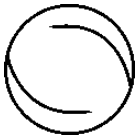

Article

Organization Studies
2015, Vol. 36(8) 1063–1093

DOI: 10.1177/0170840615580011
www.egosnet.org/os

Building the Social Structure of a Market

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Abstract

Motivated by the question of how to develop viable new markets and value chains in the resource-constrained settings of least developed countries, we adopted multi-year qualitative methods to examine the intervention of a nongovernmental organization (NGO) in developing the dairy value chain in Bangladesh. Consistent with the theoretical premise that markets and value chains are social orders, we found that the NGO's success relied on *building the social structure of a market* wherein market participants could negotiate relationships and norms of production and exchange and embed them in practices and technologies. To establish social structure among participants as a means of market building, the NGO acquired relevant knowledge, then used *contextual bridging* (transferring new meanings, practices and structures into a given context in a way that is sensitive to the norms, practices, knowledge and relationships that exist in that context), *brokering relationships along the value chain* (facilitating introductions and exchanges between value chain members) and *funding experimentation* (providing resources to test ideas and assumptions about new market practices). Market participants themselves also contributed to the development of the market's social structure by means of *social embedding* (building relationships and negotiating norms of exchange and coordination), and *material embedding* (implementing technologies and practices and integrating market norms into technology). Increased productivity and equity and reduced costs of transactions resulted from the creation of a social structure that, in this case, preceded and enabled the economic structuring of a market rather than the other way around.

Keywords

contextual bridging, least developed countries, markets, material embedding, social embedding, social structure

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Introduction

The reduction of poverty is crucial for over one-third of the global population with incomes of less than US$2 a day (Bruton, 2010; Pearce, 2005), particularly for "the bottom billion" (Collier, 2007) of the world's population in least developed countries (LDCs), who live with the lowest levels of socioeconomic development. Market development in these economies has proved to be extremely challenging, despite significant amounts of development aid (Easterly, 2006, 2014; Moyo, 2009). The long-standing problem of market development in LDCs has been approached from the macro-economic perspective of limited infrastructure, and weak state and economic governance (Reich, 2005; Sachs, 2005). However, research on how to ameliorate market failure in these more acutely impoverished environments from the perspective of micro-level social practices and processes is still highly limited (Mair, Marti, & Ventresca, 2012).

Nongovernmental organizations (NGOs) are becoming increasingly recognized as the third sector of social actors, in addition to firms and governments, in value creation and governance globally (Teegen, Doh, & Vachani, 2004). In particular, where neither firms nor the state can fulfill all needs present in a society, NGOs may be adept at building markets "because they have gained technical expertise and experience by working in difficult settings or with underserved populations [and] they tend to enjoy greater public trust" (Teegen et al., 2004, p. 468). The resources, time horizons and focus of NGOs also make them well placed to incubate novel solutions to social problems that can be subsequently adopted by governments or the private sector (Chesbrough, Ahern, Finn, & Guerraz, 2006). This paper examines how an NGO in an LDC facilitated the development of a value chain within a broader market as a means of increasing incomes among impoverished producers. Value chain and market development refers here to expanding and rendering more formal and sustainable a value chain or market that previously functioned in only a limited, ad hoc way. Given the prevalence of market failure in LDCs, we sought to bring new insights to the challenging question of how to develop new markets and value chains in LDCs by observing in detail over a five-year period the development and implementation of CARE Bangladesh's efforts to organize smallholder dairy farmers (typically earning under US$1 per day) and other value chain participants into a durable economic market for milk in Bangladesh, alleviating poverty for farmers. Bangladesh is home to a large number of NGOs as a direct result of the failure of traditional public administration and free markets to improve incomes among the poor (Sarker, 2005; Ullah & Routray, 2007). As one of the poorest countries in the world with an estimated 40% of the country's population living below the poverty line (Narayan, Yoshida, & Zaman, 2009), Bangladesh was thus an appropriate context for studying LDC market and value chain development.

The purpose of this study was to shed new light on the processes by which an NGO effectively develops a nascent market and associated value chain in an LDC under conditions of market failure and weak state governance. Previous theory and research on this topic has suggested that the challenges of market evolution in these contexts should be addressed through improvements in infrastructure, formal institutions (greater property rights, regulatory structure, or policy change), micro-financing (Yunus, 2003) or multinational corporation (MNC) intervention (Prahalad, 2005). In contrast, our paper's premise is that in LDC markets and value chains, which are characterized by voids in formal market institutions (Mair & Marti, 2009; Mair et al., 2012), the social structuring of markets becomes critical as a primary means of market development. By social structuring of markets we mean developing and renegotiating relationships, norms and beliefs among market participants.

The social structures of markets typically reinforce existing power and resource distributions. To increase the incomes of the least powerful market participants, social structures must be remade

in new ways, which can be especially difficult for the most powerless actors. We were interested in how an NGO interacted with potential market participants within a constrained market and a context of limited state governance to develop a viable market in which all market participants in the market's value chain achieved social and economic benefit. We were also interested in how the practices of change played out at the smallholder producer level to improve markets when the risks associated with change were so consequential for individuals living on such low incomes.

Building on insights from the sociology of markets literature, we found that creating the social structure of the market preceded and enabled a more efficient economic market. This is contrary to strategic and economic accounts of market development that point to the role of business and economic exchange in precipitating social relations and benefits for the market (Bardy, Rubens, & Jackson, 2013; Eapen, 2012; Hirschman, 1982). These accounts explain social structure as the positive outcome of economic interactions in the market. In contrast, we found that the creation of a social space conducive to building a market orientation and social and material practices among local participants was a critical precedent to the successful implementation of effective and enduring economic market exchange.

Our study makes three contributions. As an empirical investigation of markets as social orders, our work extends theory by showing how taken-for-granted understandings of subsistence market commodities and production were incrementally swept away in the light of experiments that altered the perceived value of an economic practice. As part of this contribution we identify the enabling conditions for altering normative beliefs around social and material market practices.

Second, our study adds to the literature in economic sociology (see Fligstein & Dauter, 2007; Fourcade, 2007; Zelizer, 2007 for reviews) which views markets as social structures infused with norms and relationships that define the meaning of acceptable economic exchange (Biggart & Beamish, 2003; Fligstein, 1996; Swedberg, 1994; Uzzi & Lancaster, 2004). Little work has been done on how norms and relationships frame the meaning of what is perceived as a market in which economic actors would willingly participate. Therefore, this work is among the first to examine how social interactions among and between market actors and external organizations affect market entry, engagement and growth.

Third, our research contributes new understanding to the study of poverty alleviation through market interventions. While other studies have focused on interventions to improve formal market institutions (Gabre-Madhin, 2001), these are less applicable in LDC contexts lacking developed formal markets. Base-of-the-pyramid interventions, often taking a market *entry* approach, have usually lacked the positive outcomes the interveners seek (Karnani, 2011). We observed, in contrast, that success occurred when the focus was on market *creation*, and in particular, creation of the foundational social structure of a market or value chain. As the following literature review indicates, we develop our theoretical explanation for effective market functioning in LDCs within the framework of markets as social structures in which the norms and values of local market participants are leveraged to improve social and economic outcomes.

Literature Review

The social structure of markets

According to Fligstein and Dauter (2007, p. 113), markets are "social spaces where repeated exchanges occur between buyers and sellers under a set of formal and informal rules governing relations between competitors, suppliers, and customers." Sociology of markets scholars (Fligstein & Dauter, 2007; Fourcade, 2007; Lie, 1997; Swedberg, 1994; White, 1981; Zelizer, 2007) describe three main theoretical approaches to markets: networks and structural positions (Granovetter,

1985; Uzzi, 1997); institutional or field-based (cultural) approaches, concerning the norms and beliefs governing markets as institutionalized fields (Beckert, 2010; Fligstein, 2001); and performative approaches, concerning the material artefacts, tools and technologies by which markets are enacted and objectified (e.g. Callon & Muniesa, 2005). Each approach agrees that markets reflect the shared cognitive frameworks of their participants. Each approach also views the relations among participants as intersubjective channels of agreed-upon norms and rules of economic coordination and conduct. The social structure of markets is therefore "a refutation of asocial market conceptualizations that dominate economic theory and policy" (Biggart & Beamish, 2003).

Literature on the sociology of markets has created a compelling theoretical case for viewing markets as social spaces. Indeed, markets are socially constructed worlds; bases of exchange depend on the structure of social relations between actors, and it is through the interpretive schema of actors that markets are socially constructed (Biggart & Delbridge, 2004). Empirical studies of the sociology of markets are scant, however (Uzzi, 1997; Uzzi & Lancaster, 2004). Even less attention has been given to the development of nascent markets as social arenas (Mair et al., 2012): "Nascent markets constitute unstructured settings with extreme ambiguity … ambiguity arises from unknown cause–effect relations and lack of recurrent, institutionalized patterns of relations and actions" (Santos & Eisenhardt, 2009, p. 644).

Social beliefs about what is a viable market define the meaning of acceptable economic exchange and dictate the extent to which local actors will entertain the possibility of market transactions (Oliver, 1996). The relations and beliefs of these local actors are particularly salient in less developed economic settings because their decisions about market participation are cautious in light of the personal risk associated with market failure (Banerjee & Duflo, 2011). Markets in these contexts commonly lack voluntary and predictable rules of exchange, transaction transparency, rule of law, trust, and clear price setting (Collins, Morduch, Rutherford, & Ruthven, 2009). How markets emerge in LDCs remains a formidable theoretical and practical question.

Markets in LDCs

Much work on market development has focused on macro-level economic determinants of market development, which explain market improvement as a rational function of government policies, rule of law, MNC support and macro-economic reforms (Azmat & Coghill, 2005). Scholars have identified institutional voids in LDC contexts in which property rights are loosely defined or difficult to enforce, laws and regulations are unenforced, legal systems are corrupt, and formal market infrastructures are weak (Khanna & Palepu, 1997; Mair & Marti, 2009). Within these voids market participants may possess differing normative prescriptions for the expected functioning of markets. Mair and colleagues (2012), for example, described the community, religious and political prescriptions governing market activity in Bangladesh, and illustrated how these overlapping prescriptions systematically excluded women from market activity and marginalized them in the enforcement of their property rights. In such contexts, informal social structure substitutes for formal market structure, but because the informal social structure is not focused on market transactions, it can reinforce systemic inequalities in society (Godfrey, 2011). Market development in these economies remains stubbornly resistant to improvement, even in those instances where considerable resources have been provided through aid (Easterly, 2006, 2014). Yet how do functional market norms and social structures emerge?

We suggest that the material and broad-ranging macro-level social constraints imposed on economic actors in impoverished LDC contexts render particularly salient the question of local actor participation on the part of both market actors and the NGOs who attempt to assist them. Embedded agency is especially consequential in economic markets because individual actors are forced to

rely less on state and market infrastructure support, and the embedded actors' activities and interpretations in seeking novel and unknown market opportunities may have potentially life-threatening implications for individuals' economic well-being (Duflo, 2006). If actor agency, defined as greater individual initiative and control over one's actions (McKague & Oliver, 2012), is important in these contexts, then constructing social spaces within which agency can be usefully exercised is, in our view, an important element of effective market development. Markets only work effectively when market participants understand each other's roles and rules of exchange, thus providing stability and solving coordination problems, which enables exchange partners to trust each other and the value of market goods (Beckert, 2009). How markets develop, therefore, depends on how they are socially structured.

The work of Mair and colleagues has helped us to understand how NGOs as institutional entrepreneurs can leverage existing social structures to increase the inclusiveness of markets for women (Mair et al., 2012) and how the energy of entrepreneurs can also be tapped to participate in transforming markets (Tobias, Mair, & Barbosa-Leiker, 2013). However, we still know very little about how NGOs foster the social structural conditions for markets to be more productive, inclusive and effective, and we know even less about the processes by which local market participants effectively engage in and promote new market arrangements.

Methodology

Study context

We studied the efforts of CARE, an international federation of NGOs initially founded in 1945 to combat global poverty, in a project designed to make the dairy value chain in Bangladesh a more inclusive, productive market with better outcomes for the poor. In line with a CARE (2004) report entitled *Making Markets Work for the Poor* and consistent with other NGOs and aid agencies (McKague, 2011), CARE had initiated several market-based value chain projects that included supporting micro-entrepreneurs, helping establish village savings and loans groups, arranging for small Kenyan farmers to aggregate vegetables and sell to UK supermarkets, and connecting coffee producer cooperatives to international buyers (CARE, 2004). In Bangladesh, CARE's Rural Sales Program, launched in 2004, partnered with the Bata Shoe Company to train very poor women to sell shoes door-to-door in rural areas that were beyond the reach of Bata's existing distribution networks (McKague & Tinsley, 2012). Other products were added and 3,000 women across the country earned their living this way. The successful project was spun off as a separate business, attracting social investment. In 2007, CARE received US$5.25 million in funding from the Bill and Melinda Gates Foundation for a four-year project entitled "Strengthening the Dairy Value Chain in Bangladesh." The grant was later extended to six years, and then an additional US$3.8 million over three years was awarded from 2013 to 2015. CARE Bangladesh was, therefore, an appropriate case to study market and value chain development in the context of a least developed economy.

With 162 million people, of which about 56 million live in poverty, Bangladesh has the highest population density of any major country in the world (Narayan et al., 2009). In rural areas, the poorest 40% of the population own just 3% of available land (Haque, 2007). The country has a weak government with limited provision of public goods (education, health, development) and market infrastructure (regulations, legal system, infrastructure) and low ratings in regulatory quality, rule of law and control of corruption (Azmat & Coghill, 2005). As a result, Bangladeshi and international NGOs, such as the Grameen Bank and BRAC (the largest NGO in the world), operate across the country in various sectors. Bangladesh has also attracted considerable donor money

since its independence from Pakistan in 1972 due in large part to its high poverty rate and its vulnerability to typhoons and flooding.

On Hofstede's (1984, 2001) cultural dimensions, Bangladesh is a society characterized by high power distance (members expect unequal power relationships), high uncertainty avoidance (members prefer clearly defined rules and adhere to them rigidly), high masculinity (people compete aggressively for success), high collectivism (loyalty and trust is strong within groups), and low indulgence (meaning behavior is rigidly constrained by social norms). In addition, Bangladesh is an "honor" culture: family ties are strong and people protect themselves and their in-group aggressively to avoid being taken advantage of (Aslani, Ramirez-Marin, Semnani-Azad, Brett, & Tinsley, 2013). In negotiations, people in honor cultures tend to share little information and act tough, and those with higher power and status earn better outcomes (Aslani et al., 2013). In Bangladesh, informal dispute resolution systems (usually the only feasible means of enforcing rights) commonly function via bribes and favors and thus disproportionately privilege wealthier, higher-status people (Mair et al., 2012). Honor cultures also tend to restrict women's behavior, as the immodesty of a female family member would shame the family (Aslani et al., 2013). In Bangladesh, many women are prohibited from accessing the market directly, and they are often unable to hold or enforce property rights, as religious, community and political norms prevent them from accessing informal justice mechanisms (Mair et al., 2012).

The dairy sector. Formal development of the dairy value chain in Bangladesh can be traced to British colonial times with the importation of breeding animals from other parts of the Indian subcontinent (Hamid & Hossain, 2014). Milk Vita, a government-owned dairy, was established in the 1940s (Haque, 2007) and currently processes approximately 35% of the country's domestic pasteurized milk. BRAC Dairy, established in 1998 and operated as a social enterprise, controls approximately 30% of the formal market share (Smillie, 2009). PRAN Dairy, operated by a private Bangladeshi food conglomerate, was established in 2001 and processes approximately 15% of the milk in the formal sector (Jabbar, 2010). Grameen-Danone, a partnership between the Grameen family of enterprises and the French food company Danone has less than 1% of the formal market share but is known for its development of nutritious, low-cost yogurt aimed at reducing childhood malnutrition (Yunus, Moingeon, & Lehmann-Ortega, 2010). However, despite decades of development of the formal sector dairy market in Bangladesh, over 90% of the milk produced in the country (2.8 million tons) was still produced by smallholder subsistence farming households owning between one and three cows (Jabbar, 2010). This level of domestic supply remained insufficient to meet market demand and 27% of the country's milk was imported as powdered milk (Jabbar, 2010). Farmers consumed about 25% of their own milk, then sold the rest to collectors—intermediaries who bought from farmers at the lowest possible price and sold to informal restaurants, tea shops and the like (often through other intermediaries) or formal markets (chilling plants and processing plants) at the highest possible price.

Numerous barriers made the dairy sector inefficient. An independent study reported that the dairy sector "receives very little out of the government's huge subsidy bill" and "nearly all the policy-related variables—both dairy policy and macro-economic policy—had no significant association with growth in the dairy sector" (Jabbar, 2010, pp. 52, 57). Despite growing market demand in urban areas, farmers were sometimes unable to sell their excess milk before it spoiled, collectors were not always available or reliable, and female farmers were usually restricted by social norms from leaving their homes without a male family member. Productivity on small farms was very low (each cow produced about 1 liter of milk per day vs. about 30 liters per cow per day in developed countries) due to semi-starvation rations for the cattle (sparse grazing or waste material such as rice straw), poor cattle breeding and a lack of veterinary care and quality feed. Farmers saw cows as

"savings" or "insurance" rather than income-producing assets and thus invested only as much as required to keep the cattle alive. Farmers were price-takers because they had little power in the value chain and limited ability to protect their own interests due to the lack of market infrastructure (Mair et al., 2012). Milk collectors, as higher-status (out-group) members, exploited farmers' lack of power by giving low prices for milk. Some farmers and collectors watered down their milk; this made it difficult for buyers to judge milk quality, and they paid low prices to everyone to compensate for low-quality milk. Low prices meant that farmers had no incentive to improve the quality of their milk by improving feed or health care, as they could not recapture their investments. In addition, farmers could not ascertain the quality of feed or health care on offer and there was little market infrastructure to protect them from opportunists. Thus, the dairy value chain suffered from low productivity, poor value chain connections, lack of transparency in pricing and product quality, and lack of trust.

CARE's involvement in the Bangladesh dairy sector

CARE Bangladesh worked in 41 districts of Bangladesh through 18 regional, field, team and hub offices with 800 staff and an annual budget of US$25 million. CARE's early involvement in the dairy sector involved building two chilling centers where farmers could bring their milk, but these failed to be used and were soon closed, thus illustrating the classic problem with traditional approaches to aid that are not based on a comprehensive understanding of markets and the obstacles to their effective functioning.

Upon receiving the first Gates Foundation grant in 2007, CARE Bangladesh (with CARE USA) began a process of intervening in the dairy value chain in order to reduce the barriers to efficient market functioning and improve outcomes for poor farmers. The project's objective was to double the dairy-related incomes of 35,000 targeted smallholder and landless milk producer households in northwest Bangladesh by improving productivity, increasing access to both inputs and markets, strengthening value chain relationships, and improving the enabling environment in the dairy sector. As 82% of dairy farmers with whom CARE worked were women (McKague & Siddiquee, 2014), the project had to address gender barriers in order to succeed. Rather than buying and selling milk itself, CARE planned to act as a facilitator and catalyst among existing value chain actors to introduce and enhance market practices.

Methodological approach

We used an inductive theory-building approach (Charmaz, 2006; Glaser & Strauss, 1967; Locke, 2001) based on field research in Bangladesh into CARE's influence on market creation in low-income rural areas in the northwest of the country. An inductive analysis of qualitative data is well-suited to the study of phenomena for which theory is lacking (Locke, 2001), for real-time on-the-ground events for which there is little a priori information (Eisenhardt, 1989) and for phenomena embedded within multiple levels of their social, economic and institutional context (Langley, 1999; Weick, 2005).

Data collection

The unusual scope and depth of access to a broad range of data and real-time observation meant we could identify themes and constructs with a high level of specificity based on first-hand knowledge of the institutional setting to address our research question. Data sources included interviews, focus groups, quantitative household data, field notes from ethnographic observation and archival data.

We conducted 59 semi-structured, face-to-face, in-depth interviews and engaged another 240 individuals in 8 extended focus groups. Informants included farmers, CARE staff, dairy economists, industry experts, agriculture and dairy scientists, the International Finance Corporation (IFC) and multiple representatives of the dairy value chain, including input providers (e.g. cattle feed suppliers, animal health service workers), milk collectors, chilling plant managers, small- and medium-sized formal and informal sector processors and retailers and senior representatives from the three largest milk processors in Bangladesh: BRAC Dairy (a profit-making arm of the country's largest NGO), PRAN (a private-sector processor) and Milk Vita (a parastatal processor). Producers, collectors and processors independent of CARE's intervention were also interviewed to further examine multiple perspectives. The majority of data were collected in Bangladesh with 10 additional face-to-face interviews conducted with dairy value chain experts and CARE staff in the United States, the United Kingdom and Canada.

Extensive demographic and survey data were collected by CARE on 350 variables relating to 35,000 farmers, 1,163 producer groups, 308 milk collectors, 201 livestock health workers and 6 formal sector milk buyers. These data were analyzed to obtain deeper insights into changes in the production and exchange relationships in the dairy sector over time and helped determine the project's overall impact.

Two of the authors observed activities associated with all aspects of value chain operations and communications, including four extensive field visits to remote northwest Bangladesh villages to observe farmer milk aggregation, animal husbandry practices, feed distribution, milk collection and testing, and meetings between CARE staff and villagers. These authors also observed three confidential meetings between senior CARE staff and senior executives of large private-sector dairy companies. These data, captured in extensive field notes, were important in determining activities CARE undertook, how the entire value chain worked and the roles and interests of different actors, including large companies.

Participation at a major two-day international dairy conference at Bangladesh Agricultural University also resulted in significant additional information on the dairy value chain. Upon presenting a case study at the conference, audience comments were used to add depth and nuance to our emerging understandings, to check in with others about the importance of various factors and to assess our early ideas about causal relationships. Extensive archival data were also collected dating from the start of CARE's involvement in the value chain in 2007. Interview and participant observation data were collected between June 2009 and September 2012 (see Figure 1), and, to enhance data reliability, two of the three authors participated in the majority of interviews, observations and archival data collection in Bangladesh during all phases of data collection.

Data analysis

We began our analysis with a chronology of events (Langley, 1999) and tested it with market participants, refining it and adding notes about the relative importance of various events and actions and their interrelationships. The highlights of this chronology are described in Table 1.

We initially stayed close to the data, using open coding to conceptualize the action our data described. Examples of codes at this stage included "commissioning studies on various parts of the value chain," "facilitating creation of farmer groups," "farmer training," "distribution experiments," and "legitimization of women performing non-traditional roles." We then grouped like activities together, gradually moving into more abstract second-order themes. For example, "brokering relationships" was a theme at a very high level of abstraction that included many examples of data from both vertical and horizontal partnerships and varied from formal groups to one-off

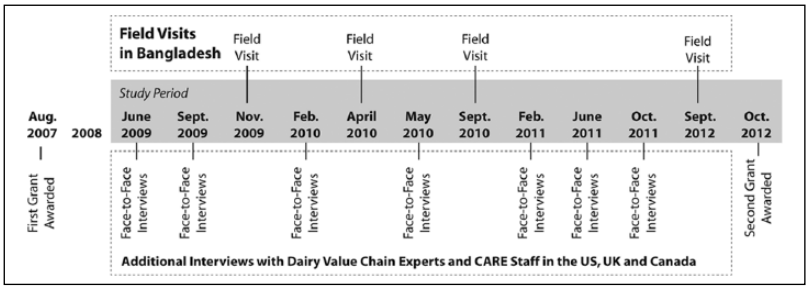

Figure 1. Data collection.

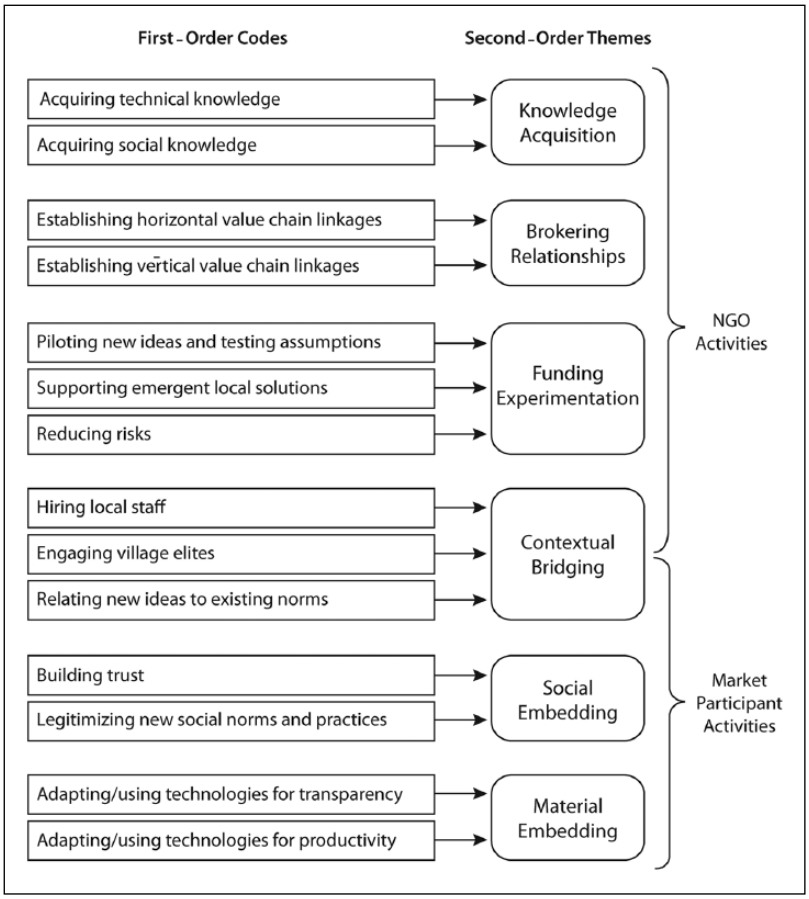

Figure 2. Overview of data structure.

meetings involving understanding the other's perspectives. The structure of our data and emergent themes are illustrated in Figure 2.

As coding proceeded, the core theoretical premise that emerged to explain successful market growth was the theoretical insight that CARE and market participants were co-constructing an

Table 1. Chronology of events in CARE's Bangladesh dairy market intervention.

Date and Phase	Activities
Pre-grant period, 2000–2007	• CARE pilots early market-based projects in different countries (2000+) and in 2004 publishes *Making Markets Work for the Poor,* committing to work with markets, companies and entrepreneurs to achieve poverty reduction. • In Bangladesh, the Rural Sales Program is launched in 2004 ultimately employing 3,000 women selling goods door-to-door as a social enterprise. • CARE builds two milk chilling centers in Bangladesh, but these fail. • In 2007, CARE is awarded US$5.25 million over four years by the Gates Foundation to "Strengthen the Dairy Value Chain in Bangladesh."
Acquiring technical and social knowledge of the dairy sector context, 2007–2008	• CARE commissions studies of the dairy value chain in Bangladesh, including key players, transaction cost, gender and volume and flow data, feed availability, paravet training curricula and best practices, and policy barriers to dairy sector development. • CARE hires 60 Bangladeshi staff for the project (ultimately growing to 88).
Social structure development: connecting, experimenting and mobilizing knowledge, 2008–2011	• CARE brokers horizontal and vertical linkages among market participants: - Recruits farmers into producer groups near existing chilling plant infrastructure: 8466 farmers (75% women) in 288 producer groups in 2009; 25,863 farmers (81% women) in 863 groups in 2010. - Connects milk collectors, paravets, chilling center operators and feed suppliers and purchasers to producer groups. - Connects Krishi Utsho shops to paravets, inseminators, feed and medicine suppliers and farmer groups. - Launches Dairy Technology Fairs with another NGO. - Organizes NGO and Donor Coordination Committee. - CARE trains farmers in the basics of animal care, feeding, milk handling, breeding, savings, recordkeeping, group facilitation, literacy, numeracy, etc. - CARE trains milk collectors and animal health care workers. - CARE launches Krishi Utsho microfranchise program. • CARE launches experiments and pilot projects with other organizations: - PRAN (milk processor) to show farmers the benefits of improved nutrition. - BRAC (chilling centers) to implement digital milk fat testing. - BRAC to implement one-stop-shop dairy hubs (milk buying, artificial insemination, feed selling and microfinance) (ultimately not pursued). - Rural Sales Program for feed and other input distribution (failed). - Community Dairy Veterinary Foundation (and BRAC) to provide inputs to farmers (not able to scale). - Agricultural College to create paravet curriculum and certification. - ACI, Renata and Square (pharmaceutical firms) to distribute medicines. - International Finance Corporation to influence government policy (failed). - Animal breeding and genetics experts to affect government policy (failed).
Scaling 2011–2014	• CARE organizes and trains 36,397 farmers, 308 milk collectors, 201 livestock health workers and 149 input shop owners. • CARE systemizes training materials and extends cattle health cards, savings programs, fat testing machines and other innovations. • CARE records and shares learning from successful and failed experiments. • Gates Foundation funds CARE proposals to scale their work within Bangladesh and in six different agricultural value chains in six countries.

informal social structure and that this structure, as a facilitative social space, was the necessary foundation for effective market development. Comparing emerging codes and understandings with the literature, and iterating regularly with raw data, our open-coded data and our emerging concepts, we sharpened and defined our concepts. We then engaged in a selective coding process in a subsequent pass through the data, looking for ways in which the market's social structure was both formed and embedded. We also engaged in a process of axial coding, looking for relationships between categories and the conditions under which they emerged. Building on this axial coding, we took a process analytic view, tying our emerging concepts back to the narrative to develop a phased, process view of the events in the case. We initially used a process mapping strategy to illustrate the events, staying close to the data as described in the narrative, then used the concepts identified through the grounded theory approach to iterate toward a more abstract process model. A summary of all data sources is included in the Appendix. Additional representative data informing the development of our second-order themes are included in Table 2.

Building the Social Structure of a Market

CARE's intervention in the Bangladeshi dairy sector was successful in substantially improving the outcomes for market participants. At the time of writing, CARE had achieved the following: over 35,000 farmers organized into 1,163 producer groups (71% of farmer group leaders were women); 308 trained milk collectors and 201 trained local animal health workers; a daily milk production increase of 48% and a 69% increase in net income per household; a drop in the mortality of farmers' dairy cattle from 2.8% to 2.1% and a reduction to zero in the rate of milk spoilage by collectors (McKague & Siddiquee, 2014). By the tangible goals and metrics established by CARE and the donor for assessing sustainable market improvement and poverty reduction independent of future NGO intervention, CARE's market initiative could be considered successful. We explain CARE's activities chronologically (see Table 1) to preserve the process nature of the data; these activities occurred over three discernible phases. We then present our resulting model of successful market development.

Phase 1: Acquiring and bridging knowledge of the dairy sector context (2007–2008)

CARE began its intervention in the Bangladeshi dairy sector by seeking to learn as much as it could about the sector. For example, CARE learned that farmers thought about dairying in terms of cost minimization rather than cost-benefit analysis because they (and those around them) did not see dairying as a profitable activity. As reflected in the initial perceptions of one female farmer in Dhakin Boithavanga village, "It is not possible to raise dairy cows in a commercial manner." CARE staff interpreted comments such as these in this way: "Farmers do not see their cows as an important income source. Consequently they don't tend to invest a lot of resources in managing their animals well." Farmers were also unorganized, and thus had low bargaining power and no voice for their collective interests. Animal health services and agricultural input shops were not seen as accessible, affordable or trustworthy. There was no standard curriculum for "paravets" (animal health care workers) and no regulation. Many farmers were not directly connected to formal sector chilling centers, many of which operated at 10% to 20% of capacity. Instead, milk collectors intermediated between farmers and both formal and informal sector retail markets. Farmers had little access to the cattle feed that would improve the productivity of their cattle, and if they did, they tended not to buy it because they failed to trust its quality or they did not wish to add costs to raising cattle, as they saw no benefit to doing so. The breed quality of Bangladeshi cattle was

Table 2. Representative data.

Second-Order Themes	First-Order Themes	Representative Data
Knowledge acquisition	• Acquiring technical knowledge	• "CARE oversaw the collection of information on 350 different variables covering 35,000 farmers, 1,182 producer groups, 308 milk collectors, and 201 livestock health workers, as well as formal sector and informal sector milk buyers, feed and medicine sellers, and animal breed information." – Author field notes • "The project has made an inventory of existing paravet practitioners in the operational areas in the nine project districts and documented their history of training (duration and content and provider) and service area of each paravet." – Independent review of CARE's work on developing curricula for paravets
	• Acquiring social knowledge	• "Despite [a] complicated environment, CARE has been able to significantly advance key pro-poor initiatives during Phase1 … while learning much about the intricacies of the dairy sector and, in particular, the situation and potential for small-scale producers." – 2012 external evaluator's report
Contextual bridging	• Hiring local staff	• "CARE field facilitators are hired from the regions in which they worked with farmers, speaking the same language and familiar with local norms as well as CARE's practices." – Author field notes
	• Engaging village elites	• "The first general meeting in the community included community elites, local leaders, government representatives, teachers, the local Imam or other religious leaders, and other influential community members." – Author field notes
	• Relating new ideas to existing norms	• "When husbands or others objected to women's group participation, they [CARE] used arguments linking the wife's participation in dairying with greater family income." – Author field notes • "Groups allow a structure for members to benefit from each other and make it more efficient for groups to learn and form relationships with other market actors." – Author field notes
Brokering relationships	• Horizontal value chain linkages	• "One can solve almost any problem if one remains in a group. It helps us to go for a better market with a large volume product which is a good means for negotiation, and while buying inputs larger demand also help in the same way. We can also use our savings money in a good way so building cohesion is very important to survive." – Dairy farmer, Mazbari village • "Before joining CARE I was known to a very small portion of the village. I was inexperienced and knew a little about the animal treatment. After receiving several training from CARE and connecting with a number of groups through CARE, I was able to expand my business in a larger scale." – paravet in Dhoroil Bazar, Sirajgonj

Table 2. (Continued)

Second-Order Themes	First-Order Themes	Representative Data
	• Vertical value chain linkages	• "CARE will continue to assure that current farmers are linked to individuals/producer groups, community-level milk collection points, dairy input shops, and livestock health worker and artificial insemination services." – CARE proposal for second Gates Foundation grant • "Twenty dairy input supply shops are currently fully operative and linked to a range of dairy input suppliers [including] 15 input supply companies providing animal feed, veterinary medicine, artificial insemination services and other products." – CARE report to funder
Funding experimentation	• Piloting new ideas and testing assumptions	• "The pilot has US$10,000 of seed funding plus additional business support services from CARE. Community Dairy Veterinary Foundation (CDVF) is piloting its model in two BRAC chilling centers in Joypuyrhat (Kalai and Panchbibi) in the CARE project area." – CARE annual report to donor
	• Supporting emergent local solutions	• "Earlier on in the initiative, there were a lot of unknowns. We therefore invested heavily in experimenting, trying different things and making mistakes." – CARE manager
	• Reducing risks	• "Poor smallholder farmers simply cannot afford to take risks. It is therefore critical that NGOs like CARE help to reduce the risks through a range of different measures and to underwrite the initial risk associated with the adoption of new practices." – CARE employee
Social embedding	• Building trust	• "In the business of buying and selling of milk, trust is the most important thing and if you are not trustworthy you are out of the business sooner or later. In this value chain we always abide by this rule of trustworthiness and develop the relationship that would last long and beneficial for the business." – BRAC Dairy manager of a digital fat testing collection point • "By the consent of milk producing group (formed by CARE) [name] got the job of milk collector … [name] earned trust of group members within very short time." – CARE project notes
	• Legitimating new social norms and practices	• "Connecting closely with farmers helps us in many ways. As we can communicate with them directly, we know what their complaints are, their need, difficulties, and we can then take corrective measures accordingly. This in return helps us to receive quality and consistent supply of milk from the farmers." – Chilling plant manager • "When you include the sale of calves and manure as well as milk, farmers themselves begin to see their animals as assets that they can make money from and not just try to keep them alive with the minimum of cost." – CARE manager

(Continued)

Table 2. (Continued)

Second-Order Themes	First-Order Themes	Representative Data
		• "At the beginning, medical representatives of vet medicine company ignored me … But as soon as my market grew they started to communicate with me. They are now providing commissions on medicine and also providing orientation on different disease, treatments and current medicine of the company." – Female animal health worker
Material embedding	• Adapting and using technologies that integrate market norms of transparency	• "CARE and BRAC's Digital Fat Testing pilot that promotes more sensitive pricing based on fat content at collection points, promises much-needed transparency in pricing to producers." – 2012 external reviewer's report • "CARE developed and introduced cattle health cards (known as "Poshu Sastho Card" in Bangla) to all of the 36,400 producers it worked with in Phase 1. Before the introduction of these cards, no animal health record keeping system existed." – Author field notes
	• Adapting and using technologies that integrate market norms of productivity	• "The PPT [participatory performance tracking tool] was an important breakthrough for the initiative. It helped to simplify the key skills and practices we wanted each dairy household to practice in a way they could understand." CARE manager • "Farmers who were under this project [with PRAN Dairy] are now practicing improved feed, as they found it productive to increase the milk production. They are vaccinating and de-worming their dairy cows." – CARE project document on the PRAN pilot project

low, and the government-controlled animal genetics system, which could improve genetic quality, was in disarray. Access to artificial insemination services was minimal.

A noted value chain expert was initially hired to study the value chain holistically, seeking leverage points where CARE could make improvements. CARE also commissioned studies that reviewed the availability of feed in the project area, paravet training curricula and best practices, and policy barriers to dairy sector development (including artificial insemination, breed improvement and financial services). In addition, CARE overlaid its value chain map with production and transaction cost data, gender data and the volume of milk flowing through various channels, seeking to identify the most strategic points for intervention. CARE's research was cross-checked with value chain actors on the ground for accuracy.

CARE hired 60 employees (later rising to 88), all of whom were Bangladeshi, to help with this knowledge acquisition process and with the contextual bridging that followed (the planning in phase 1 and the implementation in phase 2). CARE field facilitators were recruited from the specific regions targeted in the interventions, making them even more sensitive to local social and contextual conditions, and helping them determine how to relate new ideas to existing norms. This familiarity and sensitivity during knowledge acquisition and contextual bridging was a precondition for creating a social structure or social space that could foster market development.

Phase 2: Social structure development: bridging, brokering and experimenting to develop new socially and materially embedded norms and practices (2008–2011)

In phase 2, having acquired an initial baseline of knowledge to create a platform for building the market's social structure, CARE bridged the new knowledge into the context, brokered new relationships along the value chain and funded experimentation in new practices. These activities helped to develop a resilient social structure in which new norms and practices were legitimated and socially and materially embedded in new technologies and practices.

Developing the social structure through farmer bonding and training. An important first step in the construction of a social structure during phase 2 involved brokering horizontal relationships by recruiting farmers and organizing them into groups of about 30 farmers each (most farmer group members were women). This process laid the foundation for developing trust and for creating a functioning social order from which to build the market. When asked about the value of belonging to a farmer group, a woman farmer in a village near Bogra stated: "One can solve almost any problem if one remains in a group." For a CARE staff, member "groups … also helped to build strong solidarity and cohesion among dairy producing households in each village." First engaging the support of village leaders, CARE workers recruited 8,466 farmers into 288 producer groups in 2009 and an additional 25,863 farmers into 863 producer groups in 2010. In early meetings, husbands of women farmers were also invited so that all could understand that cows could be productive assets, relating new ideas to existing norms of family income earning. Increased social interaction among the farmers and with CARE legitimated the social construction of cattle as income-producing assets whose productivity would increase with investment. Greater normative receptiveness among farmers to the concept of cattle as income earners, in turn, made farmer training easier. Three farmer leaders were recruited from each group to participate in three-day train-the-trainer programs. The curriculum, designed for low-income, illiterate audiences, included leadership and business management skills along with specifics on cattle health, milk handling, feed management, breeding, savings and recordkeeping. The training also created normative adjustments in social roles and legitimacy by supporting the economic need for women to take on greater roles in household decision-making and encouraging men to share women's workload (which comprised, on average, many more working hours per day than men). A woman farmer from the village of Mazbari stated: "From the training we are learning about how to increase the milk quality and quantity and thus the income, and this is helping us get respect from the family. Additionally, the learning about leadership is developing our capacity to become a good leader and therefore receiving acceptance from the society." Farmer leaders then worked with CARE field facilitators to socially embed new training in other farmer group members over a 12- to 18-month time period, after which groups would "graduate" in special ceremonies that further legitimated members' decisions to participate in farmer groups. These groups continued to meet over time, and as other villagers in a focus group told us, the producer groups continued to be of value to them: "We would advise other farmers to join a group because they can share information." Social structuring through group formation and training thus created a normative substratum from which to begin building a more effective market structure.

Social structuring also involved the renegotiation of taken-for-granted assumptions and beliefs as a means of facilitating the legitimation and implementation of new social norms and practices. An important means by which this occurred was by providing factually interpretable evidence that a given practice was beneficial to the value chain actor. For example, CARE worked with formal sector dairy firm PRAN on a pilot project to show farmers explicitly the benefits of improved nutrition to the milk production of their cows. Through such experimental pilot projects, CARE was able to absorb the risk by providing farmers with higher-quality feed, so that farmers could see for

themselves with their own cattle and those of other members of their group the income benefits of better-fed cattle. This idea of investing in cattle differed markedly from farmers' initial beliefs about cows as simply a form of "insurance" to be sold if times became too difficult. As one CARE technical advisor noted, "Farmers don't do something till they see it; they are very risk averse." As group members discussed and compared their observations, social prescriptions surrounding the function of cattle changed, stimulating the market by increasing demand for nutritious feed and medicines. In this way the structuring of the normative order surrounding economic production preceded market development.

CARE consistently emphasized experimenting and learning *with* value chain actors and acting as a facilitator and catalyst rather than as a director of change, as a means for local actors to increase their social involvement in market building: "One way to leverage the resources and buy-in of value chain actors is to actively generate their sense of ownership in solutions to overcoming value chain obstacles" (Senior CARE advisor). This social embedding of all new practices and structures also enabled faster ongoing social adjustments among actors as they struggled to adapt to each other during the implementation of new practices. CARE generated a sense of ownership by recognizing and supporting solutions that were developed by individual farmers, farmer groups and entrepreneurs, such as local cattle feed shops.

Social embedding of market practices was reinforced through the social structure of the new farmer group relations and the embedding of new norms and knowledge in material technologies and practices. Groups were shown how to monitor their own group performance on dimensions such as vaccination and deworming of cattle, record keeping, group cohesion and leadership and using a participatory performance tracking tool. The tool included the names of each member of the group in the rows of a matrix and the group's objectives in the columns. Every six months, in a session facilitated by the group leader and a CARE field facilitator, the group members would discuss their performance, then place stickers in the squares if they had achieved their improvement targets for each of the indicators. This practice helped to objectify the group's social structure by making it both visible and performative. The groups would discuss their collective performance, sharing suggestions to improve it and further solidifying social support for both the group and its practices. As one female dairy producer group member stated: "First of all [participatory performance tracking] process create a positive competition among farmers, here we can see in which way we are weaker than others and we act accordingly. Secondly from this session, we also learn about what we are doing wrong and how to get rid of this. To me this is a great tool to learn." As a material tool, it objectified and embedded the desired norms (increased productivity, mutual support, health care and nutrition of animals, and good business practices) into each group. As CARE consolidated the data from multiple groups, analysis showed that for every single point by which the score increased, farmers in the group earned an average of 10 taka (about 13 cents) more per month in income. The sense of social solidarity generated by the expanding social structure precipitated more mutual problem solving, created the basis for savings groups (which substituted for microfinance loans), and augmented group beliefs about their ability to solve their own problems. A woman farmer from Mohonpur Dakhinpara village stated:

> After forming into groups we came and learn all the aspect of dairy farming, we solved the issue for selling our milk, we found the source of inputs, we have learned from each other and most importantly we promised each other to stay beside regardless of whatever situation comes. From this principle we have realized that we gained some power to act against all the odds we face by helping each other.

The developing social structure of farmer groups also provided bargaining power for the farmers, enabling the collective purchase of goods and services on better terms.

Expanding the social structure by brokering vertical value chain relationships. Social structuring across vertical value chain relationships was also crucial to creating a market. One CARE manager observed: "In order to build trust among the value chain actors, we first needed to strengthen their relationships." For example, while CARE originally planned to develop a house-to-house milk collection and distribution system, farmers told them that this was unnecessary, as a network of milk collectors already existed. Milk collectors would then be invited by farmers to their group meetings to build social relationships and seek opportunities to improve their exchange. If a trusted milk collector did not exist for a particular group, a member of the group itself would be selected and trained to act as a milk collector and village-level milk collection points were organized to improve the efficiency of collection. Inviting collectors to the group or selecting collectors from among the groups created more socially embedded relations among vertical market actors and strengthened norms of reciprocity, trust and fair business practices.

Similarly, to improve the upstream social structure of the value chain, CARE brokered relations between nearby animal health workers and the farmer groups, using existing paravets where possible. These people would be encouraged to form relationships and brainstorm ideas with farmers at the farmers' group meetings to improve their animal health practices. When a trustworthy paravet existed in the area, CARE provided refresher retraining. When no paravet was available, CARE would embed a paravet within the social structure by training a paravet from a farmer group, giving them a kit bag of basic veterinary equipment and introducing them to five to eight other farmer groups in their area, for which they became a local, trusted partner, providing care on a fee-for-service basis. CARE also brokered vertical value chain relations by introducing paravets to pharmaceutical company representatives and government veterinarians to strengthen and legitimate the chain of access and enable knowledge sharing. As one CARE staff member noted, "One of the essential components to ensuring that the paravets were successful was linking them to the dairy farmers, veterinary and animal companies as well as the DLS [government department of livestock services]."

CARE attempted to place women in these paravet roles wherever possible, especially divorced or widowed women (who faced fewer mobility restrictions and needed the livelihood more), and they undertook a number of initiatives to overcome the barriers to having women in these roles, including counselling for applicants' families and assurances to veterinarians and pharmaceutical company representatives that the paravet training was sound. In this way, social structuring across vertical value chain relationships dramatically reduced the mistrust and opportunism that had previously existed among farmers, collectors and paravets who now believed they were part of the same in-group and thus could be expected to protect each other's interests in building the market.

Due to its relationship building at all points in the value chain, CARE was also able to share learning and best practices from one location to another. For example, when some of the farmer groups initiated savings programs to enable the purchase of new cattle or artificial insemination services, CARE was able to transfer their practices to other groups. CARE also launched Dairy Technology Fairs with another NGO to spread best practices and increase the conversations among value chain members that could lead to productivity improvements. Remarkably, before CARE's development of the value chain's social structure, there was surprisingly little pre-existing contact between value chain actors and this was also salient between producers and downstream buyers. For example, a CARE staff member found that during their gatherings to introduce producers to a particular buyer, "in many cases, it was the first time that the BRAC chilling plant managers had actually met the dairy farmers in their area face-to-face." Once a social connection was initiated by CARE, however, the manager of a milk collection point and chilling plant operated by BRAC Dairy saw the economic value in the closer relationship:

> Connecting closely with farmers helps us in many ways, as we can communicate with them directly, we know what their complaints are, their need, difficulties, and we can then take corrective measures accordingly. This in return helps us to receive a quality and consistent supply of milk from the farmers.

Funding experimentation. Numerous experiments with vertical value chain members were undertaken to find the right means for accessing high-quality feed and animal health products. Feed and medicine companies had little or no distribution in the CARE farmers' remote villages. CARE partnered with one feed company and three pharmaceutical companies to explore distribution, experimenting with several initiatives simultaneously. As one CARE manager observed:

> Experimentation is an ongoing mechanism: we do, we learn, and we incorporate into our design. It is very important.… in the past we had set things, set activities, but we couldn't continue that. We need the flexibility to change because the market is so dynamic.

The Rural Sales Program (that CARE spun off as an independent social business) was used, but it proved impractical, as feed was too heavy and not profitable enough for the rural saleswomen. Milk collectors were asked to distribute feed to the villages using a three-wheeled bicycle commissioned to ease the transport, but the collectors still could not carry and sell enough feed to make it feasible. CARE partnered with a non-profit (the Community Dairy Veterinary Foundation), which had vets distribute inputs to farmers' groups and collect milk for BRAC Dairy for a commission, but the founder was not motivated to expand and CARE moved on. Livestock health workers were asked to sell feed when they provided health services, but again, transportation was infeasible.

A distribution solution finally emerged after multiple experiments. The increased demand for feed and medicines due to CARE's work with the farmers stimulated local entrepreneurs to open or expand small shops in and near villages. These entrepreneurs were often already associated with dairy farmers (i.e. animal health workers or farmer group leaders). The shops were tenuous, however, as they were not large enough to have relationships with the major feed producers and farmers did not know whether or not to trust them. Furthermore, the shop owners often lacked business skills. From their analysis of the earliest shops, a CARE field worker stated that "the agricultural input shops carried a very limited amount of products and were poorly managed."

CARE then invested in a microfranchising program, piloted with 15 shops and subsequently expanded to 40. They provided business training, distribution linkages with large feed and medicine companies and the Rural Sales Program's warehouses, systems for inventory control and bookkeeping, store designs, a brand (Krishi Utsho, meaning "Agro Source") and marketing assistance. Through microfranchising, CARE brokered trust with the farmers, since it laboratory-tested the products sold by the shops and required franchisees to adhere to quality and service standards. In addition, CARE brokered trust with large suppliers (like Novartis and Pfizer), who wanted to ensure that the sellers were knowledgeable about how to handle and sell their products. A CARE manager noted: "linking the small agricultural input shops with the large veterinary medicine and animal feed companies helped to strengthen the operations of these shops."

As CARE expanded the program, CARE introduced animal health workers and inseminators to the shops to treat cattle, increasing shop viability. The shops became one-stop dairy farmer shops in the increasingly interconnected value chain. By brokering relations among value chain members and experimenting with alternative practices with participants across the entire value chain, the resulting new relations further solidified a new social structure of trust, transparency and productivity from which to initiate, conduct and enhance buy-in to the social structure.

Materially embedding social norms in technologies and practices. In addition to embedding value chain members in a social structure that made the market work effectively, CARE helped value chain

members to develop and adapt technologies and practices that reinforced social norms of transparency and productivity in the value chain. These technologies and practices materially embedded the mutually supportive social structure that was emerging in the value chain, reducing information asymmetries, and reinforcing market norms of trust and the value of product quality. Developing market norms around the value of increased productivity stimulated greater creation of value, and developing norms around market transparency enabled value chain members to capture the value they created. For example, together with BRAC, which operated one of three major formal dairy sector companies in Bangladesh, CARE experimented with digital fat testing machines, providing them to milk collectors and showing value chain members the benefits of their use (16% average increase in prices paid for milk). CARE noted that "The [digital fat testing machine] ensures that farmers are paid a fair price for their milk based on quality. This in turn means that farmers see their cows as an income source and are now investing more in their up-keep." Digital fat testing machines enabled the assessment of milk quality at collection points, meaning that those farmers who invested in more nutritious feed and animal health reaped the benefits because they could obtain higher prices for their higher-quality milk. As farmers worked with these technologies, the technologies instantiated norms of product quality and transparency as indispensable to market and income growth.

Another material practice that CARE piloted through the participation of farmer groups was a cattle health card for recording and codifying immunizations and other preventive health treatments cows received, creating an incentive feedback loop, as their cattle had a higher market value because they had records that showed they were immunized and otherwise well-cared-for. A male paravet observed: "the cattle health card helps the farmers and livestock health workers like us in many ways. It helps the farmer to keep a record of their cattle and share the information in group meetings to understand why the problem arises." Furthermore, the records they kept could be registered and used to assess the performance of parents and progeny, information that was needed to improve animal genetics planning. As farmers began to materially embed this practice in their approach to production, the practice reciprocally reinforced their developing belief in the value of cattle as productive income-producing assets, further stimulating market growth and alleviating poverty.

Social structuring versus formal institutional change. CARE made numerous attempts to work with the government to effect formalized changes, which could potentially have had a powerful impact on the dairy industry, yet these attempts were largely unsuccessful. The productivity of Bangladeshi cattle was limited by the breed, and careful genetic selection could have provided a significant improvement. The government controlled animal genetics and the importation of breeding animals, but they retained no data and did not support research. Having been unable to influence regulatory policy surrounding animal genetics, CARE then conducted a detailed cattle breed survey and convened professors from Bangladesh Agricultural University, government officials and international experts recommended by the Gates Foundation, but recommendations were never implemented by the government. CARE became the only NGO that worked on the government's Dairy Development Board, but this Board became non-functioning and disbanded when a new government was elected. CARE also lobbied the government to recognize the training of livestock health workers, but was unsuccessful. CARE also worked with the World Bank to explore collaboration on influencing government policy, and organized an NGO and Donor coordination committee. As one CARE senior manager stated, "We invested significant time and resources in trying to move forward policy changes with the Government of Bangladesh. However, we faced a number of challenges and were not as successful as we would have liked." Thus CARE felt it had very limited success in altering the formal institutional context. Its effectiveness in constructing a social structure and accompanying functional market made its success in market development all that more

extraordinary. CARE's experimental and socially structured approach provided the outcomes and lived experiences that made the solutions compelling for new adopters, motivating these new adopters to materially embed their technologies and practices in their daily life as a means of improving their income. Only those practices and technologies that were supported within the newly emerging social structure and led to effective outcomes were then scaled up in phase 3.

Phase 3: Scaling (2011–2014)

In the third phase, CARE focused primarily on scaling up successful practices. Training and organizing was extended to a total of 36,397 farmers (with plans to work with 12,500 new farmers), 308 milk collectors, 201 livestock health workers and 149 input shop owners. Training materials, such as the participatory performance tracking system, were refined and further systematized. The cattle health card was implemented among all CARE farmers. Group savings programs became incorporated in 71% of the farmers' groups. CARE worked with BRAC to put digital fat testing machines in all of BRAC's 101 chilling plants and in other collection points with the effect that BRAC paid more for milk (increasing farmers' incomes) but also increased its supply and quality, which was a clear benefit to the company, as it could not keep up with demand for milk products in urban markets. CARE and BRAC collected data on the impact of the fat testing machines to make the business case to other dairy processors. One CARE senior manager stated: "Earlier on in the initiative, there were a lot of unknowns. We therefore invested heavily in experimenting, trying different things and making mistakes. We then iterated constantly on what worked. Once we were reasonably confident, we then took the successful approaches to scale."

Interestingly, the legitimacy of these innovations spilled over into the control groups CARE studied and into other areas through social relationships and the technologies and practices that had been developed. As a CARE staff member recounted, "On more than one occasion, the dairy farmers involved in the project I have visited have told me that many of their neighbors not involved in the initiative have come to ask them questions on dairy management and learn from them." Half or more of the clients of Krishi Utsho shops, and artificial insemination and paravet services, were non-CARE farmers, who also benefited, for example, from the digital fat testing machines at BRAC's chilling plants. Furthermore, CARE submitted another proposal to the Gates Foundation to replicate their work in different agricultural value chains in six other countries, which was awarded US$15 million in 2013.

A Social Structure Model of Effective LDC Market Development

The arm's length economic market which existed in the dairy sector prior to CARE's intervention was fragmented and dysfunctional. Each member of the chain sought their own self-interest, and as would be expected, more powerful players were able to capture more value than marginalized farmers. Farmers sold what they could as price-takers and processors bought what they could, with collectors earning distorted and unpredictable profits. Although processors demanded more than they could buy, they also kept prices low to account for opportunism by farmers and collectors. Given the market conditions that the farmers faced, they were not motivated to invest in the health and nutrition of their livestock beyond the bare minimum, and thus productivity remained low.

The dairy market in Bangladesh illustrates how a market can provide much greater value for its participants when it is first embedded socially in a supporting social structure and materially in useful technologies and practices that support and reinforce appropriate market norms. In this case, social and material embedding was initiated by an NGO bringing new knowledge into the context, building new relations among market actors, and engaging with them to negotiate and experiment

with new practices on the basis of altered beliefs about the role of cattle and the value of market-oriented practices.

It is important to note that this is not strictly a story of institutional entrepreneurship by CARE. While the influence of CARE Bangladesh was necessary to kickstart the process financially and broker social contacts and connections, market participants themselves were invited and engaged to renegotiate the social structure on which their future economic well-being depended. Our model therefore reflects both the role of CARE as the entrepreneurial NGO and the actions of the local participants as those who implemented change that socially and materially embedded practices in functional market improvements.

CARE's role in market development

Bringing together the overall analysis of the three foregoing phases revealed that CARE leveraged the social structure of the market to successfully solidify the market's value chain using three primary processes: contextual bridging, brokering horizontal and vertical relationships along the value chain, and funding experimentation.

Contextual bridging. Contextual bridging is defined as a process involving the transfer of new meanings, practices and structures into a given context in a way that is sensitive to the norms, knowledge and relationships that exist in that context. Both CARE and market participants collaborated on contextual bridging. CARE initially accessed the technical knowledge of best dairy farming and dairy marketing practices as they existed in Bangladesh and in other countries and simultaneously absorbed as much social knowledge as it could about the norms and institutions already operating in the context. CARE then contextually bridged the new knowledge into the regions they targeted, making it understandable and socially legitimate to local dairy farmers by obtaining the endorsement of community leaders, putting the knowledge into a form that could be understood by the mostly illiterate farmers, using staff who were trustworthy and knowledgeable within the context because they were locals, and challenging existing norms that were getting in the way, such as those about appropriate roles for women, by appealing to economic benefit. "Within the project area, CARE demonstrated that women can be effective leaders, paravets and milk collectors," observed one CARE staff member. These actions made new market meanings and practices acceptable to local participants, laying the groundwork for a viable social structure in which market participants themselves could take ownership and embed meaning in market practices, improve their incomes and co-create a much more effective and efficient dairy market.

Brokering relationships. The social structuring of horizontal and vertical relations along the entire value chain was crucial to success. For example, CARE set up meetings between farmers and milk buyers, suppliers and cattle health service providers to establish and legitimate exchange throughout the value chain, using CARE's own legitimacy and resources as an NGO to facilitate trust among value chain participants. The farmer bonding structure CARE facilitated as part of its contextual bridging process rebalanced market power and supply and demand. Rather than individual farmers, exchange partners began dealing with farmers acting as a collective, both because they were in producer groups, but also because across producer groups, farmers were beginning to act more predictably due to the contextual bridging of best practices to the local context. The social structuring of farmer group relations increased demand for cattle feed and health care and increased and consolidated milk supply, leading to a more sustainable dairy market. These brokered relational processes within producer groups and among value chain members in turn augmented the social acceptance of material technologies, such as digital fat testers, health cards, the participatory

performance tracking system, the testing of feed quality, and the microfranchise system, which ensured store owners consistently provided high-quality supplies and services.

Funding experimentation. CARE also developed the market by funding experimentation, enabling market participants to try new technologies and practices without bearing substantial costs or risks. As a result, farmers assured themselves of the feasibility of new market practices by participating in creating their own tangible evidence that these technologies and practices were beneficial before they had to invest in them. It was CARE's experience that "poor smallholder farmers simply cannot afford to take risks." This risk reduction is an important part of developing subsistence markets. By funding experimentation, CARE enabled farmers to adopt new practices only after they saw irrefutable proof of their benefits without facing potential starvation before the investment paid off.

Thus CARE's role as an entrepreneurial NGO in this context was effective due to three forms of social structuring: *contextual bridging* of new knowledge to alter norms and values about appropriate market and production practices; *brokering relationships* vertically and horizontally in the value chain that contributed to the rebalancing of market power, norms, trust and transparency in market interactions; and *funding experimentation* to reduce risk, test assumptions, discover practices that worked, and ease transitions to more market-conducive activities. This led to successful market development and the subsequent ability to scale practices that were shown through experimental evidence to be functional over the longer term. Thus, we found that CARE put the conditions in place through these three fundamental processes to construct a supportive social space conducive to effective market functioning.

Market participants' role in market development

The social structuring of the dairy market reflected both CARE's initiatives and the value chain participants' involvement in interpreting and implementing these initiatives. Local participants achieved this through processes of social and material embedding.

Social embedding. Social relationships, brokered by CARE, helped market actors to freely share knowledge with one another in order to build trust and legitimate new norms and practices. In effect, by establishing these social relationships, market actors themselves renegotiated the meaning of the "in-group," which is so important in honor-based cultures, thereby embedding new social norms in the local economic context. While members of honor-based cultures expect outgroup members to behave opportunistically toward them, motivating them to negotiate aggressively and withhold information, in-group members are treated warmly, and trust and loyalty are strong within groups (Aslani et al., 2013). Forming social relationships among farmers enabled market participants to negotiate new social norms together to govern market transactions. Social relationship formation also ameliorated power difference problems, as within groups members looked out for one another's interests. Building relations with one another altered norms around what constituted the group, leading the way for renegotiated norms of exchange and coordination along the value chain that improved market conditions significantly by increasing market trust, productivity, the capacity for collective saving, the transparency of prices and economies of scale in buying inputs. Taken together, this embedding process greatly enhanced the social control of local actors in making market decisions by giving them the social space and support to negotiate the social order in which they lived their daily experiences as members of a market.

Material embedding. The exchange norms that developed through social structuring were also materially embedded in practices and technologies, and this embedding also enabled more

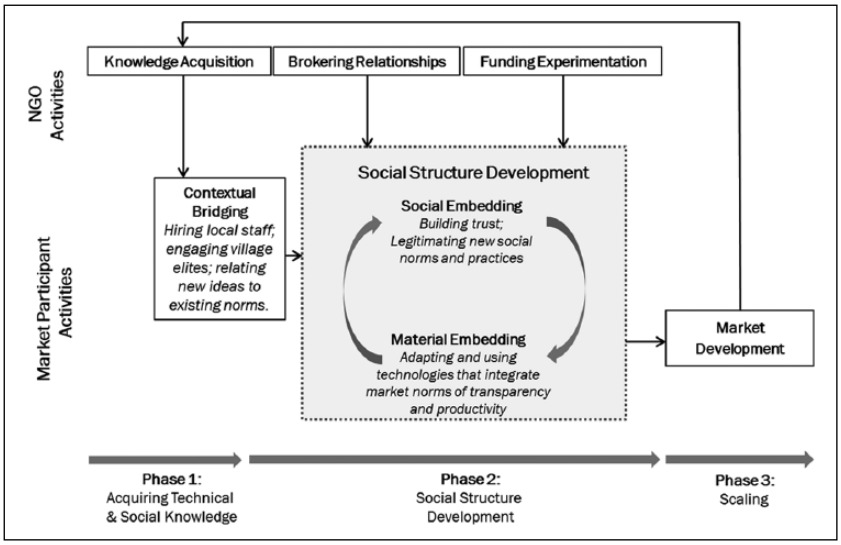

Figure 3. Building the social structure of a market in least developed countries.

effective market functioning. For example, within the farmers' groups, the materially embedded participatory performance tracking system made everyone's objectives clear and explicitly indicated who was or was not achieving their objectives. This system meant that group members held one another accountable for their performance, further strengthening norms of accountability and high production standards. The farmers also readily adopted the fat testing technologies, integrating and reinforcing norms of transparent market price as a fair indicator of market value. Interpretive schema surrounding the meaning of markets were also embedded materially in the farmers' use of the cattle health card which reinforced norms and beliefs around the importance of investing in cattle as the basis for sustainable market growth. It also served as a trusted form of information that informed the selling price of cows. Thus market participants embedded values of the market in technology and practices. The embedding of these values in turn made visible the functionality of these technologies in contributing to market development. The social and material embedding processes were therefore mutually reinforcing.

Thus, in contrast to economic approaches that seek to impose new market practices on understandably wary local actors in less developed countries, CARE created the conditions for market participants to engage with and renegotiate a new social order that laid the essential groundwork for new market practices over which local actors could take economic ownership. Figure 3 illustrates a model of this process that emerged from our data. Together, the efforts of CARE to contextually bridge new knowledge into the local context, broker value chain relationships and fund experimentation enabled processes of social and material embedding through autonomous implementation by the market actors themselves. These efforts led to significant poverty alleviation and market development, providing a positive feedback loop to future knowledge acquisition and learning.

Discussion

The dairy sector in Bangladesh before CARE's intervention featured atomized farmers who saw little productive capacity in cows or market value in milk dealing with (or more commonly not dealing with) atomized collectors and animal health workers whom they did not trust. Farmers did

not buy animal food or medicines because they failed to see value in them, often with justification as many actors in the value chain took advantage of each other or failed to understand the potential value of an improved market system. CARE transformed this dysfunctional market order by recrafting the conditions for the social structure of the market. They achieved this through a comprehensive and experimental reorientation of the social norms and relationships that made up the social structure of the market, thereby generating a low-risk social space within which value chain actors could reinterpret the meaning of their economic activities in ways that were persuasive and beneficial. This study's contribution was thus intended to add new insight into how effective markets develop in LDCs in a way that moves the literature on market development beyond a description of potential economic techniques to a more fundamental understanding of the social and economic processes necessary for markets to succeed and endure in less developed economies.

Implications for the sociology of markets

Our study emphasizes the argument from the sociology of markets literature (Biggart & Beamish, 2003; Fligstein, 1996; Fourcade, 2007; Oliver, 1996; Swedberg, 1994; Uzzi & Lancaster, 2004) that a market is "a social institution which facilitates exchange" (Coase, 1988, p. 8). Our results go further, however, in demonstrating that the economic potential of this underdeveloped market could not be realized until a social space was first established. Predominant explanations of market development suggest that economic transactions are precursors to social relationship development (Bardy et al., 2013; Eapen, 2012). However, our findings suggest the arrow pointing the other way, with social structure and relationship development leading to improved economic productivity and exchange. Hirschman's (1982, p. 1473) work also recognizes the interconnectedness between the economic and social dimensions of market development: "Multiple acts of buying and selling forge all sorts of social ties of trust, friendliness, [and] sociability," particularly if market exchange is repetitious. In contexts of market failure where market exchange is sporadic, inefficient and untrustworthy, this study demonstrated that effective market and value chain development may require first building relationships and the social structure of a market. Building legitimated social ties among individual producers and among members of the nascent value chain was the precursor to initiating effective economic exchange and market growth. By socially and materially embedding exchange in a cohesive social structure in which value chain actors saw each other as in-group members rather than untrustworthy strangers, the market was able to develop and evolve. As Fligstein and Dauter (2007, p. 109) observed in their review of the sociology of markets literature, theorists have argued "that social relationships between market actors solve market problems, such as agency costs (Fama & Jensen, 1983) and transaction costs (Williamson, 1985)." We suggest that they also exist to create market solutions. This implies that the social structuring of markets can serve as an a priori antecedent to develop markets in ways that may then create new market opportunities.

The study's results also suggest that the social structuring of a market may have efficiency effects. Sociology of market scholars have had an ambiguous relationship with this assertion (Fligstein & Dauter, 2007, p. 120). The present study found that social relations improved market efficiency under conditions of market failure when an independent organization guided the development of relations with the intent of increasing market transparency, increasing productivity, reducing risk to market participants, creating channels of knowledge transfer, and embedding new learning and technologies in the market. Social relations do not necessarily improve markets. However, evidence from this study suggests that social relations intended to benefit all members of a value chain do. Thus, future research on market development might consider the importance of examining all social actors involved in a market and the relative benefit to each member of the

value chain in initiating and sustaining exchange. CARE succeeded primarily by viewing the market as a complex interrelated system of moving parts that required social intervention simultaneously across all participants in the market. By jointly negotiating the means and the meaning of exchange, participants could increase the effectiveness of their market through everyday action in a way that made everyone in the value chain more like in-group members, increasing the future potential for collaborative action.

Socially structuring a market required more than the creation of social relations that generated the requisite trust among market participants to initiate economic exchange without the threat of opportunism. Building a social structure meant the renegotiation and legitimation of values and beliefs surrounding the economic potential of the commodity on which the value chain depended. Experiments that provided irrefutable evidence to producers of the economic benefit of milk production dramatically altered the ascribed meaning of cows and social constructions of cattle as more than "insurance" against financial downturns. Social structuring grew the market by also reducing the perceived risk of economic participation, which is particularly salient and consequential in low-income contexts.

Thus, the results of this study refute what we see as the false "assumption that there are distinct arenas for rational economic activity and for personal relations, one a sphere of calculation and efficiency, the other a sphere of sentiment and solidarity" (Zelizer, 2007, p. 1058). Instead, *social structuring provides the necessary context for economic transactions*. Constructing the social meaning of a commodity and building a local relational context for implementing the new meaning of that commodity are pivotal actions of market evolution when markets are failing. This implies that the stage of a market's development shapes the relative priority that should be attached to social and economic aspects, with social structuring predominating in earlier phases and durable economic exchange revealing itself in latter phases of market growth. Scholars who take seriously the concept of embeddedness view markets as inherently hybridized (Granovetter, 1973). A fruitful line of future inquiry would be tracking the role of social relations as a lever for inducing exchange and how that role changes over the development of a market. We see markets as deeply social creations rather than autonomous arenas on which social processes merely impinge (Zelizer, 2007). We suspect that the instrumental role of social structure in developing countries only becomes a cognitively taken-for-granted phenomenon as markets mature and that changes in the social structure of a market are particularly salient in the early phases of market development.

Apart from a few excellent studies of how markets are created to increase access and social inclusion in LDCs (Mair & Marti, 2009; Mair et al., 2012), empirical studies of the development of new markets as social phenomena have been restricted almost exclusively to studies of new market or product categories, e.g. grass-fed beef, minivans, satellite radio, or fair trade coffee (McMurtry, 2009; Navis & Glynn, 2010; Rosa, Porac, Runser-Spanjo, & Saxon, 1999). Scant attention has been given to the evolution of a market as the fundamental rules, norms and roles of production and exchange. The conclusion we draw from the present study is the need for comprehensive value chain intervention for market evolution to succeed, something we witnessed across all three phases of market development. Initial knowledge gathering, locating key intervention points for market improvement, and scaling up operations all depended on concurrent attention to the entire value chain. Given that the success of market development in this study depended vitally on comprehensive value chain inclusion from the beginning and across each phase of market development, future research might wish to move beyond the current literature's predominant focus on LDC global value chain development for export markets (Pietrobelli & Saliola, 2008) to examples of comprehensive value chain growth in domestic markets as a means of alleviating poverty in LDCs.

Implications for market-based approaches to poverty alleviation

This paper also adds to the conversation on management approaches to market-based poverty reduction. In less developed countries, obstacles to the formation of markets have been well documented (Datta-Chaudhuri, 1990; Stiglitz, 1989) and have raised significant questions about how to develop markets when state and economic conditions conspire to inhibit them. Under these conditions, researchers have sought solutions to the problem of market creation in firms, industries and the state, relying on foreign market entry or multinationals (Prahalad, 2005), micro-financing (Yunus, 2003) or public sector policy to explain how markets materialize. The base-of-the-pyramid approach that dominates the management literature on poverty has focused primarily on MNCs attempting to eradicate poverty through pursuing profits by selling to the poor (Prahalad, 2005). This study, in contrast, focuses on the poor as agentic individuals whose norms and behaviors are leveraged for effective market development by a facilitative NGO whose focus is local, social and experimental. Much of the base-of-the-pyramid literature to date has focused on creating new business models to enter LDC markets with new products or business processes. Our findings offer a possible explanation for why so many of these approaches over the last decade have been unsuccessful (Simanis, 2010). Rather than market entry, market-based ventures in LDCs could explore their value chains and markets of interest to see if developing the social structure of the market may be necessary before commercial opportunities can be effectively pursued.

CARE made the market a social space. In LDC settings, the formidable challenges of developing a market are exacerbated by local participants' norms and beliefs that are formed by impoverishment, which creates a well-founded skepticism of income improvement initiatives and a highly rational risk aversion to the pursuit of novel and unfamiliar opportunities. In the present study, it was the development of a less risky and more supportive social structure that drove changes in beliefs about the economic logic and feasibility of new market activities, and this, in turn, led to durable economic improvements throughout the value chain.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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Appendix. Data sources.

Data source	Focus	Length/frequency
Interviews		
150 Farmers (5 groups × 30 farmers per group)	Opinions of dairy production and market participants	10 hours
30 Independent farmers (control group)	Opinions of dairy production and market participants	3 hours
4 Chilling plant managers	Opinions of dairy value chain and its participants	4 hours
2 General Managers of largest processing companies (Milk Vita and BRAC Dairy)	Opinions of dairy value chain and its participants	3 hours
1 Plant Manager of medium-sized processing company (Grameen-Danone)	Opinions of dairy value chain and industry	2 hours
1 General Manager of small dairy processing company	Opinions on opportunities for dairy sector growth	0.5 hours
1 Informal milk market milk retail shop manager	Potential for informal sector milk enterprise development	1 hour

(Continued)

Appendix. (Continued)

Data source	Focus	Length/frequency
Milk collectors:	Opinions of dairy value chain and its	
2 Individual interviews	participants	2 hours
1 Focus group of 26 collectors		2 hours
2 Rural Sales Program distributors	Opinions of distribution of consumer dairy products	1 hour
1 Feed hub manager	Opinions of input services to farmers	2 hours
1 Artificial insemination service provider	Opinions of input services to farmers	0.5 hours
1 Head of the Community Dairy Veterinary Foundation	Opinions of input services to farmers	1.5 hours
1 Senior Agriculture Economist, International Livestock Research Institute	Opinion on dairy industry and policy	0.5 hours
1 Dairy industry financial services expert	Opinion on current and potential financial services for smallholder dairy farmers	1 hour
3 Dairy packaging company executives	Opinion of dairy industry growth potential	1 hour
3 Executives of nongovernmental organizations working to support smallholder dairy farmers	Opinion of constraints and opportunities for farmer participation in dairy	1 hour
3 Agriculture and dairy scientists	Technical aspects of dairy production	1 hour
1 Dairy economist	Macro-economic trends in the dairy industry	1 hour
1 CARE Senior Project Manager	All aspects of the dairy value chain	20 hours
1 CARE Senior Technical Advisor	All aspects of the dairy value chain	20 hours
1 CARE Communications Manager	All aspects of the dairy value chain	10 hours
1 CARE Monitoring and Evaluation Manager	Impact evaluation of the dairy value chain interventions	10 hours
10 CARE field, technical and program staff	All aspects of dairy value chain	5 hours
Quantitative Surveys		
Farmers (N=1,500)	Smallholder dairy production, detailed assessment of target households and control households	154 pages
Collectors (N=50)	Milk collection, handling, sales and income, as well as expectations and perceptions of fairness and trust	29 pages
Chilling plant operators (N=50)	Quantity, quality, source and payments for milk, as well as expectations and perceptions of fairness and trust	13 pages
Animal health workers (N=50)	Training, business model, services and knowledge, as well as opinions of other dairy value chain actors	14 pages
Processors (N=5)	Opinions and expectations of their employees as well as other actors in the dairy value chain	12 pages
Feed and medicine sellers (N=50)	Business model, sales, procurement and promotion, as well as opinions of farmers and other dairy value chain actors	12 pages
Informal market (N=50)	Business model, products, and pricing, as well as business relationships, expectations, and obligations	12 pages
Participant Observation		
On-site farm visits and observations	Multiple rural areas of northwest Bangladesh	10 hours
On-site milk testing	Multiple rural areas of northwest Bangladesh	10 hours

Appendix. (Continued)

Data source	Focus	Length/frequency
On-site milk collection	Multiple rural areas of northwest Bangladesh	10 hours
Meetings with villagers and producers	Knowledge and information exchange	10 hours
Meeting between senior CARE and IFC staff	Government policy and competitiveness in the dairy industry	2 hours
Meeting between senior CARE staff and 11 senior executives at BRAC Dairy	Potential for dairy industry collaboration	2 hours
Meeting between senior CARE staff and three TetraPak (dairy packaging company) executives	Dairy industry collaboration	6 hours
Attendance at Major Dairy Conference		
At Bangladesh Agricultural University (including 24 paper and plenary presentations)	Wide range of issues in dairy sector development and animal husbandry	16 hours
Archival Data		
Monitoring and evaluation data	Continuous impact evaluation of:	Monthly reports
	Farmer incomes, productivity improvements, animal health, local animal health worker performance, market prices of milk and feed	
	Collector performance	Bimonthly reports
2 Progress reports (2009 and 2010) to donor	Progress toward project objectives	Semi-annually (90 pages each avg.)
3 CARE commissioned external reports:	Socioeconomic analysis of dairy value chain	67 pages
Value chain analysis report	Policy analysis of dairy value chain	71 pages
Policy barriers for dairy development	Financial services needs for dairy producers in Bangladesh	57 pages
Investment scenarios and demand in the dairy sector		
4 Memoranda of Understanding between CARE and PRAN, TetraPak, Milk Vita and BRAC	Partnership agreements for collaborative projects	4–14 pages each
22 Other archival documents (including CARE training materials and promotional material from value chain actors)	Technical training and promotional materials	Avg. 40 pages each