Value chain development in Nicaragua: prevailing approaches and tools used for design and implementation

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This article draws on four contrasting cases of value chain development (VCD) in Nicaragua to assess approaches and tools used in design and implementation. We interviewed 28 representatives from the international NGOs leading the interventions, the local NGOs that participated in implementation, principal buyers, and cooperatives. Despite the complexity of market systems, results showed a relatively basic approach to VCD, reflected in: 1) reliance on a single tool for design and implementation; 2) expected outcomes based on technical assistance and training for smallholders and cooperatives; 3) local NGOs and cooperatives with key roles in implementation; and 4) limited engagement with other chain actors, service providers, and researchers. We conclude with a call for a broader approach to VCD, based on a combination of tools to account for multiple, context-specific needs of diverse stakeholders, deeper collaboration between key actors within and outside the value chain, and evidence-based reflection and learning.

Keywords: business services, agriculture, smallholders, NGOs, rural development, methodologies and tools, impact

VALUE CHAIN DEVELOPMENT (VCD) is defined here as the process by which government agencies, NGOs, and private companies engage with smallholders and their businesses (e.g. co-ops and producer associations) to reduce poverty, increase the efficiency of value chains, and enhance their environmental and social performance. VCD has emerged as a major area of rural development programming (Seville et al., 2011; Devaux et al., 2016). Interest in VCD mainly stems from an increased commitment to poverty reduction (Humphrey and Navas-Alemán, 2010) and the awareness that commercial success in relatively complex agrifood value chains requires intense collaboration among chain actors, including producers, processors, and retailers (Hobbs et al., 2000; Humphrey and Memedovic, 2006). The rapid growth in

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demand for products in which smallholders are considered to have a comparative advantage – e.g. horticultural products that require high labour inputs – can provide a strong incentive for private sector collaboration in VCD processes, for example to reduce risks associated with raw material sourcing and to comply with corporate social responsibility or similar standards. By focusing on the nature and quality of interactions and institutional arrangements between chain actors, VCD offers an opportunity to address common problems and design interventions with potential to generate win–win outcomes. Improved relations among chain actors are expected to yield tangible benefits in terms of overall chain performance and, under certain conditions, poverty reduction (Cattaneo et al., 2010).

In addition to the interactions and arrangements between chain actors, VCD processes typically involve external organizations, often NGOs, which support VCD in pursuit of broader development goals, in many cases with financial support from various sources (e.g. bilateral donors, government agencies, and large-scale businesses). NGOs engage with chain actors to determine the scope and modalities of external support, including the sharing of information, resources, benefits, and risks. The design of VCD approaches that effectively respond to the needs and realities of poor chain actors and build a solid basis for long-term chain growth and consolidation is no small task. The effectiveness of external support depends, in part, on the capacity of external organizations to anticipate the responses of smallholder households who typically face trade-offs when committing their own resources to VCD at the expense of other livelihood activities (Stoian et al., 2012). Gender relations, organizational and management capacities of cooperatives, availability of complementary technical, business, and financial services, and overall market conditions also shape the design of interventions and their ultimate outcomes. Moreover, the needs of chain actors may change during VCD implementation in response to market trends, changes in the regulatory framework, specific conditions of given chain actors, and new insights gained during the VCD process.

These complex factors, both internal and external to a given value chain, need to be understood and adequately addressed when embarking on a VCD initiative. A decade ago, this journal featured considerable debate on options for the design of market-oriented interventions with smallholders that preceded a broader value chain discourse. Articles by Lusby and Derks (2006), Albu and Griffith (2006), and Meyer-Stamer (2006), for example, presented a logical case for the design of VCD interventions based on extensive field experience in given countries and with actors engaged in a particular value chain. During the early discussion on VCD, these articles provided useful insights into how VCD could advance rural development goals. After roughly a decade of continued proliferation of VCD, however, there is a need for cross-cutting analysis on what approaches and tools are used for VCD design and implementation and what gaps exist in terms of tool coverage and implementation strategies. This paper seeks to contribute to such analysis by drawing on four contrasting cases of VCD initiatives from Nicaragua, a country where VCD approaches have featured prominently in efforts to address rural poverty.

Methodology

We analysed secondary information and conducted key informant interviews in Managua, where NGOs and government agencies engaged in VCD are headquartered, to gain an overview of the various interventions in VCD under implementation or recently completed. We then selected four cases – dairy, cocoa, coffee, and horticulture – based on the following criteria: 1) current phase of intervention was near completion or recently completed (last 12 months); 2) interventions implied a range of services provided directly to one or more chain actors; and 3) key stakeholders were willing to participate in interviews and share documentation. These cases cover diverse conditions in terms of product (perishable vs. non-perishable), target market (national vs. export), and need for labour and other inputs. Each case involved a selected number of smallholders, a cooperative, principal buyers, and a partnership between an international NGO and various local NGOs. None of the cases involved VCD led by government agencies – a possible limitation of this study. In two of the cases (dairy, horticulture), the VCD initiative began as an NGO-led project in collaboration with local actors, while in the other two (cocoa, coffee), a large-scale buyer initiated the VCD process in collaboration with local organizations, joined later on by an international NGO.

Primary data was collected in 2016 through 28 structured interviews with representatives of the NGOs leading the VCD interventions, principal buyers, and the cooperatives as representatives of the smallholders engaged in each chain. For each case, we identified the key elements of the NGO-led intervention, such as facilitation of information or inputs, training, and technical, business, or financial assistance to smallholders, their business organizations, and other value chain actors (Table 1). Within each lead NGO, interviews involved the intervention (project) leader and two or three other key staff. Areas covered in the interview included: 1) key elements of the VCD approach; 2) tools applied in VCD design and implementation; 3) key partners for implementation; 4) major achievements; 5) principal challenges faced; and 6) perceptions of needs for improved VCD design, implementation, and assessment. Interviews with cooperative representatives focused on achievements and bottlenecks during the VCD process, relations with principal buyers and service providers, including the lead NGO, and needs for future support. Eight cooperatives (two per case) were sampled, and the lead NGOs were consulted with regard to their selection to ensure that variation in terms of capacity and experience in the VCD process was captured. Finally, interviews with the principal buyers covered the strengths and limitations of their relations with the cooperatives and the lead NGO, their achievements in the VCD process, and bottlenecks for deeper collaboration. In most cases, there was only one principal buyer. In the dairy case, there were two buyers, but only one was available for participation in this study.

Results

Lead NGOs

As shown in Table 1, all lead NGOs were international organizations that have been active in Nicaragua since the 1990s, if not earlier. In all cases, the NGOs were

Table 1 Overview of VCD cases selected for research

Case	*Start year*	*Local chain actors*	*External service provider(s)*	*Brief description*
Cocoa	1990	Initially 1 co-op, later grew to 6; 1 international buyer	Lead NGO: established locally in 1998, designed and monitored project Local NGOs: implementation of activities with households and co-ops	Cocoa buyer collaborated several years with local NGO to restart cocoa production (1990–2005). The collaboration evolved into a business endeavour in 2005 with project funds that supported the purchase of a warehouse, support to the co-op, and technical assistance. Collaboration with the lead NGO followed in 2009.
Coffee	2008	11 co-ops; 1 international buyer	Lead NGO: established locally in 1991, responsible for design, implementation, and monitoring	First phase of VCD began in 2008 to improve productivity of coffee plantations between the lead NGO and a major coffee buyer. A second, more intensive phase began in 2013 in response to the spread of coffee rust disease. Buyer provided 50% of project investment, with the aim to ensure supply of coffee through smallholder renovation of coffee plantations.
Horticulture	2005	17 co-ops; 6 large processors; 2 major buyers	Lead NGO: established locally in 1946, designed and monitored project Local NGOs: implementation of activities with smallholders	The lead NGO aimed to help smallholders improve productivity and quality of horticulture supplied to demanding supermarkets in major cities. NGO support has focused strongly on facilitating the links with local supermarkets, building co-op capacity, and facilitating technical assistance to smallholders.
Dairy	2013	25 co-ops, 4 large buyers	Lead NGO: established locally in 1976, responsible for design, implementation, and monitoring	Lead NGO efforts sought to increase income and productivity from small-scale dairy operations to supply the growing national demand for higher quality dairy products. The lead NGO had previous experience in smallholder livestock production from previous projects.

well connected to national-level rural development circles and enjoyed strong contacts with bilateral donors, government agencies, and large-scale businesses. Their activities in VCD were more recent, beginning between 2005 and 2008. This period coincides with the signing (2004) and ratification (2005–2007) of the Free Trade Agreement between the United States, Central America, and the Dominican Republic (DR-CAFTA) – a time when many bilateral donors allocated resources to promoting increased trade capacity of Central American countries, including Nicaragua. At the time of data collection, the budget managed by the NGOs for the selected VCD initiatives ranged from about US$2 m to $10 m, over a period of four or five years. Each lead NGO had mobilized funding for its VCD work from a bilateral donor (only in one case co-investments were made by a major buyer), and all of them expected less funding for VCD-related work in the near future – perhaps more a reflection of overall donor retrenchment in Nicaragua than of waning donor interest in VCD.

Table 2 presents the key features of VCD design. Two of the lead NGOs used the Link methodology (Lundy et al., 2012) for designing their intervention, while the others relied on the Inclusive Business methodology elaborated by SNV (2008) or a unique methodological approach they designed for their intervention. There were no reports of other guides, methodologies, or tools used for VCD interventions, for example for addressing gender equity, impact assessment, the business environment, cooperative development, monitoring and evaluation, or joint learning. The actual selection of the chain for intervention considered the NGOs' experience in a given chain (and interest in building a reputation for work in certain chains), along with the anticipated income generation potential for smallholders. In some cases, criteria were established for smallholder participation (e.g. 10 dairy cows per household) in the intervention, while in none of the cases were explicit steps taken to identify the poorest segments of the rural population and encourage their participation. Monitoring and evaluation was carried out in response to donor requirements. In all cases, the VCD initiative in question was a follow-up on previous, similarly designed interventions. Initiatives aimed to reach 1,250 to 5,500 smallholder households, organized into 6–25 cooperatives. Three of the cases were fully funded by bilateral donors. The other case (coffee) was financed through a partnership between the Dutch Government and a large-scale coffee buyer. In general, direct private sector investment in supporting smallholder participation in relation to the VCD initiative was limited during the interventions assessed for this study.

Overall, the lead NGOs, in collaboration with cooperative partners, provided most of the inputs to the design process. Principal buyers primarily provided feedback and inputs to intervention design and coordinated with NGO partners during the implementation process. Smallholders, in turn, provided inputs to VCD design during workshops in an initial planning stage. Regardless of the target chain and the methodology used, the overall intervention design was quite similar. Specific lines of activity included support for building cooperative capacity, technical assistance and training for strengthening smallholders' capacity in primary production, and, in some cases, support for small-scale processing (dairy and horticulture). In the coffee,

Table 2 Design features of the VCD interventions

Case	*Methodology used*	*Source of funding for interventions*	*Target beneficiaries*	*Major lines of action (in order of budget allocation)*	*Gender focus*
Cocoa	Link	100% bilateral donor	1,250 smallholders 6 co-ops	Smallholders: technical assistance to increase yields Co-ops: financial and administrative management, legal assistance	None
Coffee	Inclusive Business	50% bilateral donor 50% private sector	3,441 smallholders 11 co-ops	Smallholders: technical assistance to increase yields; credit for some growers (provided by principal buyer) Co-ops: financial and administrative management, marketing	Component was added during implementation (family gardens with some 900 women)
Horticulture	Link	90% bilateral donor 10% own sources	1,500 smallholders 23 co-ops	Co-ops: Strengthening organizational capacity, legal support for business formalization, infrastructure expansion Smallholders: Technical assistance for production, infrastructure expansion	Target of 30% women participants (not met)
Dairy	Self-designed	100% bilateral	5,500 smallholders 25 co-ops	Smallholders: upgrading smallholder production capacities Co-ops: improved management, buyer relations, infrastructure expansion, links with rural credit provider	None

cocoa, and dairy cases, activities focused on smallholders essentially aimed at higher yields (e.g. 20 per cent increase for cocoa, 50 per cent for dairy). In the case of horticulture, ambitious objectives were set which centred on boosting production of produce to meet volume requirements of supermarkets. Across all the cases, activities at cooperative level focused on building the capacities of recently organized cooperatives to provide services for members – as part of the NGOs' phasing out strategies. NGOs reported no specific assessment or dedicated activity to understand and address potential gender inequalities. In one case (horticulture), the initiative envisaged 30 per cent of the participants to be women but the target was not met. The interventions focused on different target groups, none of them including explicitly the poorest households in rural areas and, in some cases, involving relatively well-off households (e.g. households with 10 cows for dairy production).

Partnerships for implementation. The lead NGOs identified implementation partners and the relevance and capacity of these partners for achieving VCD objectives (Table 3). All lead NGOs regarded the partnership with the major buyer as critical. In the cocoa and coffee cases, a division of labour emerged whereby the NGO focused on smallholder production and cooperative development, and the major buyer engaged the lead NGO on commercial matters (contracts, pre-financing). In the dairy and horticulture cases, the lead NGOs played a strong initial role in establishing the links between the cooperatives and the major buyer, but later shied away from deep engagement with buyers as the interventions evolved. Lead NGO engagement with smallholders tended to be indirect – in all but one case (dairy), the lead NGOs contracted a local NGO to provide technical assistance to smallholders, and monitored as well as evaluated progress during the intervention via local NGO staff, village-level promoters, and cooperative leaders. Across all cases, the lead NGO forged strong partnerships with local NGOs and cooperatives for implementation of activities. Cooperatives usually received services directly from the lead NGOs (e.g. developing business management capacities and skills). Cooperatives were also hired by lead NGOs to provide advisory services to their members. Involvement of local or national government agencies in project design and implementation was relatively limited. The exception was the dairy case, where the lead NGO engaged with municipal governments for services provision to smallholders (ear tags for cattle) and co-investment in infrastructure. All lead NGOs recognized the importance of smallholder access to financial services, but they had difficulties in building effective partnerships with specialized service providers – either because this fell outside the scope of the intervention or because financial services providers were reluctant to engage (e.g. 'micro-finance institutions only provide services to producers who have paperwork in order'). Partnerships with a research organization were limited to the dairy case (tracking of cattle diseases), and no partnerships were identified with the media, national or departmental government agencies, or specialized providers of business or financial services despite some efforts to establish such links.

VCD implementation. Lead NGOs provided their perceptions of the major obstacles they faced for achieving the intervention-linked goals with smallholders and cooperatives. When referring to households, the responses highlighted the

Table 3 Partnership approach by lead NGOs

Case	*Smallholders*	*Cooperatives*	*Buyers and other chain actors*	*Barriers to forming deeper partnerships (reported by lead NGO)*
Cocoa	Services to smallholders provided by local NGOs and co-ops; feedback loops established through network of project-supported local promoters	Lead NGO engaged co-op leadership for intervention design; co-ops provided information upon request; technical assistance carried out by local NGOs	Lead NGO focused mainly on training for improved primary production and supporting the co-op; limited communication and coordination by the NGO with other chain actors (and vice versa)	Young co-ops dependent on NGO support for survival; only one major buyer within the country; lead NGO with limited staff dedicated to the project
Coffee	Technical assistance and other services to smallholders provided by co-ops engaged with project; some feedback received through project-supported co-ops	Lead NGO provided technical assistance for strengthening co-op management (e.g. leadership, planning, quality control, marketing) and service capacity	Frequent engagement between lead NGO and high-level staff from buyer's company; limited coordination on the ground; separation of tasks between buyer (pre-financing) and lead NGO (cooperative development)	Sole buyer set business terms, preventing co-ops from selling to other large buyers
Horticulture	Strong links with producers during initial phase of activity; intensity declined as co-ops became stronger and were able to channel more resources to members	Lead NGO implemented project through local partners that coordinated meetings, oversaw quality and delivery issues, and provided financial advice to co-ops	Initially, strong and direct link to establish relationship; as project progressed, interactions with buyers based on a 'light-touch' approach	Co-ops rather recently founded with high need for strengthening their capacity; producers with need for guidance on quality and logistical issues to fully engage with large buyer
Dairy	Lead NGO provided technical assistance, access to inputs, and training to smallholders either directly or through co-ops	Lead NGO delivered training and support in setting up accounting and management systems; some training on institutional strengthening and governance	Made initial contacts and stepped back from the negotiations, although became involved for training purposes; linkages with input suppliers and MFI (not formalized)	Dairy sector relatively weak, without national guidelines or policy framework; all large buyers purchase milk from smallholders without formal contracts

challenge of encouraging resource-poor farmers to intensify their engagement with the major buyer in the value chain. Examples of obstacles reported include: 'farmers rely on traditional information and farming systems – many are aware of the need to update, but do not see the need to implement the full set of agronomical management steps required' (cocoa case); 'the mindset of the producers, no funds for purchase of inputs' (dairy); and 'reach quality standards required by formal buyers – to shift the traditional producer's mindset of subsistence' (horticulture case). In the case of cooperatives, responses highlighted the limited capacity of cooperatives to consolidate their governance structures (including mechanisms against mismanagement) and to meet the needs of their buyers owing to lack of access to raw materials (side-selling by members). For example, 'Cooperative members are still tied into the informal market and network of middlemen. It was hard to get them selling to [an internationally owned supermarket], but it will be easy to get thrown out of the chain if they do fail to deliver on time.' The main buyer for horticulture echoed this by stating, 'We will just import directly from neighbouring countries if the local product does not meet deadlines and quality standards'.

Lead NGOs reported how they engaged with smallholders, cooperatives, and major buyers during the implementation process. They communicated most frequently with cooperatives for the purpose of assessing progress and adjusting activities. In some cases, the NGOs described examples of how intensive engagement with cooperatives led to adjustments in activities and priorities (e.g. building of cooperative collection centre and new efforts to expand access to finance). Engagement with smallholders tended to be less frequent and indirect, mainly through partner cooperatives and local NGOs. In the case of horticulture, the lead NGO noted that smallholder engagement was more intensive during an initial phase of activity, but as cooperatives grew in capacity (and began to receive greater amounts of project resources), coordination with smallholders was transferred to cooperatives. Initial efforts to establish feedback loops and learning cycles between the lead NGOs and key value chain actors were not followed through, leaving insights up to each partner rather than striving for joint learning. In one case, both the major buyer and the NGO had implemented separate systems for monitoring outcomes by smallholders. Efforts to engage in joint monitoring and learning, where reported, usually involved the lead NGO and the main implementing partners (local NGOs or cooperatives) and focused essentially on outputs. As a general practice, local NGOs and cooperatives reported to the lead NGO on intervention specific activities and achievements.

When asked to assess their capacity to address different elements of the VCD implementation process (Table 4), lead NGOs considered as a particular strength their capacity to understand the needs of cooperatives. This reflects the general approach to design and implement VCD initiatives in close cooperation with cooperatives – in some cases NGOs had worked with the cooperatives for several years (e.g. cocoa). Competences were also considered relatively strong with regard to assessing market trends, business context, and impact, along with monitoring and learning. These strengths are fundamental for the lead NGOs to engage

Table 4 Self-assessment by lead NGOs of their capacity to address different elements of VCD

	Capacity (1–5, where 1 = very limited capacity and 5 = very strong capacity)				
	Cocoa	*Coffee*	*Horticulture*	*Dairy*	*Average*
Understanding needs of cooperatives and producer associations in complex business environments	4	5	5	5	4.8
Assessment of business context incl. market trends and their implications for the design and implementation of VCD	4	5	5	4	4.5
Impact assessment, monitoring, and joint learning/innovation as related to VCD	4	5	5	4	4.5
Capacity to collaborate with and coordinate among stakeholders from multiple sectors (government, NGOs, private, media)	5	3	4	5	4.3
Qualified staff within your organization to get the job done	4	3	5	4	4.0
Gender roles, in terms of ability of women to participate in the chain or equitable distribution of benefits from VCD interventions	3	5	4	4	4.0
Assessment of the value chain dynamics (actor relations, market opportunities, bottlenecks)	3	3	5	5	4.0
Assessment of risks related to VCD for poor actors in the chain, including potential trade-offs between market and non-market activities	2	4	4	5	3.4
Demand assessment, including consumer demand and retail sourcing	2	1	4	5	3.0
Access to methodologies and tools for intervention design which address the needs of women and men actors	2	4	1	4	2.8

with donors and implement large-scale projects on their behalf. The extent to which lead NGO capacities in monitoring project outcomes (donor-driven) led to improved learning within the value chain (e.g. options for adaptive management for improved processes and outcomes) is not addressed here. Among the capacities considered weakest, lead NGOs pointed at difficulties to access tools and methodologies for intervention design and assessing consumer demand and retail sourcing. Two lead NGOs mentioned the lack of tools for addressing gender: 'Gender is a very complex issue, we do not have a specific tool designed which addresses specific gender approaches'. The perceived need to assess VCD outcomes in terms of gender equity seemed to be the driving force behind this assessment.

When asked about the most critical aspect of VCD where lead NGOs needed support in terms of new tools, methods, or technical assistance, they provided the following responses:

> We know the field and farmers, but we don't understand the final market. There is a need to better understand prices and trends in the international cocoa market. If we didn't sell to [international cocoa buyer], we wouldn't know to whom to sell the cocoa (cocoa case).

> We are keenly aware of each step in the value chain. Our needs are mainly in the emotional and social intelligence side of understanding needs of producers and also with the staff. Another area is gender, since we do not typically run gender projects, but try to incorporate gender aspects into our projects, as flawed as these efforts may be (coffee case).

> Improved knowledge of the market and consumer behaviour. Also in understanding pricing and demand in other markets (horticulture case).

> We lack the ability to stay ahead of appropriate and up-to-date practices and technologies. We are unable to learn from others … Our reality of project cycles does not allow us time to critically evaluate with whom we work. The challenge is how to choose the right person and the producer groups. How do you do that without rushing and being constrained by the project cycle? (dairy case)

Cooperatives

The cooperatives varied significantly in terms of their consolidation, with the oldest established in 1995 (cocoa) and the youngest in 2010 (dairy). Their membership was small to medium, ranging from 18 (dairy) to 259 (cocoa) members. The cooperatives were engaged in the sale of semi-processed products to downstream buyers and processors, save for those that delivered fresh produce to supermarkets. In all cases, cooperatives specialized in a single type of product.

Engagement with VCD intervention. Major investments in the value chain focused on the expansion of machinery and infrastructure, including collection and processing centres (cocoa), a fleet of vehicles for transport of raw material (coffee), and a packaging and washing centre (horticulture). Most of these investments were co-financed by the VCD initiative. Major self-reported accomplishments from engagement with buyers and NGOs related to higher income generation through access to certification (cocoa and coffee) and meeting strict quality requirements (dairy and horticulture). At the same time, most cooperatives identified as principal constraints or risks the lack of reliable supply (inability to meet buyers' demands), dependence on a single buyer (cocoa), and the absence of buyer contracts (dairy and horticulture). In the case of cocoa, cooperative representatives noted 'there is only one major cocoa buyer in the country and members have limited capacity to invest in cocoa production – we are dependent on third parties for working capacity and covering our expenses, such as technical assistance to members'. In the case of horticulture, representatives mentioned, 'The large buyers do not sign contracts with us. Outbreaks of diseases and members' limited grasp of cooperatives continue to be difficult to manage'. Leaders of one of the dairy cooperatives added, 'We have to depend on the buyers' laboratory for analysis. There is no third-party certification. The large buyers do not sign contracts with us'. In addition to support from the NGOs engaged in the respective VCD initiative, the cooperatives reported minimal collaboration with external support organizations (e.g. government agencies, other NGOs, other cooperatives) or researchers.

Table 5 reports the cooperatives' prioritization of needs with regard to business development and value chain engagement. The self-assessment shows how cooperative representatives see the organization based on their experiences, including interactions with buyers, NGOs, and other cooperatives. The most urgent

Table 5 Needs assessment among cooperatives (n=8) with regard to support for more effective value chain engagement

	Number of cooperatives reporting					
	No need	*Very low need*	*Low need*	*Occasional need*	*Moderate need*	*Urgent need*
Designing improved communication systems	5	1			1	1
Greater involvement of women, youth as farmers	3	2	2		1	
Greater involvement of women, youth in cooperative management	2	3	2		1	
Cooperative business administration and financial management	4	1	1	1	1	
Stronger participation of members in cooperative governance	6	1		1		
Risk management and mitigation	7				1	
Logistics and export processes	5				1	2
Processing, food safety, traceability	6					2
Managing certification processes	5			1	1	1
Designing more efficient and effective technical assistance	5	1	1		1	
Strategies and procedures for engaging with new or existing buyers	3		1	1		3

needs included diversification of buyers/markets, enhanced logistics and processing, food safety, and traceability. The involvement of women and youth in farming and cooperative management was identified by most cooperatives, but generally with a low level of priority.

Principal buyers

The principal buyers had long-standing operations in Nicaragua, ranging from 17 to 25 years of presence in the country. All except one (dairy) were multinational companies headquartered in Europe or the United States, with multi-million (US$) annual turnover in Nicaragua.

Engagement with VCD intervention. Overall, buyers tended to limit their direct engagement with smallholders engaged in the VCD initiatives to the purchase of raw or semi-processed products. Only the cocoa buyer offered annual loans and contracts to cooperatives, which included year-end bonuses for investments in infrastructure (as part of normal business partnership, independent of VCD intervention). In 2008, theft and mismanagement by cooperatives left this buyer with roughly US$70,000 in unpaid loans, which the cooperatives managed to repay over a 10-year period. In the case of coffee, training and seedlings were made available to some smallholder growers to help them recover from coffee rust (as part of the VCD intervention), along with price incentives for high-quality coffee. Coordination with lead NGOs was light in many cases, limited to senior staff when 'they come looking for support' (cocoa buyer) or when there was a felt need for a coordination meeting. The dairy case provided an example of collaboration at field level, where the representatives of the principal buyer and NGO staff collaborated in the design and implementation of training events. Cooperatives had yet to facilitate links between their partner cooperatives and smallholders and other service providers, including those that provide specialized technical, business development, and financial services.

The buyers expressed appreciation for NGO-led efforts to build productive and cooperative management capacities. In addition, a complementary approach emerged between the two actors as buyers engaged with cooperatives on commercial options and NGOs attempted to respond to the needs of smallholders and cooperatives (in terms of business administration and infrastructure development). Major lessons learned by the principal buyers through their engagement in VCD included:

> Efforts to support small cooperatives require a long-term approach, and with patience, outsiders are able to contribute. There is a need to focus more on building entrepreneurial spirit in cooperatives and move away from providing assistance (cocoa case).

> It is critical to identify the producers who have potential, as well as the best organized cooperatives (coffee case).

> We know the farmers have been milking cows for generations, so to improve pasture quality and herd management, we coordinate with cooperatives on a weekly basis to ensure high-quality milk (dairy case).

> The fresh vegetables market in Nicaragua is still very basic; growers face low productivity, few value-adding options, and high levels of disease. There is no culture of greenhouse management. Growers still require extensive support (horticulture case).

Although buyers recognized the need for support to smallholders and cooperatives, they themselves appear reluctant to engage deeply with lead NGOs, cooperatives, and smallholders. According to one buyer representative, 'We still do not understand the NGO model, but the bigger issue is that NGOs do not understand our business model'. Another buyer representative added, 'we need more [name of intervention] to support producers, as engaging with smallholders with technical services or other support is not our business'.

Discussion and conclusions

Despite the complexity of market systems, results showed a relatively basic approach to VCD, reflected in: 1) reliance on a single tool for design and implementation; 2) expected outcomes based on technical assistance and training for smallholders and cooperatives; 3) local NGOs and cooperatives with key roles in implementation; and 4) limited engagement with other chain actors, service providers, and researchers. Below we discuss each of these points in turn.

Reliance on a single tool for design and implementation

Across the cases, the NGOs leading VCD relied on a single tool for their initiatives, either a guide designed in-house or a third-party tool they were familiar with through previous exposure (e.g. training by those who designed the tool). This merits concern as no one tool has been published that covers the full range of development-relevant issues embedded in VCD processes, nor its different stages (design, implementation, assessment, adjustments). Guides for value chain analysis and development typically focus on given aspects (e.g. business relations, labour issues, participatory processes), without covering a broad range of associated issues, such as gender equity, monitoring and evaluation, gaps in service delivery, and differentiation of smallholder households (Donovan et al., 2015). The tools used for the studied VCD initiatives are no exception, as they focus on specific issues such as business relations between small-scale suppliers and major corporations and multinational companies (Link methodology) or new business opportunities that involve companies and benefit low-income communities (Inclusive Business methodology). Complementary tools are available, for example, those focusing on gender equity, but these, in turn, do not address all relevant aspects from a broader VCD perspective either (see, for example, Terrillon, 2010; Senders et al., 2013). Reliance on a single tool for VCD therefore holds the risk of important blind spots with regard to the multiple needs of smallholders and other resource-poor value chain actors. Interviews with buyers and representatives of cooperatives and NGOs, for example, brought to light several issues not addressed in the respective guides that required specific attention in the VCD initiatives (e.g. weak cooperative governance structures and management models, specific needs of women and the youth, and limits of smallholders to intensify production for sale). Such diverse needs are best addressed through the design of context-specific VCD initiatives that draw on a mix of tools and allow for client-specific needs at household and cooperative levels.

Expected outcomes based on technical assistance and training

The interventions were based, in part, on an assumption that technical assistance and training in response to market opportunities in the value chain would lead to significant and positive changes among smallholder households (e.g. improved farming practices, greater output) and cooperatives (e.g. increased performance and capacity to deliver services to members). However, resource-poor smallholders face a number of limitations and risks when intensifying their allocation of labour and other resources to a given value chain in view of their diversified livelihood strategies (Stoian et al., 2012). The ultimate impact of VCD will depend on the capacity of these households to address a broad set of issues such as food insecurity, varying availability of household labour, gender inequalities, and limited access to critical inputs and services. Similarly, to achieve shortcuts to cooperative development, cooperatives need access to an array of specialized technical, business, and financial services beyond those that could be provided by any one NGO in the framework of a single project. Lead NGOs can play an important role in bringing to light the needs and circumstances of smallholders and cooperatives and helping to facilitate engagement by other service providers. This implies a long-term commitment to development of the value chain beyond the cycle of a given project, which might be envisaged but not always possible owing to funding constraints. Long-term commitment, in turn, requires coordination among NGOs, cooperatives, and their members to prioritize needs and related investments in the short, mid, and long term. This is particularly important given that, as the results showed here, perceptions of need and priorities for investment tend to vary significantly between NGOs, cooperatives, and other value chain stakeholders.

Local NGOs and cooperatives with key roles in implementation

Another important issue in VCD implementation is the relationship between the international NGOs leading the VCD initiatives and the local NGOs executing them. The former played a critical role in developing the approach to VCD, from selecting the tool for design and implementation to engaging with funding agencies and the principal buyers to get activities running. However, their presence on the ground during implementation was fairly limited. It is acknowledged that international NGOs face relatively high costs to maintain a critical number of specialized staff for VCD implementation and monitoring in the country and, consequently, seek to become cost-competitive by outsourcing execution of activities to local NGOs and, where appropriate, cooperatives. While such delegation has the potential to build local capacities and facilitates phasing out, it often requires upfront investments to ensure that local actors are adequately prepared. Our study did not look into the extent to which this level of preparedness existed among local NGOs and cooperatives prior to the VCD initiatives but, based on our own experiences, we would expect that in many cases, local execution partners require in-depth and in-breadth development of capacities for successful VCD at the onset of a given initiative. In the cases reviewed here, coordination between the lead NGO and local NGOs centred mainly on monitoring and donor reporting, without close collaboration on a day-to-day basis to discuss opportunities and bottlenecks and identify options for moving forward. While efficient in terms of resource use, such a division of labour and delegation of responsibility limit the pursuit of a broader approach to VCD that spans cross-cutting aspects, capitalizes on insights from both international and local VCD work, responds to opportunities and bottlenecks as they emerge, and generates lessons for adapting the current VCD approach and the design of future interventions.

Limited engagement with other chain actors, service providers, and researchers

Interactions between the NGOs and principal buyers varied from case to case, but in general there was a clear separation of tasks. Engagement between lead NGOs and major buyers was usually limited to initial coordination for project design and periodic feedback during implementation. Buyers appeared reluctant to engage in joint strategy formulation and decision-making, facilitate access to financial services, or experiment with new business relations (e.g. embedding finance and technical assistance in purchase contracts). More active involvement of principal buyers would be needed to achieve impact at scale. Emphasis should be on: 1) identification of short-term benefits and clear prospects for further benefits over the mid to long term as part of the VCD design phase; 2) support strategies for cooperatives that address bottlenecks prioritized by the buyers (e.g. requirements in relation to volumes, quality, and timely delivery); and 3) continuous monitoring of key performance indicators to measure progress and as an input for joint reflection on collaboration needs and investment priorities.

Looking ahead, various opportunities emerge from this research to advance how VCD is designed and implemented. More debate within and among NGOs and other stakeholders engaged in VCD will help to understand the opportunities for a broader and more adaptive approach to VCD, one that employs feedback loops in implementation (non-linear design) and utilizes an integrated set of tools based on diverse stakeholder needs and conditions. As the external business environment can become less favourable over an intervention period, it is critically important for integrated VCD approaches to allow for alternative options if assumptions about demand trends, the regulatory framework, and the behaviour of chain actors and service providers turn out not to stand up to expectations. Where the right tool for a given element of a VCD approach is unavailable, NGOs can work with specific partners, such as research institutions, to advance existing and develop additional tools. Such interactions can also help to develop viable mechanisms for critical reflection, joint learning, and continuous improvement.

Models for designing and implementing VCD initiatives with varying roles and responsibilities of international leads, local partners, and other stakeholders also require us to revisit underlying assumptions about respective strengths and weaknesses. International–local hierarchies and the notion of a governmental or non-governmental lead agent promoting VCD based on externally sourced funding may need to give way to more horizontal, integrated, and collaborative approaches where different service providers and value chain actors play complementary roles, pool human and financial resources, and draw on diverse, mutually reinforcing methodologies and tools. 'Communities of practice' of NGOs and other lead agents in VCD across a portfolio of value chains in a given country, and across countries, would strengthen evidence-based improvements in VCD design and implementation. Funding agencies, committed buyers, national and local government agencies, and cooperative leaders could also contribute to and benefit from these collaborative frameworks. Participation of cooperative leaders in such endeavours is critical to ensure mutual understanding and mediation between external agents, who tend to focus on mid- to long-term development goals, and the former, who need to address pressing, often short-term needs.

Lastly, the findings suggest an opportunity for greater involvement of researchers in the design and implementation of VCD. They can make important contributions to facilitate broader, more integrated approaches to VCD by designing tools with practitioners that address the most glaring gaps in the overall VCD tool kit, particularly as regards the operationalization of ways to enhance gender equity, integrated service delivery by cooperatives and external providers, and management of production and commercial risks. A sound combination of VCD methodologies and tools and their adaptation to local contexts would also account for better anticipation of trends and risks, as well as bailout options with possible shifts from one value chain into another. Such a broader approach to VCD would have a stronger focus on a given geography as a biophysical, socio-economic, and institutional space; be mindful of diverse market- and non-market-oriented livelihood activities of smallholders across this space; and support them and other value chain actors in searching out options across a portfolio of value chains to maximize synergies and minimize risks.

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