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**A conceptual framework to evaluate the impact of innovation
platforms on agrifood value chains development**

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A conceptual framework to evaluate the impact of innovation platforms on agrifood value chains development

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Abstract

Innovation platforms are equitable, dynamic spaces designed to bring heterogeneous actors together to exchange knowledge and take action to solve a common problem. Although innovation platforms are being set up to attain collectively defined development objectives, there are limited methods and tools available using quantitative data to evaluate whether they are effective. This paper elaborates a conceptual framework based on elements from new institutional economics and marketing relationship management to model the impact pathways within innovation platforms and how they contribute to attaining the objectives of the rural communities involved. The paper also proposes a field research protocol based on focus group discussions, semi-directive interviews of key stakeholders associated with the innovation platforms and individual surveys of platform members. The data collected is both qualitative and quantitative in nature allowing useful triangulation to test the model. Successive empirical tests of the model in different contexts should allow long-term strengthening and field validation of the conceptual framework.

1 Introduction

A recent workshop held at the International Livestock Research Institute (ILRI) in Nairobi on 6 and 7 December 2012 allowed ILRI researchers who have been working on the topic of innovation platforms to exchange their experiences and to develop a research agenda on innovation platforms. The workshop participants also elaborated a definition of innovation platforms which encompasses ILRI's viewpoint of what innovation platforms are (ILRI, 2012): 'Innovation platforms are equitable, dynamic spaces designed to bring heterogeneous actors together to exchange knowledge and take action to solve a common problem.'

Working through such innovation platforms has become increasingly relevant to projects developing agrifood value chains in developing countries because governments and donors have finally recognized the role of the private sector and civil society in agricultural development so as to achieve food security (World Bank, 2008). Following this change of mind set from major development partners, it is now largely recognized that agro-industries and value chains can pull agricultural production in developing countries (FAO and UNIDO, 2010). As a result, national agro-industrial development policies in developing countries are now encouraging the strengthening of value chain networks; innovation platforms are one example of such networks.

Furthermore, past agricultural development projects have often been confronted with a lack of markets once the productivity of beneficiaries had been increased. This past history has encouraged the integration of marketing activities in development projects (Cadilhon and Even, 2012). Finally, the European Union (EU SCAR, 2012) and the World Bank (2006) have identified that multi-stakeholder interaction could be considered as best practice for agricultural knowledge and information systems. All these arguments support the relevance of using innovation platforms as a tool to achieve objectives set out by a multi-stakeholder community wanting to develop agrifood value chains.

However, there is still very little research published on the impact assessment of innovation platforms. Most evaluation reports use single case studies to evaluate the impact of a given innovation platform (Nederlof and Pyburn, 2012; Kilelu et al., 2013). Outcome mapping, network analysis and participatory impact pathways are some of the qualitative methods used to monitor the outcomes of innovation platforms but Lundy et al. (in press) could only showcase one example of a quantitative analysis of the impact of innovation platforms comparing villages using platforms with control villages using more traditional methods of agricultural research and development in the Sub-Saharan Africa Challenge Program of the Forum for Agricultural Research in Africa. Some projects have

attempted to implement cost–benefit analyses (Gildemacher and Mur, 2012). A discussion paper by Badibanga et al. (2013) used a probit regression model to assess the impact of how an innovation platform worked on its performance. Kilelu et al. (2013) have recently called for more research on the governance mechanisms of innovation platforms and on monitoring systems that can help platform members and facilitators adapt to changing needs. Researching the mechanisms of how these multi-stakeholder systems foster agrifood chain development and the impact pathways between different elements of these systems is thus highly topical. This paper elaborates such a conceptual framework that would allow the empirical testing of a model reflecting how the structure of an innovation platform impacts on the achievement of the objectives set out by its members, through relational elements that arise from the interaction amongst platform participants.

This paper being primarily focused on value chain development, the first section will review the objectives that innovation platforms set up for value chain development may be attempting to achieve. The second section will pursue the literature review so as to construct the conceptual framework for the evaluation of the impact innovation platforms have on agrifood value chains development. After having presented the various elements of this conceptual framework in the third part, the paper will present preliminary elements for a setup that will allow the iterative empirical testing of the model, thus enabling in-time the step-by-step consolidation of the conceptual framework proposed. The final section will discuss the appropriateness of the conceptual framework to respond to real-life development questions of practitioners and policy makers.

2 The functions of innovation platforms in agrifood value chains management

Because this paper focuses on agrifood value chains development and how innovation platforms can support this process sustainably, the following section summarizes the different marketing functions of innovation platforms, as already published in previous international overview studies (Shepherd et al., 2009; Cadilhon and Dedieu, 2011; Birachi et al., in press).

Firstly, innovation platforms can help advocate the interests of the platform members to public decision makers. This is particularly useful at the national level for industry stakeholders to provide relevant ideas and feedback into national agrifood policy making (Cadilhon et al., in press). One of the latest examples of such a national innovation platform is the Tanzanian Dairy Development Forum which was launched in early 2013 to assist in dairy development policy making and to address the bottlenecks faced by industry players (ILRI, 2013a). Examples of innovation platforms advocating the interests of their members to public officials can also be found at a more local level. For example, the innovation platforms set up by the LiliMarkets project in Mozambique have lobbied the local government to facilitate the construction of a slaughterhouse for cattle and goats and to fund the construction of livestock markets so as to improve the marketing conditions for livestock products by the platform members (van Rooyen and Homann, undated).

Secondly, innovation platforms can undertake collective promotion of the goods produced by the platform members, thus increasing sales to consumers and benefitting all value chain participants. National commodity associations often undertake this type of promotion in local and foreign consumer markets on behalf of their industry-wide membership base (Shepherd et al., 2009).

Thirdly, innovation platforms are particularly well suited to set up food quality and safety standards in a collective manner. Indeed, all stakeholders in the value chain will likely benefit from the standardization of weights and measures in the chain or from an agreement on definitions related to the composition of certain processed food products (Cadilhon et al., in press).

Fourthly, innovation platforms can be at the centre of innovation systems to implement research and development activities in order to improve farm productivity and marketing efficiency. Innovation platforms set up by the research community rely on the active participation of platform members to suggest new research topics that will address real-life issues faced by the value chains; platform members also participate in the field-testing of new technologies and processes, and in the dissemination of successful innovations. For the researchers, working with innovation platforms also provides a unique opportunity to tap local or traditional knowledge to be included in research protocols. Thus, the Volta2 project in Lawra District, Ghana, has been relying on members of innovation platforms to identify new topics for research on crop productivity innovations and to validate and disseminate successful trials for new varieties of seeds and new farming techniques on 16

participating farms so as to respond to changing markets (ILRI, 2013b). At a national level, commodity associations are involved in funding research that will be useful to help solve the problems of their members (Shepherd et al., 2009).

To move to activities that are more directly related to marketing, innovation platforms can become very potent brokers of information useful to take marketing decisions. In the absence of public marketing information systems, many national commodity associations provide information on the state of markets to their members (Shepherd et al., 2009). At a more local level, innovation platforms can assign to some of their members the task of gathering and disseminating local market information for the benefit of all members; such was the assignment given to a local trader within a Burkinabese innovation platform set up by the Volta2 project in Koubri District. In Ghana, the innovation platforms also set up by the Volta2 project have enabled better information on prices of inputs and outputs and information on production techniques to flow between platform members residing in different villages (Cadilhon, 2013).

Finally, innovation platforms, although not strictly a type of hybrid organization for market transactions (as defined by Williamson, 1991), can also facilitate market access if they take some kind of market facilitation role on behalf of their members. Shepherd et al. (2009) have described how such multi-stakeholder groups can also help resolve conflicts between stakeholders in the value chain, acting as arbitrators in the absence of commercial courts. In many countries, facilitating business transactions between members of large commodity associations is banned by free-market regulations. In particular, agreeing on prices and quantities transacted across the value chain within associations is seen as market collusion and condemned as such (Cadilhon and Dedieu, 2011). At a more local level on the other hand, innovation platforms represent too small a market share to pose any threat to a competitive market. The problem faced by smaller producers is often to access relevant production inputs and to find remunerative markets for their agrifood produce. This is where the social capital and networks of individual platform members, in particular the traders and processors involved, can come in handy to serve the interests of producers and other value chain members. A market lady from an innovation platform in Tolon-Kunbungun District, Ghana, involved in the Volta2 project described how she had been able to find markets for the other members of the innovation platform she was involved in thanks to her personal network of traders in the rest of the country and in neighbouring countries. Likewise, the interaction of various value chain actors within the Gataraga potato innovation platform in Rwanda has helped farmers improve the yield, quality and shelf-life of their potatoes while also introducing new packaging in bags woven from natural fibre, thus leading to new and remunerative niche markets (Tenywa et al., 2011).

Although this section has focused on value chain development, innovation platforms can also be set up to address other topics of a community's sustainable development. For example, the objectives aspired to in 2013 by the Burkinabese and Ghanaian innovation platforms in their second year of existence after having been set up by the Volta2 project were related to natural resource management as well as agrifood marketing; namely, access to inputs, access to credit, increased crop and livestock production, improved soil and water management, information access and exchange, capacity building among value chain actors, coordination of activities among value chain actors and improved market access. Because this conceptual framework aims to be able to measure the impact of an innovation platform on how well it is attaining its objectives, it is crucial to identify precisely the different objectives set by the platform. Indicators of these objectives will be used as the dependent variables of the model to be described later in this paper. More generally, using innovation platforms can lead to identifying local solutions to local problems; this can promote an endogenous development approach which fosters greater sustainability of activities.

3 Theoretical build-up of the conceptual framework

The literature review to construct this conceptual framework for the impact evaluation of innovation platforms is based on three strands of literature from socio-economic theory: the Structure–Conduct–Performance model, New Institutional Economics, and Supply Chain Management and marketing.

3.1 Elegant logic, flawed assumptions: the structure–conduct–performance model

First of all, it is worth remembering the elegance of the structure–conduct–performance model of markets, which can provide an overall outline for a conceptual framework to study multi-stakeholder groups like innovation platforms. Developed by Bain in 1959 for an industrial setting and derived from the pure and perfectly competitive market model, the structure–conduct–performance (SCP) framework posited a link between the structure of a market (number of players, market share of stakeholders...), the conduct of traders (competition, collusion, price fixing, raising barriers to entry...) and the performance of the market measured by price indicators (price correlation between different physical markets, price variations, equity of margin distribution among market players...) (Moustier et al., 2003). The benchmark market in this type of analysis was the pure and perfectly competitive model with price indicators used to measure better performance.

The SCP framework has been applied to market studies in developing countries with recommendations to make market structure and conduct closer to those of the pure and perfectly competitive model; this would then result in better market performance. Practical recommendations were the building of modern wholesale markets that would enable buyers and sellers to convene in conditions closer to those of the neo-classical model (Goosens et al., 1994; Mohtar, 2000).

The theoretical background of the SCP literature has been vigorously criticized. Because it posits a pure and perfectly competitive market, which is virtually non-existent in real-life markets involving real people, the results using this model are often challenged by evidence from the field. Among other deficiencies, the SCP model also negates possible environmental influences on the marketing system (Harriss, 1979). Moreover, further research has shown that the infrastructure investments (wholesale markets, market information systems...) that resulted from their recommendations have had mixed results (Galtier and Egg, 1998, 2003; Paulais and Wilhelm, 2000; Shepherd, 1997). A fundamental criticism to the SCP model also lies in its use of price data as principal indicators of performance; they are very difficult to collect from official sources and their reliability is often challenged.

Despite the criticisms on the basic assumptions used by the SCP framework, it nevertheless remains useful as an elegant overarching logic for a conceptual framework to analyse how the structure of innovation platforms can impact on the conduct of its stakeholders, and in turn on the performance of the platform in attaining its development objectives.

3.2 Making sense of real-life markets: new institutional economics

The exploration of food marketing systems using new institutional economics (NIE) and transaction cost economics has become prominent since the 1970s taking account of the uncertainty that is endemic in the food industry because of the technical and economic characteristics of the products, e.g., seasonality of agricultural production, instability of weather and food market conditions (Furubotn and Richter, 2010). NIE is concerned with transaction costs and the organisation and development of economic activity. Transaction costs are the costs incurred by market agents when searching for a buyer or seller, negotiating terms of trade and monitoring and enforcing contracts. They are a consequence of the uncertainty that arises from the opportunistic behaviour (in plain words, cheating) of market agents, limited or asymmetric information, concentration of market stakeholders, and investments in assets specific to the transaction (Williamson, 1991). NIE theory posits that market stakeholders will create a specific institutional background (laws, norms of behaviour) and organizational setting (associations, cooperatives, contracts, firms) to deal with this uncertain market environment. Hobbs (1996) has summarized the theory of transaction costs economics and the NIE framework to apply it to supply chain management. This framework has also been used to understand the contractual arrangements between members of French interprofessional associations (Valceschini, 2002). Thus, it is relevant to introduce elements of NIE into this conceptual framework on innovation platforms.

Given the existence of transactions costs in trading relationships, NIE theory ponders what type of marketing arrangement may be the most efficient to reduce these costs (Hobbs, 1996; Loader, 1997). This literature has discussed which alternative between integration and spot market transactions was the most appropriate for firms depending on the type of product, levels of cross-investments by business partners and the market environment (Heide and Stump, 1995). In a context of high market

uncertainty and strong investment by business partners into the relationship, transaction cost theory points to stronger hierarchy of supply chain activities so as to manage what is called the quasi-rent, or the expected return and value addition from the investments made into the business relationship. The founding publications of transaction costs theory have been especially effective in explaining the efficiency of two extreme arrangements – firm integration and spot markets (Coase, 1937; Williamson, 1985). The analysis of all the intermediate marketing arrangements, which were called hybrid forms by Williamson (1991) and acknowledged as a stable form of governance structure, have only more recently become the focus of research by transaction costs economists (Brousseau and Glachant, 2002).

3.3 Detailed characterization of business relationships: marketing research

Marketing and business management research has been traditionally more focused on identifying these various hybrid forms, and, in line with transaction cost economics, has put the distribution of information along the chains at the core of its analyses. For example, Webster defined a marketing continuum taking account of the intermediate forms of inter-firm relationship arrangements (Webster, 1992, quoted by Cadilhon et al., 2009). Although innovation platforms are not predominantly a mechanism for organizing market transactions between its members, they undertake many functions in facilitating value chain management, as reviewed in the previous section. Innovation platforms also help their members acquire a marketing orientation to their activities. Noble et al. (2002) have characterized how a marketing orientation pushes firms to be customer-focused throughout their activities, implementing market analysis techniques to discover the needs of customers, co-operating to react to the results of the market analysis and embedding the marketing concept in all departments of the firm. In this sense, innovation platforms participate in the distribution of information along chain stakeholders. They help in placing the market as an important decision-making factor of their members and contribute to regulate some of the marketing relationships along the chain. It is thus relevant to use some insights from the marketing literature to analyse how innovation platforms are working.

Furthermore, from a theoretical perspective, a literature review by Cadilhon (2005) has concluded that the field of relationship marketing had usually been more attached to researching the hybrid forms of market organization than studies using a purely NIE framework, which were more focused on the polar spot market and firm integration. Fearne (2000) has also argued that research on agrifood systems should endeavour to detach itself from a strict NIE perspective and its difficult vocabulary to get closer to the practitioners through a management and relationship marketing perspective. In addition, a research focus on relationships provides a way of overcoming an under-socialised view of market relations in past economic and geographic studies (Duteurtre, 2003). Finally, the business management marketing literature provides a range of indicators for the conduct of transaction partners and the performance of their marketing arrangements. If many of these indicators were originally tested in industrial contexts of OECD countries, they have increasingly been validated through empirical research using agrifood value chains of developing countries (Han et al., 2011).

4 The elements characterizing stakeholder conduct within innovation platforms

The marketing literature has been developing constructs to characterize the way businesses undertake transactions along dyadic relationships involving suppliers and customers. This paper proposes to extend these constructs of business relationships to characterize the interactions between the members of an innovation platform so as to model the conduct of platform stakeholders within the conceptual framework to evaluate the impact of innovation platforms.

4.1 Information sharing

Market orientation of firms has been directly linked by past empirical research to information sharing (Sanzo et al., 2003). Rather than keeping information to themselves, market-oriented firms in successful partnerships exchange information so as better to customize their activities to those of their partners and to the needs of the final consumer. Information sharing has been linked to increased performance in several studies of agrifood produce marketing in developing countries (Alemu et al. 2012).

4.2 *Communication*

Communication between business partners has been recognized as a fundamental component of successful inter-firm relationships (Kumar, 1996). Despite the advent of modern information and communication technologies, face-to-face discussions and physical visits to business partners have been recognized as success factors in building stable inter-firm relationships (Dyer and Ouchi, 1993). Physical interactions are important as they allow the building of strong inter-personal relationships between business stakeholders who can relate to each other rather than to only a name or a business title. Effective and frequent communication, including physical visits, was shown to have a direct positive impact on relationship benefits such as profits and waste reduction in Vietnamese fresh produce supply chains (Cadilhon and Fearn, 2005). Badibanga et al. (2013) have shown that the number of stakeholders physically participating in multi-stakeholder platform meetings in the Democratic Republic of the Congo had a positive impact on the platform being more effective.

4.3 *Cooperation, coordination and joint planning*

Cooperation has been defined as 'similar or complementary coordinated actions taken by firms in interdependent relationships to achieve mutual outcomes or singular outcomes with expected reciprocation over time' (Anderson and Narus, 1984). Joint planning is part of cooperation and specifically addresses the actions decided by both firms together (Claro et al., 2003). Cooperation has been conceptualized as a key element of inter-firm relationships very early on in the marketing channels literature (Reve and Stern, 1979). Cooperation has been judged to be fundamental in successful inter-firm partnerships (Spekman et al., 1998). An example of coordination between producers and supermarkets has been studied by Gaucher (2002). Her research on quality beef meat supply chains to Carrefour supermarkets showed that when producers and distributors coordinated to agree on a price structure for a differentiated product compared with a generic product, this increased the value of the whole supply chain and also increased the global surplus (producers, distributors and consumers) as opposed to prices fixed by distributors (own-labels) or producers (protected geographical indications) where distributors and producers respectively took the biggest share of the added-value and surplus. However, this coordination necessitated long-term forward planning by farmers who had to plan livestock production in advance so as to have their product ready at the designated time of transaction.

An example of joint planning among members of an innovation platform comes from the Volta2 project in Lawra District, Ghana. Orbilli Gardeners Association, Nandom Rural Bank and an input supplier in Lawra had agreed for the bank to provide credit to the input dealer so that he may in turn buy enough agricultural supplies for the Gardeners Association members to produce vegetables in quantities, quality and time specified by education institutions buying produce to feed their students. The schools would pay their purchase of produce directly to the bank; the amount of credit offered to the input dealer for his inputs would then be deducted and the difference credited to the Gardeners Association bank account. In this process, the Gardeners were assured of a ready market for their products and also gained timely access to inputs to produce more vegetables for other markets (SNV, 2013). Finally, Badibanga et al. (2013) have shown through a probit regression model that coordination between members of Congolese multi-stakeholder platforms led to a 6% increase in the probability of the platform reaching at least one of its goals.

4.4 *Trust*

Many definitions of trust within a supplier-customer dyad can be found in the marketing literature. Kumar (1996) proposed that trust was the belief that each party was interested in the other's welfare and that neither would act without first considering the impact of his or her action on the other. Publications in empirical marketing have confirmed the theory on the differentiation of trust into different types of trust. The concept of generalized trust, norms and conventions by which all individuals are bound has been shown to be prevalent in some societies and nations (Platteau, 1994), where trust can even become a prerequisite to economic exchange (Batt, 2003). Depending on the social context, such normative trust may be present or not in a country. A global literature review on the concept has found trust to be stronger in developing countries than in Western environments (Batt,

2003). The importance of trust can also vary within a country as reported for North and South Vietnam by Le Goulven in her study of Vietnamese pork value chains (2000).

Finally, in a business context of networked businesses that puts together several competing firms for the same market, trust in another firm or in another individual can be based on reputation. Word-of-mouth and recommendation by recognized and trusted business partners or competitors can help foster trust in a new inter-firm relationship (Lazzarini et al., 2001). The role of inter-organizational trust between the firms, or in other words their reputation as a business entity, has been positively linked to joint planning and joint problem solving, which in turn both led to increased sales and satisfaction (Claro et al., 2003). However, one should try to differentiate trust as inter-organizational or between firms, and inter-personal when two individuals who happen to work together have built trust in each other as individuals. Inter-personal trust can very well be built in a non-working environment but propagate itself to the working relationship through the development of 'overlapping networks' (Ettlinger, 2003). Organizations that engage in successful partnerships have been found to allocate permanent representatives to manage the supplier or customer relationship with their partner so that inter-personal trust could be added to inter-organizational trust (Kumar, 1996).

It seems relevant to extrapolate the concept of trust from the business relationship literature reviewed above to apply it to innovation platforms. Indeed, the different types of stakeholders within innovation platforms also have to learn to trust each other so as to solve common problems. Yet, they might be competing or in a dependency situation within their value chains.

5 Building up the conceptual framework for the impact evaluation of innovation platforms

The three preceding sections have presented the individual elements that could be used to construct a conceptual framework for the impact evaluation of innovation platforms. First, measures of the performance of innovation platforms were presented, as identified through the example of the functions these platforms play in terms of value chain development. Second, the overall logic of the structure–conduct–performance model was complemented by relevant conceptual inputs from new institutional economics and marketing research to construct the basic outline of this conceptual framework. Finally, detailed elements of business relationships were identified to characterize the conduct of stakeholders within innovation platforms.

Put together, these different elements can be assembled in order to build a conceptual framework and model positing that the structure of innovation platforms will have an impact on the conduct or behaviour of its members, which in turn will influence the performance of the platform in attaining the development outcomes it has set itself to reach. The platform's structure may also have a direct impact on its performance. This model is illustrated in Figure 1.

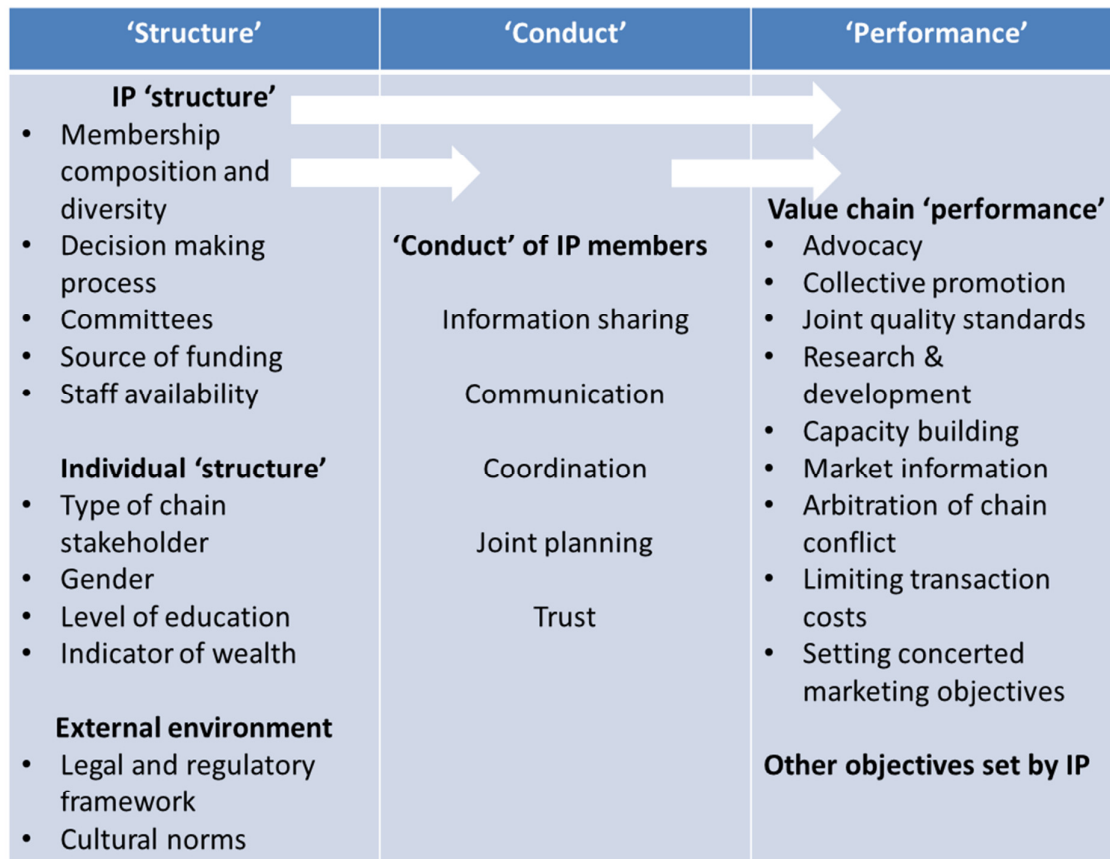
The structure of the platform can be characterized by its internal organization (composition and diversity of membership, the share and influence of commercial actors versus producers and public sector participants, decision making process, whether committees have been formed to tackle specific topics, its source of funding, the availability of staff to man a secretariat, etc.). The external environment to the platform can also be part of structure within this model: what are the legal and regulatory frameworks existing around the innovation platforms? What are the cultural norms for interactions between stakeholders in this society? Finally, some characteristics of individual members of the platform can also be assigned as an element of structure for the model. Namely, the type of stakeholder within the value chain and some indicator of the respondent's position in society: gender, age, ethnicity, and a locally-relevant proxy for wealth. Indeed, previous research by Badibanga et al. (2013) on Congolese multi-stakeholder platforms has shown that an increase in the financial support of the platform, increased participation at platform meetings and a better balance of membership towards women members all had a positive effect on the effectiveness of the platform.

The conduct among the platform members is characterized by the elements of business relationships described in the previous section. Information sharing, communication, coordination, joint planning and trust have all been proved to be essential constructs of successful business-to-business relationships and it is assumed that they are also relevant in the semi-business environment of innovation platforms involving value chain stakeholders. Badibanga et al. (2013) identified

coordination among multi-stakeholder platform members as an explanatory variable for the platform's effectiveness.

Finally, the performance of the innovation platform should be measured according to indicators that are relevant to the objectives set out by the stakeholders at its inception or at the previous strategic meeting of the platform. These objectives will vary according to context. Thus, an appropriate research protocol to monitor and evaluate the impact of innovation platforms needs to be grounded in the activities of the platforms themselves, so as to use indicators that are most relevant for the object of study.

Figure 1 Elements of a conceptual framework to monitor and evaluate the impact of innovation platforms on value chains development



Source: own elaboration

6 Research methodology proposed for empirical testing of the conceptual framework

This section proposes field research and analytical protocols that will enable the validation and strengthening of the conceptual framework with empirical findings from projects that are using innovation platforms as a research and development tool.

6.1 Data collection on innovation platform structure

As identified above, elements characterizing the structure of the innovation platform are linked to the way the platform is organized, to the larger regulatory and socio-cultural environment around it and to the demographic characteristics of its members. Some of this data can be collected using a structured questionnaire targeting the facilitator or secretariat of the innovation platform, depending on its degree of formalization. This questionnaire will gather information at the time of interview about the number of members, the diversity and composition of membership across types of value chain stakeholders.

Some questions will help identify the decision making process within the platform and whether committees have been formed to tackle specific topics. Further details will be sought on the total funding available for the operations of the platform, the source for this funding and the availability and number of staff to man an internal secretariat.

Questions on the external legal environment to the platform will also help identify the legal and institutional frameworks existing around and within the innovation platforms: is there an official status that can recognize the platform as a legal entity? Has the platform established its own by-laws? What are the cultural norms for interactions between stakeholders in this society? Semi-structured interviews of key knowledgeable stakeholders and focus group discussions with platform members will also help to understand better the socio-cultural environment of the society in which the innovation platform is embedded.

Characteristics of individual members of the platform, which is another element of the structure of the platform, will be determined through the first part of individual questionnaires targeting platform members. Within larger platforms, the sampling of respondents could be undertaken so as to represent all types of stakeholders involved in the platform according to their weight in the overall stakeholder composition of the platform members. Each individual respondent will be asked to identify him or herself concerning the type of stakeholder within the value chain, gender, age, ethnicity (if relevant), and a locally-relevant proxy for wealth to be identified beforehand through focus groups with the local community. These indicators of wealth would be ranked in five ascending categories; thus, further comparisons would be possible with other research sites that might not have similar thresholds for wealth of individuals.

6.2 Slow refinement of statements characterizing conduct and performance of innovation platforms

The indicators described in the section above to capture the conduct (information sharing, joint planning, trust, etc.) and performance (equitable distribution of value within the chain, adoption of innovations by platform members, other objectives set out by the platform members) of the innovation platforms are more difficult to pinpoint because they are based on human behaviour and behavioural outcomes. Badibanga et al. (2013) have calculated various indicators from their data to quantify the mechanisms at work in Congolese multi-stakeholder platforms. Their effectiveness variable, in particular, was constructed as a binary variable: 1 if the platform had achieved at least one of its objectives; 0 if not. To generate quantitative data with a more continuous distribution for such indicators, sociological and marketing researchers have used Likert-scales of agreement from individual respondents to a given statement that is supposed to encompass the element under study (Batt, 2003; Han et al., 2011). To start off the empirical validation of the model, it is proposed to reuse previously used statements within the marketing literature which describe the elements of stakeholder conduct in empirical contexts as much as possible related to that of agrifood marketing in developing countries.

The statements describing the performance of the innovation platforms under study will be directly linked to the strategic objectives set by the platform members or its facilitators. If clear statements of objectives to be achieved by the platform have not yet been formulated, focus group discussions can be organized with selected platform members so as to agree on various platform objectives to be attained. These objectives can then be submitted to individual members to collect their level of agreement on whether the different objectives have indeed been reached.

However, the statements used to characterize conduct out of past research and the stated objectives of the innovation platforms as indicators of their performance may not be entirely adapted to the local context of research. Indeed, the statements characterizing conduct have mainly been used to describe dyadic business relationships between buyers and sellers within a value chain. Yet, in this research focusing on innovation platforms, the relationships existing between platform members are not entirely linked to a direct business interest; their interaction is closer to what Lazzarini et al. (2001) have called 'netchains', with vertical chain relationships between suppliers and customers interacting with sometimes conflicting horizontal relationships between the stakeholders belonging to a same group of actors, for example the producers within the platform. Indeed, platform members are engaging with one another within this 'netchain' to solve a common problem for the whole value chain. Furthermore, innovation platforms are a new object of empirical analysis using this type of

marketing research method. It might therefore be necessary to adapt the analytical tool to its empirical object of study. As far as the performance indicators are concerned, the stated objective to be attained by an innovation platform might not necessarily reflect the individual expectations of the platform members.

Therefore, it is proposed to refine the statement used to characterize the constructs of conduct and performance by requesting platform stakeholders to provide their own viewpoint on what they perceive as statements that fully encompass the elements of conduct and performance under study. To undertake this, focus group discussions will be organized with platform members in order to collect different statements from participants that can help characterize better the conduct and performance elements of the conceptual framework in a particular platform context. Likewise, semi-directive interviews with key knowledgeable stakeholders in the field can elucidate further some of the elements under study. Subsequent individual surveys of platform members will request the level of approval with the different statements according to a five-rank Likert-scale. Principal component factor analysis can then be used to identify the one or two statements, whether from past literature or voiced by stakeholders, which best capture the different components of an element of conduct or performance within the conceptual framework. The better statements can then replace the statements previously used in the framework because having been empirically tested as best representing the different facets of the element under study within the model. Further iterations of this method in other innovation platforms in different contexts can thus help refine the model and strengthen its relevance so as to capture the complexity of real-life multi-stakeholder agrifood production and marketing systems.

6.3 Empirical testing of the structure–conduct–performance model developed to evaluate innovation platforms

The conceptual framework described above posits a relationship between the structure of the innovation platform, the conduct of its stakeholders identified by five main elements, and in turn the performance of the platform according to the strategic objectives set out by the platform members themselves. Structural elements might also impact directly on the effectiveness of the platform.

In order to test the validity of this conceptual framework with real-life situations, it is proposed to use the data collected through the individual surveys of platform members: namely, the Likert-scale individual rankings of statements characterizing conduct and performance, and the structural indicators collected from platform facilitators and individual members. The data can be analysed with a series of multiple regressions in order to identify the statistically significant relationships existing between the different elements of the model. The overall goodness-of-fit of the multiple regressions will also provide an idea of which relationships within the conceptual framework are the most relevant to distil the complex interactions likely to be existing between innovation platform members. Triangulation of quantitative and qualitative data collected will help produce a richer and more robust interpretation of the results from the data analysis.

7 Relevance of this research agenda to agrifood development and policy interventions

It is envisaged that this new research method and its results will be extremely relevant to development practitioners in the field who are using innovation platforms as a tool for multi-stakeholder agrifood chain development.

Indeed, the conceptual framework can be used at various stages of the life of an innovation platform to measure whether there is an improvement in the collaborative conduct of stakeholders and whether this is leading towards achieving the development objectives of the platform. Likewise, running the multiple regression analysis can identify the elements of structure and conduct of the model that have the greatest influence on performance elements at a given moment in the life of the platform.

Given that innovation platform facilitators have easy control on the structure of the platform and can help guide the conduct of its stakeholders through appropriate facilitation techniques, this conceptual framework can help development practitioners allocate scarce financial and human resources onto the elements of structure and conduct which have been proved to be most likely to lead to expected development outcomes. Likewise, this type of research will provide empirically tested elements in various settings to policy makers. The latter may then set up adequate policies to

encourage agrifood chain stakeholders to constitute innovation platforms if the local context is similar to one already identified as conducive to unleash the development potential of an innovation platform.

Finally, this conceptual framework will also allow development partners working with innovation platforms to demonstrate that their tool is effective in attaining their project objectives. This is particularly important to prove the project's value-for-money to end-users and to assure the ongoing confidence of investors and donors.

However, one discrepancy of the framework proposed lies in its failure to study the impact of the innovation platforms on the livelihoods of those involved. This weakness would only be addressed by this framework if the platform under study had determined that improvement in the livelihoods of its members was a direct objective that it was set to achieve.

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