



How to make standards work for performance improvement in agri-food chains?

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Introduction: Quality and safety requirements in cross border agri-food chains have become strict and rigid. This is related both to public regulation, such as the European General Food Law, and private voluntary regulatory systems e.g. EurepGAP, a pre-farm-gate-standard initiated by European retailers. Standards are primarily designed to maintain consumer confidence in food quality and safety. Attached to these, are goals to minimize environmental impacts of farming operations, optimize the use of inputs and ensure the health and safety of workers. This indicates that, increasingly, food quality and safety requirements do not only address issues, related to the actual product, but also incorporate environmental sustainability and social welfare matters surfacing in the production processes. It can be expected that in the coming years, producer organizations and international trade and industry players, possibly in tandem with government agencies, will seek new forms of inter-related regulations.

Print This article examines how these standards and regulations will produce the desired effects. For this purpose, the paper takes a specific look at the impact on innovative capacity at the upstream end of the agri-food chain and the tendency to prescribe and standardize technologies and practices through the implementation of quality standards and safety regulations. It starts with the presumption that a viable chain configuration balances prescribed and controllable practices with local learning and technological solutions tailored to specific production conditions. The challenge then is to explore how ensuring food safety, quality performance, and sustainability, can be combined with building innovative technological capacity at the upstream end of agri-food chains. In this sense, the suggestion is that viability is achieved through a combination of controlling performance, taking corrective measures and stimulating innovative capabilities.

In general, institutional arrangements in value chains either tend to disperse responsibilities or to concentrate them. In international food trade, responsibilities for performance are increasingly decentralized under the umbrella of, for example, voluntary regulatory systems or contract farming arrangements. Simultaneously, however, buyers want to ensure compliance with performance requirements through strict and hierarchical modes of control. Here we can encounter a paradoxical situation. On the one hand, a buying company wishes to monitor generic performance criteria to enhance its public accountability. On the other hand, the establishment of quality, of both product and production processes, equally relies on the capacity of upstream suppliers to deal with complex circumstances where all kinds of risks and uncertainties affect performance.

Product quality, for example, is an outcome of biological processes in the plant, micro-climatologically changes, soil fertility, harvesting and post harvesting methods and labour management. Hence, merely prescribing fixed or universal practices, which is often done in standards, is not likely to enhance the capacity in the upstream end of the agri-food chain to handle the dynamics or variability found in nature-based production systems. Let alone, to find ways to alter social conditions and human behaviour. Accordingly, a major challenge for farms and firms and other actors in agri-food chains is to link credible modes of monitoring with flexible modes of learning and technological innovation. This mixture seems to be essential for making an agri-food chain viable, in the sense of having the capacity to respond to the changes and external pressures. The suggestion is that viability is a function of controlling performance, enabling feedback and socially embedded capacity to take corrective measures.

The observed paradox is not necessarily a problem and may even enhance the viability of cooperation and technological capacity in an agri-food chain. More problematic is that the institutional outcome of safety and quality requirements in cross-border agri-food chains has become biased towards one side of the paradox, namely prescribing generic practices, which leaves less space for learning and selecting technological options tailored to the specific socio-economic and agro-ecological conditions. This trend may contrast with the development of learning and innovative capacity in the upstream end of agri-food chains. Consequently, it seems unwise to assume that performance standards will automatically lead to improved technological capacity upstream in the chain.

Hence, standards enforced in international trade provide an incentive, but are insufficient to actually enhance performance. The focus of this paper is on how to organize innovative capacity at the upstream end of agri-food chains. This is the place where most of the desired performance improvement should happen. There are two institutional matters that come to the fore. On the one hand, technological innovation can evolve through the interaction of actors in the agri-food chain with other actors, such as R&D organizations or industries in other sectors. On the other hand, technological innovation can be embedded in the functional relationships between actors within the chain.

A paper by Vellema and Danse (2007) draws lessons on these two essential institutional aspects of technological change in the context of agri-food chains. Firstly, the paper discusses the National System of Innovation (NSI) perspective, which emphasizes the importance of creating interaction and intermediary processes as a condition for technological innovation. It proposes an alternative to more linear approaches that tend to see technology development as the result of applying science. Although, NSI primarily focuses on the functioning of public research organizations, it has an interest in the distribution of responsibilities between public and private actors in the enabling environment of an agri-food chain. Innovation occurs in networks clustering technological competencies. NSI emphasizes the continuous interactions between users and providers of knowledge and technology. Accordingly, this view underlines the contributions of intermediary or producer organizations, with varying forms, as brokers between knowledge producing actors. Installing feedback mechanisms and facilitating interactions appears to be more important than focusing on the organizational forms of technological innovation. Experiences in building regional and specialized economic clusters indicate that investing in socially embedded intermediary organizational creates the

right conditions for innovation-based local economic development.

Secondly, the paper examines the balance between push and pull factors steering the selection of technological innovation within the chain. For this purpose, the Bottom of the Pyramid (BoP) framework is discussed, which gives the private sector a leading role in technological innovation. What is important in BoP is that it sees users of new products as customers, not as mere receivers. By introducing such a business perspective, new dynamics between demand for and supply of technological innovations come to the fore. In addition, BoP argues that the current business models used by many companies tend to ignore the purchasing capacity of low-income users. This also applies for technologies offered to agricultural producers: they are expected to receive and implement pre-defined modern technologies in their production systems. The standards introduced in international food trade also seem to rely on this. Clear institutional mechanisms for articulating the demand from low-income users for new technologies and translating this into a commercially viable process of technological innovation are rarely present in agri-food chains. Linking technological innovation to the notion of embedded services is an interesting alternative approach. For example, an intermediary person in the agri-food chain initially responsible for aggregating volumes of agricultural materials can also have the task to use the information flows around these logistical aspects for knowledge exchange and for the articulation of specific technology demands towards the buying companies. This can become a service that is financially viable when the producers see tailor-made solutions as a result.

Both approaches, NSI and BoP, emphasize that technological innovation evolves from institutional interactions within a network of public and private actors as well as with customers in locally embedded markets. NSI takes a more open-ended perspective, emphasizing the importance of interactions and intermediary organizations connecting different capacities. While the BoP framework emphasizes the processes of selection and articulation of demand, which tailor new products and services to low-income markets. A combination of both approaches may lead to institutional modalities for technological change in agri-food chains, which build on socially embedded capacities and local market demands.

A form of coordinated innovation is needed to enhance the innovative capacities of chain actors. Also, strategic policy, both in the public and private spheres, is needed to relate more radical technological innovation to the processes of incremental change and adaptation usually attached to tangible applications in business. This opens opportunities for relating commercially grounded arrangements in value chains and markets to the institutionalized arrangements in innovation networks. Building such a collaborative model, instead of relying solely on economic efficiencies and standardized practices, requires purposeful and strategic interventions and investments by chain actors in alliance with other players. Obviously, there is no blueprint for this.

This paper adds an essential component to the current weight put on standards and other forms of voluntary regulation of performance apparent in agri-food chains. It asks the question how to make these guidelines and protocols work for technological innovation upstream in the chain. The focus on the institutional dynamics of technological innovation complements the emphasis on unilateral performance requirements expressed through standards. It suggests that performance improvement can only be achieved by an iterative and flexible process, which both connects the push and pull factors within the chain and connects layers of the chain to innovative players outside the boundaries of the chain. This may contrast with the current practice of standards and requirements in agri-food chains, which importantly relies on universal technological practices. ACP scientists are encouraged to work closely with the agro-food industry and governments to find technological solutions for meeting mandatory and voluntary international food quality and safety regulations.

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End notes

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