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Linking Communities of Practice with Value Chain Development in Smallholder Farming Systems

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Summary. — Value chains are an increasingly popular approach to understanding complex policy challenges in agricultural development. However, value chain research and development has often been too narrowly focused on the structural elements of production, resulting in lack of adaptive capacity. Drawing on the concept of communities of practice, this paper seeks to operationalize an understanding of how the social relations that underpin smallholder-related value chains can be better supported to enhance resilience. Case studies from the Caribbean are then used to illustrate how a community of practice approach to value chain development might facilitate the formation of social capital.
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1. INTRODUCTION

From systems to networks to chains to clusters, a variety of concepts are being used to assist with understanding the complex sets of relationships, influences, and interactions that shape social and ecological outcomes at different scales. Within international agriculture and food systems research, value chain analysis has become widely used for understanding how actors insert themselves into economic processes and the implications of this for rural development (Humphrey & Schmitz, 2001; Kaplinsky, 2001; Stringer & Le Heron, 2008). However, value chain analysis has been critiqued for focusing too much on the structural elements of production, with only the latest generation of value chain research starting to examine more closely the social, cultural, and symbolic relations that underpin value chain initiatives (Gibbon & Ponte, 2005; Riisgaard et al., 2010).

In this paper we address the question of how social relations in value chains may be better understood and operationalized by drawing on the concept of "communities of practice" (Lave & Wenger, 1991). While this literature has not yet been picked up in value chain research and development, we argue it is particularly helpful for understanding the core challenges of collaboration, trust, and learning among actors, particularly in developing area contexts (Pietrobelli & Rabellotti, 2011). As the need to consider resilience in food-related value chains becomes more pressing due to economic and environmental change (Elms & Low, 2013), there is a need for integrated approaches and tools that engage local stakeholders in enhancing value chain performance (Bammann, 2007; Bernet, Devaux, Ortiz, & Thiele, 2005; Luthe, Wyss, & Schuckert, 2012; Ponomarov & Holcomb, 2009). We draw on a case study of food security in the Caribbean to illustrate how a community of practice approach (COP) to developing agriculture and food value chains could assist stakeholders in identifying more resilient policies and practices to better support adaptation and innovation.

2. BACKGROUND

(a) *Value chain analysis*

Most simply, a value chain is the range of activities required to bring a product or service from production through to final consumption (Kaplinsky, 2000). The value chain has become a useful analytical tool for understanding the relationships among actors in a chain and considering the potential implications for development (Humphrey & Schmitz, 2002), particularly in international food and agriculture development contexts (Graef, 2014; Kaplinsky & Morris, 2001; Stringer & Le Heron, 2008). The overall aim of value chain analysis is to identify ways to improve the performance of a chain such that all actors are placed in a better position (Bammann, 2007; Riisgaard et al., 2010). The position of actors in a chain may be improved through increased rewards and/or minimized exposure to risk, both economically and in terms of outcomes such as poverty, gender, labor, and the environment (Riisgaard et al., 2010).

According to Gereffi (1994), value chains consist of three main components: input–output, geography, and governance. The governance dimension has received the most attention in value chain analysis because it brings to the foreground questions about the forces that both enable and limit what actors in the chain can do (Sturgeon, 2008). As Giuliani, Pietrobelli, and Rabellotti (2005) state, "[a]t any point in the

chain, some degree of governance or coordination is required in order to take decisions" (p. 551). These decisions could include what should be done, how to do it, or how much or when something should be produced in both market and non-market contexts (Giuliani et al., 2005). Many theories have emerged for explaining governance in value chains, to the extent that Gibbon, Bair, and Ponte (2008) suggested that value chain analysis might best be understood as a methodology that can be "mobilized within various theoretical perspectives" (p. 315).

However, there are shortcomings in many of the existing approaches to understanding governance in value chains. One of the main critiques of value chain analysis has been that it is inadequate at capturing the complexity of social relationships across the length of the value chain (Bair, 2009). Bair (2009) argued that value chain analysis has been best at looking at the relationships between particular links in the chain (for example, between a buyer and supplier), but less successful at understanding linkages, including different types of governance or forms of coordination, across the entire chain. Bair's argument reflects a broader criticism of most value chain research in focusing too much on the structural and economic elements of production and not enough on the social, symbolic, and cultural relations among actors (Gibbon & Ponte, 2005). In the area of agriculture and food value chains specifically, Graef (2014) similarly argued that governance approaches need to better consider all the components of a value chain and take into account the particular social and institutional settings in which the chain is operating. Others have echoed this criticism in a call for greater attention to the "horizontal" factors, including the historical, institutional, and social contexts, in which value chains are embedded (Riisgaard et al., 2010).

Increasingly, social interactions among actors have been identified as important to successfully functioning value chains. For example, Schmitz (1999) suggested that the ability of actors to innovate in order to capture greater value relies on "consciously pursued joint action" (p.469). Others have demonstrated that trust among actors is a "strategic asset" that can increase performance of a value chain (Vieira & Traill, 2008, p.464). Further, a growing body of research suggests that organizations that are able to successfully transfer knowledge are more productive than those that are not (Inkpen & Tsang, 2005; Saliola & Zanfei, 2009). Several researchers have stressed the need to support collaboration, trust and learning among actors in value chain research and development, utilizing participatory approaches that seek to engage local stakeholders and offer opportunities for strategic learning and innovation (Bammann, 2007; Bernet et al., 2005; Graef, 2014; Proctor & Lucchesi, 2011; Ribiero & Zwirner, 2010; USAID, 2009).

While the importance of social interactions and engaging stakeholders in value chain development is becoming increasingly recognized in the literature, the question of how to effectively develop social relations among actors in value chains remains conceptually under-developed (Ribiero & Zwirner, 2010). While some value chain analyses have separately addressed issues of collaboration, trust, or learning, few have dealt with them collectively, or examined how these interactions play out across the entire chain. Recognizing this knowledge gap, we draw on the concept of communities of practice to help operationalize an understanding of social interactions within value chains and how they might be developed.

(b) Communities of practice: Operationalizing an understanding of social relations in value chains

(i) Defining communities of practice

Communities of practice are "groups of people who share a concern or a passion for something they do, and learn how to do it better as they interact regularly" (Wenger, 2006). The term was originally coined by educational theorist, Etienne Wenger, and anthropologist, Jean Lave, as an approach to learning that focused on people and the social relationships and structures that allow them to learn together (Wenger, 2006). According to Wenger (2006) communities of practice have three defining characteristics: the domain, the community, and the practice. The domain is the common interest that links the community; the community is the joint activities in which members engage; and the practice refers to the shared stories, tools, and resources from which the group can draw.

Communities of practice are not synonymous with project teams or working groups (Hearn & White, 2009; Wenger & Snyder, 2000). Rather, unlike these groups, communities of practice are self-selecting, voluntary, and have more fluid goals based around shared interests, practices, and learning rather than solely management objectives (Hearn, 2009; Lesser & Storck, 2001). Lesser and Prusak (1999) further broke down an understanding of community and practice, explaining that the word "community" indicates that communities of practice are not limited by boundaries imposed by geography, sector, or function but defined by common tasks and work interests. The term "practice" refers to "knowledge in action," or the "dynamic process through which individuals learn how to do their jobs by actually performing tasks" (Lesser & Prusak, 1999). In this way, communities of practice are essentially informal and self-organizing (Wenger & Snyder, 2000).

More recently, Wenger-Trayner, Fenton-O'Creevy, Hutchinson, Kubiak, and Wenger-Trayner (2015) suggested that different communities of practice may also come together to form larger "landscapes of practice" (p. 13), which have the potential to serve as loci for social learning and innovation (Wenger-Trayner, Fenton-O'Creevy, Hutchinson, Kubiak, & Wenger-Trayner, 2015).

We believe there are strong synergies between understanding and developing communities of practice, and understanding and developing governance approaches for value chains that better attend to social relationships. First, as communities of practice are not limited by traditional boundaries, so value chains bring together actors across sectors and spatial scales. Second, a view of 'knowledge in action' in communities of practice supports a consideration of the dynamic interactions among actors in value chains (Bair, 2009; Gibbon & Ponte, 2005). Lastly, taking the perspective of landscape of practice provides insights as to how different communities of practice come together in a value chain.

(ii) Supporting innovation, adaptation, and resilience among value chain actors through communities of practice

The communities of practice literature, with its focus on how people work and learn together, offers important insights for supporting innovation, adaptation, and resilience in value chains. Here, resilience can be understood as the capacity of a system "to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks" (Walker, Holling, Carpenter, & Kinzig, 2004). While the concept of resilience was commonly used in the study of ecological systems, it has

since been extended to examining the dynamics of interlinked (or coupled) social-ecological systems (Berkes, Colding, & Folke, 2003; Walker et al., 2004). In social-ecological systems thinking, resilience is closely linked to the adaptive capacity of the actors involved, defined as their ability to anticipate change in a system and use social, economic, and political means to shape its direction (Berkes & Ross, 2013). Berkes and Ross (2013) noted that adaptive capacity often takes place through social networks and learning communities which contribute to social-ecological resilience through fostering flexibility, diversity, innovation, and responsiveness among actors (Berkes & Ross, 2013; Folke, Hahn, Olsson, & Norberg, 2005; Olsson, Folke, Galaz, Hahn, & Schultz, 2007; Pelling & High, 2005). In this context, the term adaptive governance is commonly used to refer to governance approaches that connect individuals, organizations, and institutions at multiple scales, often by making use of social networks (Folke et al., 2005).

However, according to Berkes and Ross (2013), the processes by which adaptive capacity among actors may be "activated" have not been well explored (p. 15). Recognizing that adaptive capacity in social-ecological systems depends, at least in part, on social networks and learning communities, then it is here we suggest the communities of practice literature, with its insights into learning as a form of social participation, is particularly relevant (see also Pelling & High, 2005). To date, the community of practice concept has found resonance in research concerned with the informal aspects of organizational development and innovation. Wenger (1998) proposed that communities of practice foster social learning through three "forms of belonging": engagement, imagination, and alignment. Engagement is about what people do together and how they do it; imagination involves the shared images that define the boundaries and features of the community; and alignment involves individuals coordinating their perspectives and actions with the broader community in order to achieve larger goals (Wenger, 1998).

The idea of forms of belonging in communities of practice fits well with the concept of social capital and its focus on social engagement among actors (Wenger, 2001), offering additional insights on how best to operationalize social learning and innovation (Lesser & Prusak, 1999; Lesser & Storck, 2001). According to Putnam (1995), social capital may be defined as the "features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit" (p. 67). Nahapiet and Ghoshal (1998) further broke social capital down into three dimensions: structural (overall pattern of connections among actors), relational (the history of interactions among actors often described in terms of trust, respect, norms, and identity) and cognitive (the resources that provide shared systems of representation, interpretation, and meaning among actors). These dimensions of social capital approximate Wenger's ideas of engagement alignment, and imagination, respectively. Recognizing this, Lesser and Prusak (1999) and Lesser and Storck (2001) argued that communities of practice can help build these three dimensions of social capital. First, they may support structural social capital by offering people an opportunity to create a network of individuals with common interests with whom they can learn. Second, by bringing people together to generate and share knowledge, the community of practice can give rise to the interpersonal interactions necessary for building trust. Lastly, as communities of practices create stories to communicate their norms and values, they help maintain a shared language and body of knowledge among individuals, and contribute to the formation of a community memory that can persist after original members have left. While communities of practice may therefore serve as critical hubs for generating social capital, a growing body of research is, in turn, demonstrating that social capital can lead to improved organizational learning, performance, and innovation (Gubbins & Dooley, 2013; Hu & Randel, 2014; Tsai & Ghoshal, 1998).

However, appropriate support and "cultivation" are necessary for communities of practice to realize their potential (Wenger & Snyder, 2000, p. 143). In what follows, we use a regional, multidisciplinary food and nutrition security project in the Caribbean as a case study for illustrating the utility of a community of practice approach to value chain development and examining supportive conditions for the formation of social capital. In the next section we further describe our case study followed by the specific data collection and analysis methods used.

3. METHODS

(a) Case study

Our case study was a three-year multidisciplinary research and development partnership project focused on improving household food and nutrition security in the Caribbean Community (CARICOM). The CARICOM entity, which comprises mainly Small Island Developing States (SIDS), is an economic grouping of 15 countries, with a common colonial legacy. The project employed a value chain approach that linked improved smallholder farming practices to a new model for school lunch meals. This "farm to fork" value chain sought to improve nutrition outcomes of primary school children by increasing their consumption of locally grown fresh fruits and vegetables, while diversifying agricultural production and improving market opportunities and livelihoods for farmers. Between 2011 and 2014, the "farm to fork" value chain was piloted in two CARICOM countries: St. Kitts and Nevis and Trinidad and Tobago (see Table 1 and Figure 1). These countries were selected because they are experiencing high levels of food and nutrition insecurity, limited diet diversity, high dependence on imported energy-dense foods (FAO, 2013), and rising levels of overweight and obesity in the communities (Francis, Nichols, & Dalrymple, 2010). Furthermore, the agricultural industries in both countries have been undergoing substantial restructuring following the decline of traditional export commodities, including sugar and cocoa (Saint Ville, Hickey, & Phillip, 2015; Weis, 2007); this has led to urgent calls by policy makers for agricultural diversification and productivity, with emphasis on innovation (CARICOM Secretariat, 2004, 2007).

The "farm to fork" research activities were led by McGill University and University of the West Indies and implemented in collaboration with a range of local partners, including the local Ministries of Health, Education, and Agriculture, along with regional institutions working to improve regional nutrition and health outcomes, especially children and women. Schools and farmers also participated in the studies.

In St Kitts, 16 farmers in two regions of the island participated in the project. In return for participation in the project, these farmers received project support in the form of agricultural inputs, technologies, and training, and sold some of the produce harvested to the School Meal Centre for the preparation of lunch meals designed by project researchers. The School Meal Centre, located in the capital city of Basseterre, is a publicly-funded and government-operated facility which prepares lunches daily for distribution to about 3,200 students

Table 1. *Case study characteristics.*

	St Kitts and Nevis	Trinidad and Tobago
Geography		
Location	Two-island country in the Leeward Islands	Two-island country in the Windward Islands
Land area	261 square kilometers	5,128 square kilometers
Population (2014)	51,538	1,223,916
Urban population	32% of total population	14% of total population
Economy (2013)		
GDP	$767 million USD	$27 billion USD
Per capita income	$16,300 USD	$20,300 USD
Major industries	Service, tourism, agriculture	Oil and gas, mining, construction, service, agriculture

Source: CIA The World Fact Book 2014. Retrieved online https://www.cia.gov/library/publications/the-world-factbook/geos/sc.html.
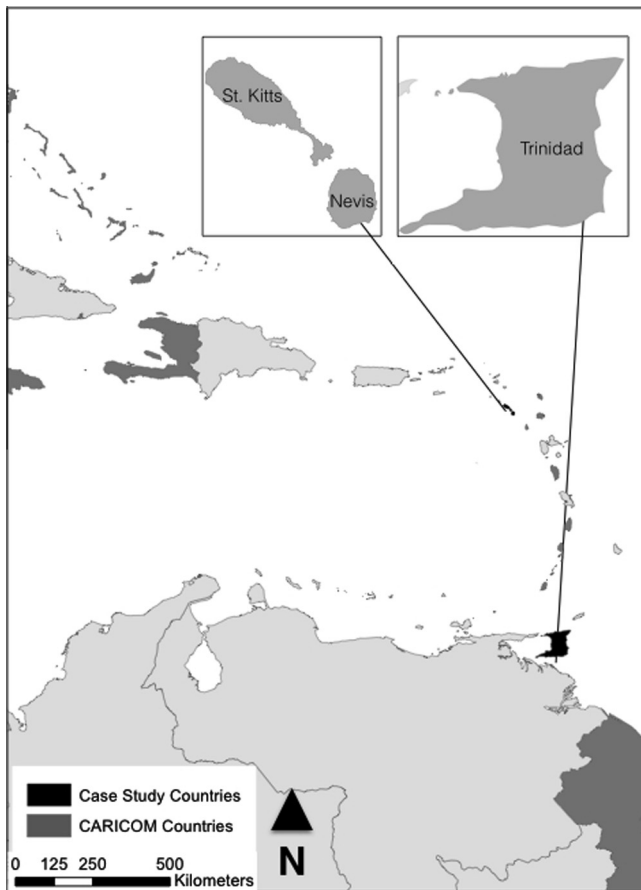
Figure 1. *Map of case study countries.*

(irrespective of economic status) in 17 public schools around the island. Four public elementary schools were selected to participate in the "farm to fork" project as "intervention schools" and three schools served as controls. The intervention schools received a modified lunch menu that included more locally produced fruits and vegetables. As part of the project, studies were undertaken to compare the nutritional and health outcomes of children across these sites (see Moumena, Johnson-Down, Granderson, Phillip, & Gray-Donald, 2014; Moumena et al., 2013). Prior to the introduction of the project, very limited quantities of fruits and vegetables were provided in the school meal and these often were not sourced locally. The project also brought together for the first time the Ministry of Education (responsible for operating the School Meal Centre) and the Ministry of Health, which is now more actively engaged in providing nutritional and dietary advice to the School Meal Centre.

In Trinidad, a government-sponsored school nutrition program (SNP) provides two meals (60,000 breakfast meals and 97,000 lunches) per day to children in over 800 schools. Unlike the St. Kitts program that provides meals to all children, the Trinidad program only provides meals to children assessed as being in economic need. The program operates according to a decentralized, "private sector" model in which 74 private caterers are contracted to provide school meals. Because the model is decentralized, the project did not work with selected farmers, as in St. Kitts, but rather tried to support the procurement of local produce for the SNP by facilitating relationships between this agency and the Ministry of Food Production and the National Agricultural Marketing and Development Corporation. The University of the West Indies also led agricultural experiments at their research station to investigate appropriate practices and technologies for supporting field crop production by local farmers. In total, six schools in Trinidad were selected to participate in the project. Two schools

Table 2. *Interview and focus group participants.*

Stakeholder groups	St Kitts		Trinidad	
	Interviews (*n* = 26)	Focus group (*n* = 13)	Interviews (*n* = 19)	Focus group (*n* = 35)
Farmers/farmer groups	8			10
School meal programs staff/caterers	1	3	2	3
Teachers/principals	4	4	5	2
Public policymakers	4	2	2	3
Government employees	3	3	1	2
Researchers	4		8	8
Practitioners		1		6
Project staff	2		1	1

received a modified menu including more fruits and vegetables, two received a modified menu and nutrition education, and two received nutrition education only. A further two schools served as controls. Nutrition education was an additional project component that only took place in Trinidad.

Through these complex and multi-sector research activities, a number of key policy questions emerged. In particular, there was a realization that implementing and sustaining the "farm to fork" value chain required a high degree of communication and collaboration among diverse stakeholders, from local farmers through to school meal staff and caterers to teachers and government officers. This created a number of challenges in both countries, as relatively low levels of trust between stakeholders and different levels of capacity were observed by the research team over the course of the project. Recognizing the subsequent vulnerability of the "farm to fork" value chain in these social-ecological contexts, we undertook an exploratory study to better understand the processes that underlie collective action in each research context with a view to informing future public policy and research.

(b) *Data collection and analysis*

This research draws on two methods of data collection. First, over the period of January to April 2014, 45 key informant interviews were completed with project participants in St Kitts ($n = 26$) and Trinidad ($n = 19$) to gain their perspectives on the successes and challenges associated with the "farm to fork" value chain, including the potential value of their participation. Interview informants were purposively selected to capture the range of stakeholders involved in the project (see Table 2), including farmers, teachers and principals, school meal staff and caterers, policymakers, and governments managers from the partnering Ministries (Kuzel, 1992). Detailed notes of interviews were taken and transcribed following the interview. These were then thematically analyzed using an inductive process of open coding (Berg, 2004).

Second, in March 2014, we hosted two policy focus groups (one in St Kitts and one in Trinidad) with project participants. The primary objective of the focus groups was to get stake-holders to collectively generate ideas about how they could work together more effectively to sustain, and possibly scale up, the "farm to fork" value chain. The focus groups thus brought together stakeholders purposively selected to represent each component of the value chain (see Table 2), including 13 participants in St Kitts and 35 participants in Trinidad. There was some overlap between interview and focus groups informants. Some participants had already participated in an individual interview prior to the focus group. In the case of Trinidad, it is important to note that individual interviews with farmers were not undertaken because the decentralized model of the school nutrition program involved multiple private caterers operating private "home kitchens," and the caterers were not consistently obtaining produce from local farmers. However, in an effort to include farmers' perspectives about the potential policy challenges of a "farm to fork" approach to school feeding in Trinidad, key farmers and representatives of farmer organizations were invited to participate in the focus group discussions. The inclusion of farmers and farmer groups accounts for the larger number of focus groups compared to interview participants in Trinidad. In St. Kitts, farmers were invited to the focus group but due to scheduling challenges they could not attend. However, the perspectives of the farmers in St. Kitts were captured through individual interviews.

Before the focus groups commenced, participants' consent to participate was requested via a written consent form. The focus groups were approximately two hours in length and were interactive in nature (Morgan, 1996). Participants were broken into small discussion groups of approximately 5–6 participants each, and asked: (1) to describe a public policy problem they successfully addressed in collaboration with another group; and (2) what made the collaboration successful. The problem did not have to be food or agriculture—related. Each breakout group was assigned a project researcher or research assistant to assist with facilitation and note-taking. While some groups chose to focus on an agricultural problem, others reflected on problems they addressed collaboratively in areas such as education, health, and community development. Participants were then asked to reflect on how they build trust in their

Table 3. *Values among organizations and communities of practice studied.*

Organization		Community of practice	Key value outcomes
St Kitts	Trinidad		
Farmer groups	Ministry of Food Production National Agricultural Marketing and Development Corporation	Farmers	Increased access to local market Improved production practices
School Meal Centre	National Schools Dietary Services Limited	School meals staff and caterers Nutrition/health practitioners	Increased access to local produce Better quality meals
Schools	Schools	Teachers and principals	Improved nutrition outcomes among students Improved awareness of nutrition among students and school community
Department of Agriculture	University of the West Indies, St. Augustine Campus	Technical agricultural staff (extension workers, project field staff)	Opportunity for building new markets for farmers Opportunity to experiment with new production practices
Ministries of Health; Education and Information; and Agriculture, Marine Resources and Cooperatives	Ministries of Health; Education; and Food Production	Government managers and policymakers	Stronger partnerships across government agencies More integrated policymaking
Regional institutions	Regional institutions	Researchers and practitioners	Improved partnerships with national-level stakeholders

day-to-day working relationships. Some groups answered this question by reflecting further on the operational collaboration they identified in the first question. At the end of the breakout session, each group shared its discussions with the larger group for feedback.

The focus groups were recorded and written notes of the session, including small group discussions, were kept. The written notes and recordings were thematically analyzed using a combination of deductive (theory-driven) and inductive (data-driven) coding to generate themes (Fereday & Muir-Cochrane, 2006). We used the dimensions of social capital as a conceptual lens for approaching the data, while also remaining attentive to other themes emerging directly from the data (Fereday, 2006).

4. RESULTS

Based on key informant interviews, we identified the main value outcomes associated with participating in the value chain for actors in different communities of practice (see Table 3) (Lesser & Storck, 2001). We found that different communities of practice have different value outcomes associated with their participation in the value chain. For example, for farmers, a value outcome was improved access to a local market for selling their crops. For teachers, potentially improved student nutrition and better nutrition awareness were valued. For government managers and policymakers, more coordinated policymaking, including stronger partnerships with other government agencies, was a key benefit. For example, as one policymaker explained, "[Since the project] our relationship with other Ministries has improved, we depended on each other for it to be successful. The more you work with other Ministries the better the outcome. Often there are cross-cutting issues. This is one of them."

Recognizing these different communities of practice and their respective value outcomes and competencies in relation to the "farm to fork" chain, focus group discussions explored what makes collaboration successful and how they, as individuals, build trust with others, with a view to informing strategies to develop collective action and adaptive capacity within and across the value chain. These findings are presented in Table 4 as supportive conditions for developing the structural, relational, and cognitive dimensions of social capital in communities of practice (Inkpen, 2005). We relate these dimensions of social capital to collaboration, trust, and learning respectively, identified in the value chain literature as important social interactions; and to engagement, imagination,

and alignment identified by Wenger (1998) as key forms of belonging in communities of practice. As the main findings were fairly consistent across focus groups in both countries we have presented the combined results in Table 4.

First, in terms of building strong collaborative relationships, participants identified equal participation, clear communication, setting common goals, good leadership, and engaging in formal and informal social interactions as important supportive conditions. There was strong agreement from participants that all actors must be present when making decisions. As one participant said, "all must have the authority." They believed equal participation must be based on the recognition that everyone brings their own strengths to the table and has a unique role, or in one participant's words "niche" to fill. However, at the same time, having leaders who can motivate people to come together and facilitate relationships with other groups was identified as important. Good communication, based in honesty and respect, was also identified as key, particularly when managing relationships with a diverse group of people. As one participant said in reference to their daily work in a school setting, "never try to keep it [ideas] in your head. You're dealing with staff, people from all walks of life." Participants also identified having shared aims as crucial to successful collaboration. This was described in terms of a "collective concept" or "common ground." Along with establishing shared aims was the sentiment that there must be mutual benefits for everyone involved in order for these aims to be realized.

A final condition that emerged as important for building collaboration is engaging with others in formal and informal social interactions. Participants stressed that strong relationships are built on activities both inside and outside the workplace. One participant, in the context of building a partnership with another organization, said, "you have to eat with them, sit with them, play with them." A caterer who prepared meals for the School Nutrition Program in Trinidad described an example of this type of social interaction. She regularly attended the public farmers' market, to shop for both her household and her catering business. Over time, through informal interactions in the market, she developed a relationship with a particular farmer to the extent she said "we're nearly friends." This merged into a more formal business relationship as this farmer now consistently sells produce, and provides custom orders, to her catering business.

Second, recognizing that trust is a critical ingredient of social capital, focus group participants discussed how they build trust in their day-to-day organizational activities. Participants identified honesty and transparency as key conditions

Table 4. *Supporting communities of practice in a value chain.*

Social capital dimensions	Key interactions in value chains	Form of belonging in communities of practice	Supportive conditions
Structural Pattern of relationships	Collaboration	Engagement	Clear communication Participation by all actors in decision-making Everyone has a role to play Establishing common goals Build formal and informal social interactions
Relational History of interactions	Trust	Alignment	Honesty and transparency Words and actions need to match Good listening skills Understanding past experiences
Cognitive Shared system of meaning	Learning, knowledge generation/sharing	Imagination	Humility Being open to others' perspectives Combining expertise and experience

for establishing trust. They further stressed that words and action must match—in others words, if one says they are trustworthy they must also behave in a way that is honest and transparent. Further, some participants mentioned the importance of a "personal touch" in establishing trust, noting that trust can sometimes be harder to establish when dealing with large institutions. However, in discussions about trust, participants identified relatively high levels of mistrust as a challenge to collaborative initiatives. Participants described lack of trust as operating at various levels, including between individuals and institutions, and among individuals (including farmers) and institutions. Participants suggested the root causes of this mistrust must be fully understood in order for collaboration to be strengthened. In this context, they noted that past experiences have a strong impact on how people work together in the present. Politics, socialization, as well as a collective history of slavery and indentured servitude, were identified as factors potentially contributing to mistrust and to a desire to work more independently. In Trinidad, which is particularly diverse in terms of ethnic and religious groups, religion was also identified as a factor potentially influencing trust.

Finally, participants identified some important conditions for learning and knowledge sharing. First, having humility and being open to others' perspectives were identified as important conditions for learning. Positive feedback was also seen as key to encouraging people to learn with one another. At the same time, participants discussed the importance of generating knowledge by bringing together people with "knowledge and experience, not just one or the other." Learning also emerged as linked to other dimensions of social capital. For example, some said that learning contributes to building morale and self-esteem, which in turn can help drive people to work together. One participant described this morale building in terms of, "giving credit where credit is due." Lastly, lack of knowledge sharing, as well as lack of openness to others' points of view, was identified as a condition that could potentially undermine trust.

5. DISCUSSION

(a) Developing a "landscape of practice" value chain

Our results suggest that the "farm to fork" value chain may be understood as a "landscape of practice" (Wenger-Trayner, Fenton-O'Creevy, Hutchinson, Kubiak, & Wenger-Trayner, 2015, p. 13) that is itself comprised of individual communities of practice that exist within the different stakeholders and organizations it brings together. Key actors within each community of practice can help facilitate linkages with the value chain landscape of practice (see Figure 2). In our case study, school principals and teachers may be considered a community of practice as they are concerned with student learning, engage in school activities, and develop the resources to help students succeed. In relation to school meal programs, food service staff may be considered another community of practice bound by their interest in meal preparation, engagement in cooking together, and an understanding of institutional food practices. Across government Ministries, scientists, project officers, and policy advisors are another community of practice. Each of these communities of practice has their own competencies and value outcomes in relation to their participation in the value chain. However, a broader landscape of practice crosses the boundaries between these different communities of practice as they collaborate in activities around the shared interest of improved school meal feeding.

As value chain initiatives bring actors together into new organizational arrangements, we suggest these arrangements can be strengthened by identifying existing communities of practice, and understanding how individuals in these communities are already, informally, working and learning together. Communities of practice offer a foundation for scaling-up interactiveness, including collaboration, trust, along an entire value chain landscape of practice. In this way, communities of practice are an important source of social resilience that may make possible more adaptive governance strategies for value chains (Folke et al., 2005; Wilson, 2013). Increasingly, organizations are beginning to recognize that communities of practice may be "leveraged to benefit the membership of communities and the organization as a whole" (Lesser & Prusak, 1999). We likewise argue that communities of practice may be a useful resource for improving the resilience of complex, multi-sector value chains through enabling learning, innovation, and adaptation (Reinmoeller & van Barrdwijk, 2005).

However, communities of practice must be effectively supported in order to build social capital and contribute to innovation and resilience in value chains (Hearn, 2009; Wenger & Snyder, 2000). Our focus group findings provide insights into the supportive conditions that may build collaboration, trust, and learning among actors as they come together as a landscape of practice. Understanding these supportive conditions can help organizations develop policy environments that foster social capital in support of collective action initiatives. For example, as stakeholders in our study identified informal interactions as key to facilitating collaboration, organizations could seek to offer more opportunities for socializing and networking. One example that emerged from our research was the organization of monthly group hikes to encourage team-building among government employees and others working in the agricultural sector. Increasingly, literature focused on the formation of social networks among different actors emphasizes the importance of providing arenas for voluntary social engagement and having in place facilitators or funding mechanisms to support this engagement (Bodin & Crona, 2009; Bodin, Crona, & Ernstson, 2006). As collective action among smallholder farmers and other local agricultural actors is increasingly seen as key to innovation in food and international agriculture, developing policy environments that support social capital will be crucial (Bammann, 2007; Bernard & Spielman, 2009; Devaux & et al., 2009; Graef, 2014; Gruere, Nagarajan, & King, 2009; Kaganzi & et al., 2009; Saint Ville et al., 2015).

However, it is important to stress that we do not present our findings as prescriptive conditions for all value chains. Rather, as Leslie and Reimer (1999) argued, "chains and their associated lores are geographically contingent, varying across different national, regional and local contexts" (p. 416). Wenger (1998) similarly emphasized the "living context" of a community of practice (p. 214). We suggest that how to effectively support communities of practice within value chains must similarly be understood within local social and cultural contexts. For example, it became increasingly clear throughout our research that we cannot understand collective action in the "farm to fork" value chain outside the broader historical context of colonialism and slavery which appear to continue to affect trust and collaboration among actors.

Given the importance of local context, we recognize there are important considerations in terms of the potential to scale-up the types of supportive conditions our research identifies. For example, there are limits to the extent to which all actors in a value chain can be present when making decisions.
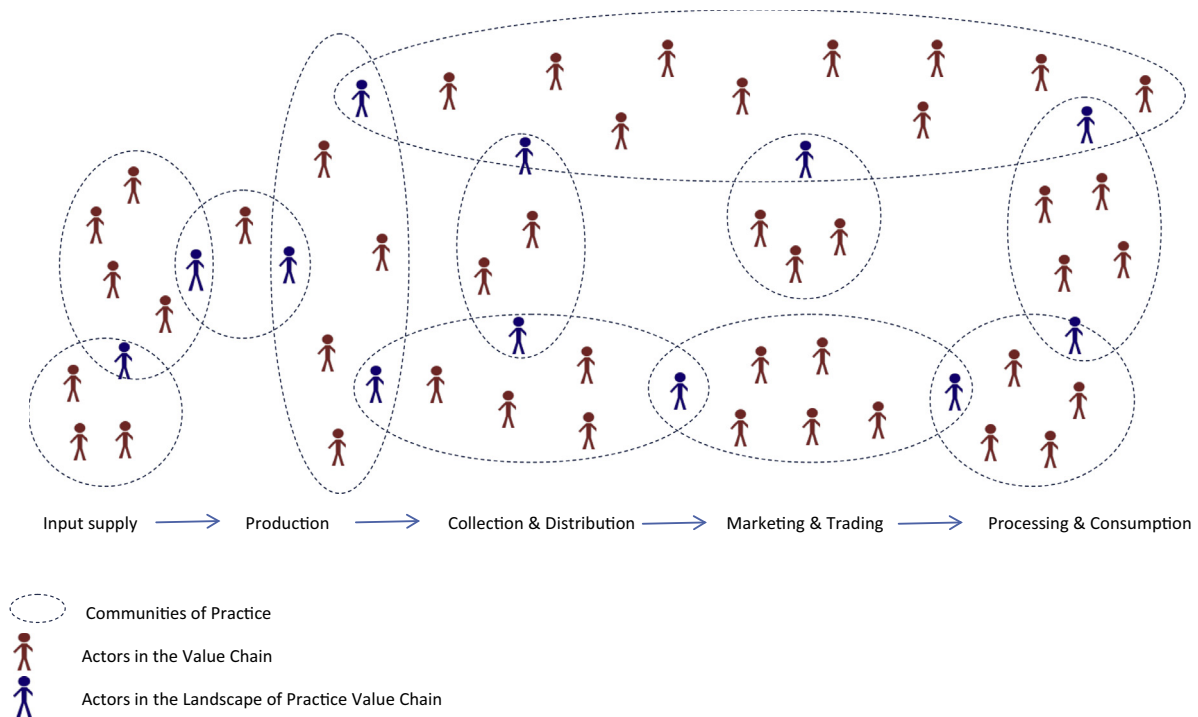
Figure 2. *Conceptualizing communities of practice in a value chain. Adapted from: Koliba and Gajda (2006)*

At the same time, trust among actors in our study was often seen to arise out of having a "personal touch" in relationships. Recently, some research has recognized that participatory approaches to value chain development are especially applicable to small countries in which relationships among chain actors may be more proximate (Bammann, 2007; Ribiero & Zwirner, 2010). However, in the context of larger, more globally integrated value chains, a community of practice approach is also relevant to thinking about how smallholder farmers and other local agricultural sector actors may collaborate to improve their position in these chains and their capacity to organize and adapt in the face of changing economic, political, and environmental circumstances (Pietrobelli & Rabellotti, 2011; Riisgaard et al., 2010; Rosseau, Guatier, & Wardell, 2014; Suzuki, Jarvis, & Sexton, 2011).

It is also important to recognize that the formation of a landscape of practice necessarily involves relations of power (Wenger-Trayner, Fenton-O'Creevy, Hutchinson, Kubiak, & Wenger-Trayner, 2015). More specifically, as communities of practice come together in a landscape there will be negotiation among actors about how their competence in a particular community is relevant in this larger context (Wenger-Trayner et al., 2015). For example, in our case study value chain, government managers are responsible for developing local policies and procedures and distributing budgets. Teachers deal directly with students and have a potentially important influence on their nutritional knowledge and practices. Farmers may have potentially less influence in policy-making, but have more control over the resources on their farm and how they market their goods. While these different roles will undeniably create power dynamics within a landscape, Wenger-Trayner et al. (2015) argued that the crucial "local knowing" that exists within each of these communities also heightens the potential for "radical innovations" by potentially expanding what a community views as important to its practice (p. 17). Here, as communities of practice engage at their boundaries, understanding the

supportive conditions for collaboration again becomes crucial. Participants in our study identified openness to others' perspectives, and valuing of both theoretical and experiential knowledge, as key to crossing boundaries between communities in a way that maximizes innovation potential. In ensuring that groups have equal opportunity to engage in negotiations around knowledge claims, participants in our study identified strong organizational leadership, supported by clear communication between the leader and the rest of the group, as essential.

5.2 Resilience-focused policy development

Ultimately, we suggest that fostering and supporting communities of practice in a value chain landscape of practice has the potential to maximize collection action in support of innovation and adaptation (Reinmoeller & van Barrdwijk, 2005; Schmitz, 1999). Such an approach can offer new ways of identifying resilience-focused policies in support of value chains (Kaplinsky, 2000; Sturgeon, 2008). By resilience-focused policy, we are referring to policy-making that engages actors at different levels of a policy system to support opportunities for shared learning and collaboration (Carpenter & Brock, 2004; Wilson, 2013). We believe that communities of practice may be key vehicles in this type of policy development.

Too often, policy-making takes place within what Wilson (2013) has termed narrow "corridors of the possible," as decisions are made within known or established pathways and thus innovation is not actively fostered (p. 299). Communities and landscapes of practice, because of their inclusiveness, may be particularly useful in generating the networks among diverse "knowledge holders", including researchers, policy-makers, and practitioners, that are needed to widen existing policy corridors and contribute to more resilient and inclusive food and agricultural development (Bertone et al., 2013;

Carpenter, 2004; Olsson, Folke, & Berkes, 2004; Wenger-Trayner et al., 2015). For example, the communities of practice in our focus groups collectively generated important insights about how they could better work together for achieving mutually agreed upon household food and nutrition security goals.

Further, as Hearn (2009) argued, communities of practice are not simply venues for exchanging knowledge. Rather, by making sense of and interpreting knowledge, a community of practice has an ability to "use knowledge, reject it, or improve upon it" (Hearn, 2009, p.2). It is this ability to make sense of and interpret knowledge within members' specific contexts, and negotiate among different knowledge claims, that makes communities and larger landscapes of practice especially "powerful tools" in informing evidence-based policy (Hearn, 2009, p.2; Wenger-Trayner et al., 2015). In this way, communities of practice can help inform the evidence base for more resilience-focused food and agriculture policy and practice that is better able to account for heterogeneity and complexity in social-ecological systems (Carpenter, 2004).

6. CONCLUSION

Recognizing that value chains involve complex social and economic relationships, Wood (2009) argued that value chain analysis has the potential to be a fertile "meeting ground" for interdisciplinary inquiry (p. 24). However, most value chain research has focused on the structural relations in chains and less on social interactions and stakeholder engagement (Gibbon & Ponte, 2005; Ribiero & Zwirner, 2010). As more scholars, including those in the field of food and agricultural development, call for value chain analysis to pay greater attention to social and cultural relationships in value chains and the importance of engaging local stakeholders, we present communities of practice as an approach to help meet these aims.

More specifically, drawing on a case study food and nutrition security project in the Caribbean, we argue that understanding a value chain as a landscape of practice, that is comprised of communities of practice within the different stakeholders and organizations it brings together, makes more visible the social capital—including the relationships, history of interactions, and forms of knowledge generation and sharing—available as a potential resource for the value chain. At the same time, a community of practice approach is not at odds with a focus on the structural elements of production that dominates much value chain research. Rather, as a growing body of research links social capital to improved organizational performance, innovation and ultimately resilience, identifying and supporting communities of practice may provide the "glue" that facilitates coherent and coordinated action in value chains (Chisholm & Nielsen, 2009; Christopher & Peck, 2004; Nahapiet & Ghoshal, 1998).

Finally, we suggest a community of practice approach offers a new way of looking at how we can use policy to support resilient value chains and create environments that foster participatory approaches to value chain development. Our study supports a need for more inclusive and resilience-focused policy development that engages diverse food and agricultural sector actors and supports opportunities for social learning and networking. This will be crucial to the capacity of actors and organizations in international food and agricultural development to adapt and innovate in a context of increasing economic, environmental, and social change.

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