committees play a liaison role between the network of actors involved in the provision of school meals and are seen as “fundamental tools to empower consumers in and *beyond* the classroom and the school canteen” [17] (p. 5). The Canteen Committee in Pisa was established formally by the municipality in 1999—a decade in advance with respect to the recommendations of the National Guidelines [69]—with the aim of increasing transparency in the management of the school meals service and encouraging participation of final users to improve quality, healthiness and appreciation of school meals. At present day the Committee is composed of the city councilor for educational services with the role of president, staff members of the school meals office, elected parents and nominated teachers from each school, representatives of the catering company, head of the cooking center and an expert in food hygiene as representative of the local health authority. Other stakeholders are invited according to the Committee’s agenda, including different departments of Pisa University, and other civil society organizations in the domains of food culture, consumer awareness and health, such as Slow Food, the Association of Young Diabetics, and the Association for Celiac Disease.

Figure 3 synthetically represents the main macro phases of the school meal service supply chain in Pisa: planning and contracting out of the service, the delivery of the service in all its steps and monitoring and commissioning. The figure above indicates the actors responsible on each phase before the establishment of the Canteen Committee. Below the same figure indicates where co-production takes place through the active involvement of the Canteen Committee, in particular incited by the initiative of parents, as final users of the service.

For what concerns the planning and commissioning phase, the Canteen Committee now plays a key role in discussing and developing a shared definition of the priorities to be followed by the municipality in the development of the tender documents. The delivery of the service is full

responsibility of the catering company, although the Canteen Committee plays a role on one hand in the realization (and adjustments during progress) of projects set to translate in practice the priorities identified previously. For example in tackling obstacles encountered in the fruit snack scheme: the health authority played a crucial role in the Committee in motivating the pursuance of the project (*i.e.*, school teachers can handle and peel fruits, as the project has an education purpose and should not be limited by strict sanitary requirements).

Figure 3. Actors' involvement in each macro phase of the school meal service in Pisa.



On the other hand, the Canteen Committee contributes to the daily functioning of the service by promptly communicating the variations on the planned daily menu. This relates to the monitoring phase, which aims at verifying the correspondence between the services and products offered and the specifications of the tender. Monitoring develops contemporarily to the delivery phase (but also after, through the customer satisfaction carried out by the catering company). Members of the Commission carry out assessments by sampling food and ascertain the size and quality of the portions offered to

children, the hygienic conditions of the service and the expiration dates of the ingredients utilized to prepare the meals with the support of a standardized checklist. All evaluation forms filled by Canteen Committee members are scanned and published on the website and also communicated personally to parents representatives concerned, in order to broaden knowledge of the results. At the same time Committee members work on building awareness among final users on the effective procedure to follow to signal faults of the services to the competent office.

Transversely to the three phases of planning, delivering and monitoring, Canteen Committee facilitates communication flows between public administration and parents, teachers and students and all actors participating to the school meal system. For example the activation of different IT instruments: the parents' weblog and the website established by the company to enable direct communication between users and firm. The latter provides access to information about menus and recipes and all technical forms with food products characteristics; it allows people to get in touch directly with the company, with suggestions and criticisms.

In broader terms, the Canteen Committee works on increasing the awareness, first of all of its members, on all implications of such a complex public service. In the words of Maria Luisa Chiofalo, the city councilor for education services:

“Real and effective participation to public decision making is based on the knowledge of facts and processes. Making the whole system transparently available has improved the ability of the Canteen Committee members to identify problems, which effectively shortens the way towards their solution”.

In this spirit, the city councilor invites Canteen Committee members to the annual meeting for the approval of the municipal budget, to make them even more aware of the financial implications. Trainings on specific matters organized within the Committee have analogous purpose (for instance on particular dietary needs of children with diabetes or celiac disease, the relationship between eating habits and quality of life, or the importance of breakfast).

The improvement of communication between Canteen Committee members and other parents/citizens represents a challenge and an opportunity to enhance the benefits of the Canteen Committee work with respect to the rest of the community. In fact, Canteen Committees include parents actively involved on the basis of a self selection and a personal interest in food issues, with the risk of isolation. Moreover, it should be considered that the relationship of trust that allows a fruitful collaboration among public administration, caterers, final users and citizenship takes a significant time and commitment in order to establish and bring positive results. This may find an obstacle—but also an opportunity—in the turnover of members participating to the Canteen Committee, and the possible political change. Thus the need for a balance between political will and the strong motivation of civil society in pushing the system towards sustainability.

Table 1 provides an estimation of the free and voluntary input provided by the parents of the Canteen Committee. This assessment considers the value of time spent by parent members to carry out the functions that they are in charge of, with reference to the school year 2012/2013 (from September to June). The first lines refer to the time spent for meetings: the first column indicates the number of parents involved in the four general Canteen Committee meetings and the five meetings of the executive board (one every two months). The time spent for monitoring is estimated by considering the

number of investigations that have been performed (and the relative check lists published on the website) for an average duration of inspections of two hours (each involving two parents at the time). Finally, the time spent for communication activities is estimated by considering the effort of the parent in charge of managing the blog plus an average of two hours per year per canteen committee member in informal communication activities in the schools represented (this very general criteria impact represents 10 per cent of the result). The value on which this estimation is based is given by the average hour salary of a civil servant employee (of low grade, assuming that this would be appropriate for monitoring jobs), which is equal to 15.22 euro per hour.

Table 1. Assessment of free resources provided by parents of the Canteen Committee.

School year 2012-2013						
Meetings	Parents involved (number)	Meetings per year (number)	Duration (h)	Hours	Cost (€/h) ***	Total
Canteen Committee	54	4	3	648	15.22	9863
Executive board	4	5	2	40	15.22	609
Monitoring		Inspections *				
Inspections	2	38	2	152	15.22	2313
Communication and networking						
Blog setting ** and facilitation	1		10	10	15.22	152
Others (informal discussions, extra meetings, mailing)	potentially all (54)		2	108	15.22	1644
Total						14,581

Notes: *completed checklists published on the website; ** the blog setting on the web is free; *** average hour cost for low grade civil servant.

This simple exercise yields an overall contribution by parents equal to roughly 15 thousands euro per year. This represents an estimation of the resources that the public administration would need to destine to activities that are taken care of by the parents for free, through voluntary and active co-production. However, this co-production also developed, as it will be illustrated in the evolution of the Canteen Committee described in the following paragraph, as a consequence of the impossibility of the public administration to respond by itself to the call for change that emerged from civil society. In other words, it would not be possible for the PA to deliver the same service—although it is an ongoing process that can be improved—without the co production effort of all participants.

4.3. Evolution within the Canteen Committee and Innovation

The Canteen Committee in Pisa is the protagonist of a gradual but deep change in the encounter between the municipality and the stimulus coming from civil society. The shift towards an educational approach to school lunch mentioned above, emerged also during the meetings as the focus gradually extended from mere monitoring to other aspects of the quality of lunch experience and livability of

school canteens (e.g., the importance of teachers behaviors in supporting children during meal time and the presentation of dishes to increase appreciation and reduce waste).

This change is also reflected in the evolution of the governance mechanisms of the Committee. Up to 2010, the president of the Committee was a nominated parent who decided the agenda but was essentially alone in coping with a very conflicting climate, while participation was strongly diminishing. The conflict was a consequence of a mutual mistrust between parents and public administration but was also the result of a clash between parents representatives (there were 60 overall) and a small group of motivated parents (less than 10) who tried to direct the discussions on topics other than the strict monitoring of meals, with the aim of revaluing the overall service, but with very little results and low impact on the rest of the group. It is to be noted that among these parents there were also professionals who could provide valuable input to the discourse (e.g., veterinarians, public officials, *etc.*).

This municipality pandered this input in two ways. Firstly, it supported the establishment of an “executive board” formed by the six motivated parents who could support the president in managing the activities and the relationships with the rest of the committee. It also could bring specific actions and projects to the attention of the plenary meetings. This helped to reduce conflict because the parents interested only in service assessment could limit their participation to that, while leaving space to the others who want to experiment new ways of revaluing the service. The unclear division of roles and the non formalization of relationships among Canteen Committee participants got to a turning point with the approval of an official disciplinary (in September 2012). Competence and functionality of the Committee was formalized by a local regulation, drafted and approved by the municipality, which specified lines of action and relationships among its members. It provides indications on functions, compositions, and terms of appointment. This is at the same time a resultant of the recognition of the relevance of the Committee and a condition for its correct functioning in the future.

Secondly, the municipality supported the involvement of external stakeholders who were able to give responses and corroborate the discussions stimulated by the small group of motivated parents. Stakeholders such as Slow Food representatives, nutritionists, researchers in local policy, consumer education and agriculture provided expert advice to the discussions and allowed the development of several initiatives, for example aiming at other parents in individual schools to discuss more in depth the quality of the service but also develop projects, such as vegetable gardens and to encourage vegetable consumption among children. This diversity of specialists and experts in various field, widely recognized among local civil society has also succeeded in easing the conflict between the municipality and the parents.

One of the most valuable contributions of the executive council and experts is to provide guidance to the municipality in setting the priorities for the new tender contract. A statement on these priorities and principles is made public on the internet web log managed by parents in the Canteen Committee. Part of the requests coming from the Canteen Committee were directly included (e.g., the mid-morning fruit snack scheme) and the hardest ones were mediated by the municipality. For example, the introduction of menus based on short food supply chains ingredients was not feasible all at once but was established through gradual steps during the five years of contract (see Box 1 for further detail on the project). Since the service is completely outsourced to Elior, there is no possibility to interfere with the procurement policy of the caterer, who commits to complying with the project as specified in the contract. For some categories of products (meat, pasta, bread and cheese), the caterer got directly into

contact with local farmers. For fruits and vegetables, an ameliorative offer made by EIOR was to provide organic and short chain “according to season and availability on territories or, in case of non availability of the Tuscan organic product, a national organic will be provided (e.g., for oranges)”. In fact the supply of organic products is quite limited in the territory of Pisa, and it is likely to remain so, especially due to the current economic crisis which limits the interest of farmers in investments necessary for organic agriculture.

Box 1. Short Food Supply Chain school meals in Pisa: main features of the project.

<i>Project features</i>	The short food supply chain meal has been included as a step by step project, twice a month in the first year of contract, up to five times per month by the fifth year;
<i>Products coming from farms in Pisa province and Tuscany</i>	Turkey, beef, pork, extra virgin olive oil, soft cheese, pasta, ricotta, bread. Fruits and vegetables according to seasonality: apricots, asparagus, chard, carrots, cabbage, cucumber, onion, aromatic herbs, fennel, lettuce, kiwi, eggplant, apples, melon, potatoes, pepper, peaches, tomatoes, leek, chicory, celery, spinach, plums, grapes, pumpkin, squash, zucchini;
<i>Number of farms</i>	17 farms involved, who become accredited into the caterer’s suppliers list;
<i>Main challenges</i>	Ameliorative offer of the caterer: organic AND local Difficult to interfere with the procurement policy of the multinational catering company (strict standards) Few organic farmers on the territory Low flexibility to adjust strict menus based on available products

Another innovation was the substitution of mineral bottled water with tap water served in glass pitchers. In terms of costs, and net of the initial structural adjustments, the comparison between bottled and tap water yields a slight cost increase. This is due to the extra costs for the filters against chlorine and the extra working time for the staff to wash and fill the water pitchers. The administration decided to support the project anyway, because of the environmental gain (less plastic bottles) and the possibility to educate children on the safety of tap water.

Another innovation oriented towards social sustainability was related to meals prepared with produce grown on lands confiscated to criminal organizations (Libera Terra, free land), while during lunch volunteer operators talk to children about the origin and history of the food label Libera Terra.

Other innovations aiming at children education to healthy food habits are the mid morning fruit snack project, the single dish menu and the introduction of dinner suggestions to parents. The fruit snack project consists in offering fruits not after lunch, but during the morning and discouraging parents from providing high calories pre-packaged snacks, generally because of lack of awareness on food contents or for convenience reasons. Consuming a fruit instead allows to give children the energy needed to keep the attention and at the same time to get to lunch-time with the enough appetite (thus also reducing leftovers). This project has no economic cost but introduces an important innovation for the caterer in organization and logistics (e.g., delivering fruits the day before, washed and stored in

appropriate containers). It also implies an extra effort for teachers, who must help children during fruits consumption (*i.e.*, peeling and cutting).

The single dish menu is another relevant innovation within the traditional meal system (generally composed in Italy by the first course, the second course with side dish and fruit or desserts). The reason behind the introduction of a single dish in the menu is related to the possibility to taste dishes that would be difficult to introduce into two courses menus (e.g., *polenta*, corn mush) and to reduce leftovers and dilate the time of meals. In three years of discussions, no consensus was reached on the right tools to drive this innovation into the system. The main bottlenecks were on one side the parents who feared that their children did not eat if they did not like the dish and on the other side the municipality who indulged in assuming full responsibility for this choice. Finally, the catering firm was formally asked to make a proposal of a menu including single dishes, complete from the nutritional point of view, provided that the modifications did not change substantially the contract in place. It started as a pilot experiment in autumn 2013 with the aim of testing appreciation in different schools. This was associated to moments of peer to peer education in class to reflect and learn about the dish assessed at lunch. Finally, based on a suggestion of the Canteen Committee parents, dinner suggestions were elaborated by the catering company and published on the website. These represents menu suggestions for the evening to stimulate parents to cook nutritionally balanced meals for their children, in coherence with what they eat at school.

Finally, a priority issue is the amount of leftovers. The last two customer satisfaction reports developed by an independent consultant (one relative to January–June 2012 and the following relative to September 2012–June 2013), show that around 20 per cent of meals is wasted, and that this figure is not reducing in the short run. The leftovers concern primarily the vegetable side dish and the fish second course, often not appreciated by small children. Parents again play a crucial role in educating their children to a variety of dishes, to try new foods and flavors, to stimulate children's curiosity about the colors of the food and thus reducing the reluctance to sample. An indirect contribution to this is given by the fruit snacks scheme, whose success is strictly related to the awareness of parents in not providing high calories snacks in the morning, which impact on appetite and lunch appreciation, but still there is much to be done to address this issue.

5. Conclusions

The present article focuses on the relationship between different stakeholders involved in school meal services as a means to reach sustainability goals in public service delivery, by framing it within a co-production theoretical framework. Public procurement as a lever to achieve sustainability objectives is at the center of a larger debate on the role of public institutions in society, particularly between “paternalistic” and “libertarian” approaches in food policies, for the impact that these have on human health and sustainability of diets. Revaluing public food procurement implies a change/transition in the public sector purchasing choices and has implications on the way services are oriented, structured, managed and monitored. Within public collective catering, school meals are visible and have a higher resonance.

The present contribution asserts that co-production in school meal services is crucial to pursue sustainability objectives. Starting from the theory of co-production in education services, and based on

the principle that school meals represent a moment for education, we develop a reflection on the nexus between service users, professionals and market actors and the inputs needed to activate co production in school meal services.

The case study on the school meal service in Pisa (Tuscany region, Italy) proves effective in showing how co-production in school meal services occurs in different phases of the school meal supply chain. The fundamental nexus between students, teachers and professional caterers is backed by a wider co-production activity that takes place among public actors, market actors and parents within an institutional body, denominated Canteen Committee. Co-production processes in the school meal service take place through a governing arrangement where the public authority directly engages with non-public stakeholders in a collective decision-making process that is formalized, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets [33]. Finding a consistency among the objectives of different—and sometimes opposed—actors represents a continuous process where dialogue, trust building and development of commitment and shared understanding are crucial. In fact, school lunch is paradigmatic of how the school system works: if the connection between school and family fails, the school service suffers.

The overlap area that defines co-production in school meal services refers to different phases of the school meal supply chain, from planning, to delivery, communication and monitoring functions carried out by the members of the Canteen Committee. In particular, parents play a direct role in carrying out the monitoring function, but also contribute to the definition of the contract, which binds the caterer in charge of the school meal service and has a strong impact on communication flows occurring within the system.

Co-production resulting from the integration of free and paid resources is a condition for a welfare improvement, also as a consequence of the impossibility of the public administration to respond by itself to the call for change that emerges from civil society. The assessment of the value of time that parents dedicate voluntarily to Canteen Committee functions represents an approximate estimation of the resources that the public administration would need to destine to activities that are taken care of by parents for free, through voluntary and active co-production. In fact the co-production activities carried out by parents, allow a reduction of transaction costs that are necessary to develop innovations. Furthermore co-production leads to the introduction of innovations in the service, in the form of several projects oriented to sustainability, which would not take place without the joint effort of all actors, especially parents.

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Author Contributions

Francesca Galli contributed to research design, case study development, data analysis and writing of the article, Gianluca Brunori and Francesco Di Iacovo contributed to study conception and design,

structure of text and improvement of following drafts, Silvia Innocenti contributed to data collection and interpretation.

Conflicts of Interest

The authors declare no conflict of interest.

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