

Integrated food supply chains: the case of variety clubs in the fruit sector

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Abstract.

Competitiveness and economic development of the fruit sector are hampered by manifold conditions. In recent times, the creation of an exclusive fruit brand turns out to be a valid strategy to counteract such challenges. Specifically, the so-called “*variety club*” leads the sector to benefit from an organizational model that relies upon a strong integration and a coordinated approach amongst actors. In this sense, it is an over-structure made up of the several subjects of the chain, which operate under formal contracts to be provided with exclusive goods and services and gain individual utilities. A large array of management schemes differ for levels of arrangements and control, with several forms in between. As a result, a complex structure emerges, depicting a dense and interconnected network of skills. Based on the general organizational structure of clubs, the study at hand is rather a concept paper, aimed exploring the subjects involved. Particularly, it elucidates various subjects who take part in the club model, explores strength relationships amongst them and sheds light on their bargaining power. Lastly, some insights are given for the improvement and future implementation of the model.

Keywords Variety clubs, vertical integration, fruit sector

Introduction

Over the last decades, several agricultural sectors are facing diversified forms of integrated supply chains, which facilitate enhancing their potentialities and strengthening their economic competitiveness. These needs are particularly evident in the fruit sector, where globalization (*Edwards and Schulz, 2005*) determines a strong price competition for commodities (*Gellynck et al., 2012; Linnemann et al., 2006*), profitability may suffer from

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overproductions and lack of innovation, and new consumers' expectations arise (Asioli *et al.*, 2016; Linnemann *et al.*, 2006). Altogether, such factors call for an economic re-organization of the entire supply chain, which could adequately counteract the prevalent role of retail (Legun, 2015) and strengthen the competitiveness of the sector.

Particularly, the creation of an exclusive fruit brand turns out to be a valid strategy to tackle all these challenges. By addressing this option, a large support to a distinctive product is provided, which puts into place the opportunity for dealers to obtain *price premia* from consumers. In this perspective, new organizational models of food supply chains are gaining pace with the concretization of the economic theory of clubs (Buchanan, 1965). Voluntary aggregation of subjects in this particular form, allows them to benefit from exclusive goods or services, and gain individual utilities. Accordingly, the so-called "*variety club*" is the core element of an organizational innovation, which relies upon a strong integration and a coordinated approach amongst actors (Maas *et al.*, 2012). Nowadays, variety clubs are typical of the apple (e.g., Pink Lady®) and pear industry, but some other experiences concern stone fruits and kiwis.

Unlike other forms of integrated chains, the variety club is rather a distinctive group of subjects involved in an enlarged supply chain, "*from consumer to breeder*" (Maas *et al.*, 2012, p. 433). Its development is subject to the patent protection of the fruit variety, which makes patent holder the leading partner of the club, responsible for the coordination of the organizational model. Through issuing formal contracts and the payment of royalties, other actors involved are exclusively licensed for the use of the fruit variety and the associated trademark, and are required to comply with specific quali-quantitative standards. Whilst for other commodities chain contracts turned out to be ineffective (Zanni and Viaggi, 2012; Solazzo *et al.*, 2015), the fruit sector can take advantage from them. The club model enables controlling quantities supplied on the market, avoiding overproduction and calming product price rise, contributes to a quality and differentiated supply, ensures higher remunerations, promotes generalized marketing of the selected cultivar (Robinson, 2011) and provides product for fresh consumption with exclusive and appealing features for consumers (Linnemann *et al.*, 2006). Fruit branding also ensures them about all the steps behind final product and its quality, and aims at facilitating and governing price formation to safeguard chain actors (Reggidori, 2016). In addition, the possibility of joining the club for both individuals and their associations, highlights the link and complementarity of the club model with all the interventions promoting food chain integration (e.g., Regulation (EU) No. 1305/2013), producers' associations and organizations, cooperation between operators. Given

the large variability of subjects potentially joining the club, different levels of complexity of both roles and relations amongst members can be found. Irrespective of its internal structure, each variety club encompasses a trademarked name, a controlled production, and/or a controlled marketing. Nonetheless, a large array of variety management schemes present different levels of arrangements and control, with several forms in between (*Harsh, 2007*). As a consequence, a marked complexity of actors emerges, depicting a dense and interconnected network of skills. Similarly, neither a unique reference model nor an optimal structure *per se* can be identified. Rather, every possible configuration results from strategic choices, according to peculiar strengths and weaknesses.

Based on the general organizational structure of clubs, the study aims at approaching the main figures involved, their economic role in the club, and the relationships amongst them.

Methodological approach

The scientific debate about variety clubs is largely focussed on genetic selection, fruit biology and protection; very scarce evidences are instead provided for what concerns their internal organisation. Actually, structure and composition of the club model are of current knowledge amongst experts, but not usually communicated to general public or addressed by scientific literature. In this latter regard, *Sansavini and Lugli (2008)* provided a general, though simplified overview of main actors involved. The authors depicted a general framework, without extensively describing the role of different subjects. Further indications in this sense can be found in *Guerra (2012)*. His popular article illustrated the more spread club systems in the apple industry, and provided more insights into the operative role of main actors and the (dis)advantages of joining the club.

Based on such starting points, this study rather represents a concept paper, aimed at further exploring the composition of variety clubs. Particularly, it elucidates various subjects who take part in the club model, explores strength relationships amongst them and sheds light on their bargaining power.

Club actors: strength relationships and bargaining power

The creation of a variety club relies upon a patented fruit, selected to have unique features. As a result and compared to traditional food chains, the club model encompasses the further step of genetic selection. Afterwards, patent holder - whatever its legal form - releases use permissions to club members, by means of formal contracts. This way, the breeder defines

roles and tasks to be performed by each of them, and sets clear rules to which signatories are subordinate once joined the club. Accordingly, patent-holder holds efficient control over plant propagation, cultivation and marketing activities. It does not personally deal with these operations; rather, indeed, its competencies supervise subsequent steps and are preparatory of fruit production actions and value chain creation. Its economic role, in fact, also concerns the prime distribution of plant material, as well as the correspondence to fruit-growers a fair producer's price.

More often, patent-holder makes use of a licensed editor, which manages contracts and relationships with all the members on behalf of the breeder. In most cases, exclusivity of a club variety involves propagators, producers and/or their associations. There is also the possibility of entrusting with exclusivity one or few large retail distributors, although this strategy has led to uncertain and contrasting results (*Guerra, 2012*). Licensed exclusivity is granted to signatories on the payment of a club membership fee and of royalties to use variety and trademark, which serve to cover club administration and management expenses. Such elements therefore represent additional costs for involved firms and farms; they should be regarded as annual instalments for the entire duration of the contract and may have marked impact on their annual budgets.

Once fruit variety is selected, a number of nurseries are commissioned to propagate only a pre-defined number of plants, with no possibility of an extra-propagation without breeder's agreement. Plant material is to be conferred only to fruit-growers members of the club, allowing nurseries to address a purchase "niche" market, with an assured product placement. As a consequence, this may represent a strategy for them to diversify their supply and benefit from a further source of income. The cost borne in sourcing plant material from the breeder contributes to the final price formation; however, from nurserymen's side, no additional margins can be obtained on the sale price to fruit growers, as also this latter element is set by the breeder.

Likewise, producers who take care for cultivation and fruit collection, are burdened with the costs of joining the club. In this case, they might weigh on farm budget, especially when grower is charged with a flat fee per kg of fruit. This is even more valid if a trademark is used, which requires royalties and the reinvestments into specific marketing and communication activities. In general terms, fruit-growers seem to be the weakest subjects of the club model (*Guerra, 2012*). Their decision-making capabilities and rooms of manoeuvre are strongly constrained by contractual conditions. Each producer is supplied with an arranged number of plants, at a predetermined selling price, to be conducted in a precise area

and aimed at a quality production. Sometimes, fruit grower is commissioned for a production of desired quality, without the possibility of influencing quality criteria imposed. On the other hand, the lion's share in decision making played by breeder may be affected by bottom-up boosts. Specifically, the usual strength relationships may be unbalanced in favour of producers, whenever demand for plants (and willingness to produce club varieties) is greater than the number available at nurseries. This way, pressures upstream the supply chain require an increase in cultivable quantities and amendments of contractual conditions.

The agreement to multi-year production contracts make producers incurring into a medium-long term investment. In first instance, this needs providing a constant quantity of fruit over time, and intending a substantial farming area to patented fruit variety, possibly giving up more profitable cultivars. Conversely, the introduction of protected varieties into the production pattern may create additional revenues, and joining variety club enables producers to differentiate their supply. At the same time, innovative products can find a collocation on a stable market, especially if a producer organization is involved. The presence of producers' organizations, associations and larger cooperatives, would in fact enforce bargaining power, either when arranging contracts or managing post-harvest activities. This also favours the aggregation of supply and producers, which in turn could facilitate interfacing with collection, logistics, distribution and commercialization actors.

Commercialization and marketing-related services cover all the post-harvest activities and must be operated by structures and centres members of the club, approved by the breeder. It can be entrusted either to dedicated companies or a cooperative made up of all operators authorized to produce the protected variety. In both cases, it is the only subject to which confer fresh product, as the exclusive licensees of marketing rights. If a cooperative is involved, it deals with promotional activities, and also coordinates and controls the production process: checking of production programs, setting of product, quality and management (e.g., storage and packaging) standards.

This is, indeed, the last step of the food chain operated within the club structure. It is noteworthy highlighting that some subjects, although not belonging to the variety club, are engaged in economic transactions with it. It is this the case of distributors, which can be exclusive licensors, but do not join the club structure. In most of cases, variety club addresses large retail distribution, which ensures collecting and purchasing large quantity of product at relatively lower prices. Large retailers are charged with the distribution of protected fruit as fresh product, while under-quality fruit and non-usable wastes can be processed and still commercialized without indications of the registered trademark. Advertisement and

promotion activities are emphasized to obtain price *premia* from final consumers, and ensure higher returns to both patent holders and fruit-growers.

Concluding remarks

A closed system, such as the club model, is the best way to meet demands from large retailers and consumers, while (i) ensuring and controlling qualitative standards of the product and (ii) offering certain advantages to producers.

At the same time, the opinions of final users should be taken into account when establishing a variety club. Large retailers may be interested in the commercialization of club products because of the exclusive supply they can benefit from. Still, it allows the creation of a more profitable market, the valorisation of fresh fruit, its availability throughout year, as well as to meet consumers' request for quality products. Consumer is in fact the key figure of the whole food supply chain, as their habits may contribute in the success of the club model, which product should satisfy organoleptic and nutrition requirements. They could also be willing to pay a price premium, even though the higher final prices typical of club varieties might not be justified by quality features (*Asioli et al., 2016*).

Improvements and future developments of the variety clubs should be based on adequate modalities, enabling efficient management of the supply chain and obtaining positively positive utilities for all the involved parties. In general, all the initiatives of co-ordination and management of the fruit chain are oriented in this sense, and can find drivers in the initiatives set up by regulators in the matter of integrated supply chain and cooperation in agriculture. All the actors involved in a club project must be willing to invest in promotion, information and implementation of a systematic food chain plan – though costly and complex - in order to establish customer appreciation and fidelity, promote communication strategies and overcome the limits of asymmetry disclosures. It is thus essential to establish a fruitful collaboration amongst all the actors and stakeholders involved in the club model (*Asioli et al., 2016*).

Such consideration can be valid for all the fruit sectors; though, a unique organization model cannot be generalized for all of them. In fact, both participation and actions of different subjects in the club are strictly linked to the peculiarities of product. Particularly, it is needed to implement amelioration programs consistent with the needs of food supply chain and oriented to the market. Features of selected varieties and the requirements of the respective sectors, call for developing specific skills and enhancing the role of certain subjects. For instance, under the hypothesis of creating a club variety in the peach sector, it will be

necessary considering its peculiarities, in order to make the organizational structure sufficiently adequate. More in detail, it would entrust tasks to precise figures of the club. The scarce differentiation in varieties, as long as the shorter shelf-life should be addressed by putting in place more efforts in genetic selection, logistics and conservation technologies; moreover, the aggregation of supply into producers' associations and organizations may enable the strengthening of competitiveness of the Italian – at least - peach sector. Finally, the reduced permanence of peach cultivars on the market may be overcome by programming the set up of orchards in manifold cultivation areas, so as to ensure production all over year.

In conclusion, it can be stated that the configuration of variety club in the fruit sector reflects its needs; nonetheless, this topic is to be further investigated, especially with regard to the concrete utilities benefitted by each actor. Beside the popularity of the model, which can be considered as an evidence of its success, chain analysis of variety club is still unexplored. More research efforts should be put into deeply investigating the role of actors, their drivers to join the club, and price formation along the chain. It becomes, in fact, necessary determine the current value chain, to verify if an adequate utility is given to all members and identify bottlenecks to be overcome for a more efficient organizational model. In this sense, the present study represents just the first step towards a more detailed analysis of the club model. Considerations arisen aim at being a further stimulus to pursue research in this direction. Likely, a valid support could be provided by the availability of existing club structures to be directly involved in such kind of analyses.

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