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Organising supply chains of organic products for Italian school meals – The case of the province and of the city of Piacenza

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1. Introduction

Serving high quality school meals is a difficult task. Many factors influence the meal quality. Products – transformed through several supply chains – are composed at the caterer's kitchen to become a healthy and tasty menu. Quality is limited by the poorest quality or the weakest link in this net of supply chains (AMIQUA 2006, Bocchi et al. 2008). One very important step in ensuring high quality is to define it. This calls for a detailed and thorough description of what is understood as food or product quality that has to take into consideration the regional food culture, the possibilities of e.g. local and organic producers and the requirements of caterers, at the same time (Spigarolo 2006a, 2006b).

The following paper analyses how high quality can be ensured by the organization of these supply chains. It is a case study on school meals in the city and the province of Piacenza, an example of best practice in Emilia Romagna, Italy. The study was conducted in work package 3 on supply chain management of the IPOPY project.

2. Methodology

Empirical data for this case study was collected by some expert interviews with representatives of the school meal system (local politicians, caterers and producers) conducted in January and February 2009. Further empirical data were the call for tender, the contract, the technical schedules of products, regional laws and guidelines.

All this material was collected according to a specific check list prepared for this case study in a first step. All critical information for the study is contained in this check list. It is divided in 4 paragraphs: supply chain analysis, management of raw materials for caterers, technological process, and further information. This check list was completed by questionnaires submitted to producers, caterers and local politicians.

After the compilation of this information (the check list) that we gathered from the stakeholders we had contacted, we organized a focus group with them all, in order to validate the information and to discuss the most critical elements emerged.

3. The situation in the city and in the province of Piacenza

Piacenza, a city of about 95.000 inhabitants, and its province (282.000 inhabitants) are located in Emilia Romagna region, in the northern part of Italy. Since 2001, Emilia Romagna has a very ambitious law with regard to the quality of school meals and to food education. E.g. for day care institutions 100% organic food is required, and for school meals in primary and secondary school a share of 70% organic or quality food (e.g. PDO - Protected Designation of Origin and PGI - Protected Geographical Indication) is mandatory. The region provides services and assistance free of charge for every municipality willing to use organic, regional, and/or fair trade products, by a website (www.sportellomensebio.it).

As in all other Italian cities, the municipality is responsible to provide meals to children who are present full time during the school day (Bocchi et al. 2008). The province of Piacenza has a great vocation for food and agriculture, in fact, they are its main resources. Food is not conceived as a physiologic need but it is considered being a cultural and social expression. These considerations are very important to understand the philosophy that inspired the political activities for food catering in school canteens.

A short history of school meals in Piacenza

Since 2004, the municipality of Piacenza has procured local organic food for the school catering service and since 2005 for other municipalities of the province. Every five years municipalities make a new tender to choose the company that will manage the school catering service. The issuing of specific regional laws and guidelines were an important driver in Italy to introduce organic and local products in the school canteens. Besides this, the local politicians pay attention to environmental considerations, to food quality and to the valorization of local production. Piacenza and its province are an excellent sample of this political will.

These elements are the most important drivers for writing demanding contracts by local administrations. The specifications of the tender contracts are very complex. It is not simple to win the tender.

CIR – Compagnia Italiana Ristorazione – is the food service company that won the current tender (2006-2011). CIR was able to satisfy the needs and the inspirations of the local administrations better than its competitors. In fact, CIR has made an agreement with local producers for the supply of organic products. Moreover, it has offered more organic and quality products than the municipality asked for in the tender contracts.

The following analysis of the organization of the school meals consists of the following elements:

- technical elements: supply chain analysis and technological process of food catering
- administrative elements: call for tender and economic conditions.

4. The technical organization of school meal provision

As described above, the municipality of Piacenza, and later the other municipalities of this province, has



charged the private caterer CIR with the provision of all school meals in Piacenza from 2006 to 2011. CIR uses a central food preparation unit in Piacenza (this structure belongs to the municipality) where the meals are prepared and (only to a small part) precooked. The prepared food is brought to the 27 school kitchens where the meals are finally cooked and served in the dining halls of the schools.

Photo 1: Organic farm of Piacenza

Only in 7 schools the meals are provided precooked. CIR gets the produce from a network of local and regional farmers and processors that have its nucleus in a farmers marketing cooperative which is called BIOPIACE Consortium. (BIO means Organic and PIACE means Piacenza and also "I like"). BIOPIACE markets mostly organic food items, but also some conventional locally produced, e.g. meat.

4.1 Supply chain analysis

Before sending out the call for tender, the local administrations developed a technical schedule in which the wanted features of the products were described in detail and in a way that they can be controlled. So the call for tender required that some products must be organic. CIR offered even more organic products in order to have a better score in the tender. The following supply chains were analyzed in detail: milk and dairy products, cereals, bread, pasta etc., meats and by products, and fruits and vegetables.

a) Milk and dairy products

In addition to that, Organic milk and dairy products (both imposed by the municipality and additionally offered by CIR) are on average 60% of all milk and dairy products procured. The total number of suppliers for milk and dairy products is four, two of them are organic. They provide organic milk (UHT – Ultra High Temperature - and pasteurized) as it is required in the tender. Further, the Grana Padano cheese is organic. That was not required but was an additional offer by the catering company (CIR). Typical local foods and yoghurt are from local producers, but they are not organic.

The dairy supply chain can be labelled as a short chain because CIR buys milk, butter, Grana Padano and Parmigiano Reggiano directly from local producers. The company controls some producers following a microbiological analytical plan on cheeses. The approximate number of milk and dairy products procured by CIR is 15 different commercial items such as: yoghurt, milk UHT, milk pasteurized, butter, Grana Padano cheese, and so on.

b) Cereals and by products: bread, pasta etc.

The local administration developed a technical schedule in which the wanted features of products were described, before sending out the call for tender. The Municipality required that all pasta, rice and flour are organic. Organic bread is required just one day per week for each school. Further, CIR offered some typical local biscuits that are produced by using organic raw materials. The supply chain for cereals and by products cannot be considered to be a short chain. Organic pre-packaged products (rice, flour and pasta) are marked through special labels. The approximate number of cereals and by products procured by CIR is 13 different commercial items such as: bread, flour, pasta, rice, biscuits, and so on.

c) Meat and by products

In this supply chain there are no organic products. However, the choice of the administration was to use local meat. The system of control for the origin of the meat is based on controls carried out directly on the farms. These controls are based on the rigid requirements of European legislation about traceability (controls on feeds, on animals' passports and documentation, on veterinary treatments, microbiological analysis of meat and so on).

The contract tender impose that meat must be obtained from animals born, bred and slaughtered in Italy. CIR has offered conventional and local meat, which is also marketed by BIOPIACE. There is no other meat supplier and the supply chain is short. In Italy only small quantities of organic meat are produced.

d) Fruits and vegetables

The local administrations decided that fruits and vegetables must come from the province of Piacenza (local products), and CIR buys it from the BIOPIACE Consortium (short supply chain). Moreover, local administrations required organic fruits and vegetable in great quantities (organic fruits and vegetables are approximately 90% of the total amount of fruits and vegetables). The remaining 10% of fruits and vegetables that are not organic come from sustainable respectively integrated agriculture.

If BIOPIACE Consortium lacks of availability of some products, CIR buys fruits and vegetable from another supplier located in Emilia Romagna region.

4.2 The technological process of food catering

Every day during the week, 4.500-5.500 schools meals are served in the city of Piacenza, summing up to 900.000 meals per year. The daily changes of the number of school meals are due to different time schedules, pupils do not stay at school in the afternoon every day (Bocchi et al. 2008).

All raw materials are delivered to the central preparation centre (CPC). The supply of the produce is planned on a weekly basis in order to guarantee a good quality (freshness, right turn over of products) of the raw materials. This means, for instance, that vegetables arrive twice a week, on Tuesday and on Thursday, meat arrives once a week, on Wednesday. This organization, connected to the short chain, ensures that all fresh products can preserve their whole nutritional quality (regarding in particular the contents of vitamins, original flavors and all the other thermolabile components) and that they are consumed when their shelf-life balance is still high.



The availability of the organic or typical local and regional produce is guaranteed by the organization of local producers. They organize a common logistic and supply system which they call "self management": they share the transportation of all their products to the CPC. Organic products are labeled with a specific logo so they can be easily identified (see photo 2).

Photo 2: Organic grana padano (typical cheese of Piacenza)

In the CPC there are two kinds of technological processes. The first one is the preparation of semi finished foods for the local cooking kitchens (LCK) dislocated in the schools. All together, there are 27 such school kitchens. The operation performed are cutting, cleaning, portioning and vacuum packaging for meat and fish or cleaning, cutting and packaging for vegetables. When ready, these semi finished foods are transported to LCK keeping a chill chain ($T < +10^{\circ}\text{C}$).

The second technological process is the preparation of the meals for the 7 schools that do not have a LCK. In this case, meals are prepared and cooked entirely in the CPC and then transported warm in special boxes that are able to maintain a temperature over 65°C . The transportation, made by trucks, takes 15 minutes at maximum.

5. The administration of school meal services

5.1 Drivers and stakeholders

The objectives of the Piacenza municipality linked with school meals are:

- to provide a service to children and their families
- to create a service based on the valorization of local territory
- to create a service based on environmental protection
- to provide children a food education and food culture

The environmental goals are an important driver for choosing organic food. Another driver for organic food are the standards defined by the regional law of Emilia Romagna. The involved stakeholders are described in detail as follows.

a) Political Local administrations

The driving force for setting ambitious quality objectives for school meals is a specific office of the local administrations. This office deals with school, education and social affairs. It is responsible of all services related to schools such as school meal system, children transportation to schools and so on. The head of this office is the councilor responsible for education, who is assisted by some consultants and advisors. The councilor and his management staff arrange the call for tender and the contract requirements and manage different aspects of the service such as:

- Carrying out technical controls on the service: there is a technical employee (normally a food technician) that goes every day in the kitchens to check the production conditions
- Verifying customer satisfaction
- Monitoring the costs of the service in accordance to the budget plan
- Managing the personnel of the food preparation

All together, this office is responsible for all food catering service because it has to choose the company that will manage the service and the specific requirements of the service. The decisions of this office are influenced by the economic office of the municipalities (this is the office responsible of economic management of the municipalities) and by the "Commissione mensa" (see following paragraphs). Let's see in detail the different stakeholders of the system:

b) Users of the service: parents, teachers and children:

We distinguish between direct users (children) and indirect users (teachers and parents). Indirect users have their own representatives in the "Commissione Mensa": a body of representation that can communicate with the public administration about the kind of menu and ingredients and about the hygienic conditions of the meal production. It may also influence the public administration with respect to the guidelines of the contracts.

c) Public Organic Surveillance Body

The office of human nutrition of the public health service prepares a menu for a period of six weeks. Their proposal can be discussed with local administrations, the private company and the Commissione Mensa, but it is up to this body taking the final decision on the menu.

d) Private Company of food service

The CIR company has won the contract. It prepares food in CPC with 6-7 employees.

e) Consortium of local organic producers

This consortium, BIOPIACE, is the main supplier of CIR. It provides fruits, vegetables, meat, biscuits, milk and some cheese. Except meat all products are organic. The presence of BIOPIACE between CIR's suppliers was significant to help CIR to get the contract.

f) Other suppliers of private companies of food service

CIR does not have only BIOPIACE as supplier. It also has suppliers for organic dried products (rice, pasta etc.) and for the conventional dairy products.

5.2 Economic organization

The public administration covers at least 64 % of its costs by the money paid for school meals by the parents (see Table 1). The public administration thinks that the high costs of the school meals are the most relevant problem of management.

Table 1: Costs per school meal per day in Piacenza, dependent on the family income and number of children

Category	1 child per family	2 children per family	3 and more children per family
INTERA (FULL) Salary of family per year > 9.000 €	4,75 €	4,28 €	3,80 €
RIDOTTA (REDUCED) 4.300 € < Salary of family per year < 9.000 €	2,85 €	2,57 €	2,28 €
ESENZIONE (EXEMPTION from PAYMENT) Salary of family per year < 4.300 €	1,50 €	1,35 €	1,20 €

5.3 Tender procedure

The municipality of Piacenza developed criteria in order to evaluate the bids for the public tender. These criteria were based on a specific Italian law (D. Lgs 163/2003). In particular, Piacenza gave:

- 32 POINTS to the Company that presented the best economic offer (Economic part)
- 68 POINTS to the Company that presented the best technical offer (Quality part)

The 68 points of the quality part were divided as follows:

- 10 POINTS for organic products
- 4,5 POINTS for sustainable agriculture
- 4,5 POINTS for PGI, PDO products
- 0,5 POINTS for fair trade products
- 4,5 POINTS for short supply chain
- 44 POINTS for improvements of the refectories and of the cooking centers

The municipality of Piacenza imposed in the contract some kind of organic food; mainly: pasta, apples, tomato sauce, oranges, kiwi, bread (only one time per week), milk, rice, tomato, lettuce, and flour. CIR, that won the tender, added to its offer the following organic products: yogurt, lemons, grana padano (cheese), biscuits, cauliflower, frozen spinach, and jam.

6. Conclusions

Healthy nutrition for children and youths is a hot topic in public debates around Europe. Public food procurement for youth can play a crucial role and some public authorities have acknowledged their responsibility to provide sustainable nutrition.

According to Spigarolo and Donegani (Spigarolo/ Donegani 2009), sustainable food for young people should be safe, tasty, nourishing, produced respecting the environment, produced respecting ethical principles (social fairness, animal well-being...), and rewarding: it must meet the needs of psychological and social satisfaction of the consumers.

Healthy and sustainable nutrition can be well-organized by school meal policies, but this choice must be shared with an educational program carried out during the school-time devoted to educate young aware consumers. This can really be the new frontier of food education.

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