

Connecting New England farmers to large retailers via values-based supply chains

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Abstract

U.S. consumer demand for differentiated, place-identified food is strong, yet current market structures are ill-equipped to meet the demand. Mid-sized farms are suited to produce such food at volumes large enough to fulfill retail demand, but

their number has been declining because of their lack of scale-appropriate market access. Values-based supply chains (VBSCs) are a market-based approach capable of supporting access for small to midsized farms, or Agriculture of the Middle (AoTM), through leveraging the pre-existing market infrastructure of large retail chains using intentional partnerships to achieve shared values. We present findings from 22 interviews with producers, intermediaries, retailers, and key informants engaged in VBSCs across the New England region. We present an analysis of the value-sharing strate-

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gies used by actors across these supply chains and identify the mechanisms by which these values are enacted. We find that adjusting the retail market structure to handle differentiated food products from relatively smaller-scale producers introduces several complexities. However, the actors involved in these VBSCs have developed strategies for cooperation to overcome some of these challenges, including: (1) risk sharing, (2) improvements in physical infrastructure, and (3) improvements in informational infrastructure. These strategies create opportunities for small and mid-sized producers to successfully participate in retail markets.

Keywords

Agriculture of the Middle, mid-sized farms, value claims, values-based supply chains, retail market access, value-sharing strategies, risk sharing, physical infrastructure, informational infrastructure

Introduction

In response to the far-reaching environmental and health impacts and the social injustices of the current food system, social movements calling for sustainability, equity, and transparency in the food system are reshaping the landscape in which food supply chains operate (Allen, 2004; Bruce, 2019; Robinson & Farmer, 2017; Wognum et al., 2011). U.S. consumers' rising interest in source-identified, locally and regionally produced food is well documented. Locally and regionally procured foods continue to be one of the fastest-growing food trends, with the potential to outpace growth in the entire food and beverage sector (Hesterman & Horan, 2017). Direct-to-consumer (DTC) markets such as Community Supported Agriculture (CSA), on-farm sales, and farmers markets have historically served and continue to serve as important markets for producers. Online and subscription sales are increasingly important as well (AgAmerica, 2022). Growing demand for locally and regionally sourced foods is reflected in the growth of national DTC markets, reaching US\$9 billion in revenue in 2020 (AgAmerica, 2022), a 32% increase in eight years (Low et al., 2015). The USDA National Agricultural Statistics Service (2022) estimates that in 2020, 78% of DTC sales were within a 100-mile radius of harvest. However,

DTC markets fall short in capacity to handle larger volumes of differentiated, high-quality foods.

Despite dramatic growth in consumer demand and DTC markets, the number of farms in the U.S., as well as net farm income, continue to decline (AgAmerica, 2022). AoTM scholarship recognizes that farm losses are most significant at the middle of the farm size spectrum, and may be largely attributed to a lack of scale-appropriate market access. Defined as farms with annual gross cash farm income (GCFI) between US\$350,000 and US\$999,999 (U.S. Department of Agriculture, National Agricultural Statistics Service [USDA NASS], 2021), mid-sized farms have the scale and capacity to meet the increasing consumer demand for local and regional food, and are important to the food system in numerous ways. However, mid-sized farms seeking to serve the demand for locally and regionally sourced food may produce at volumes too large for DTC markets, particularly if a locale is especially rural, thus limiting their market access. Thus, while these farms can meet the increasing volume demands of consumers seeking high-quality and source-identified foods, there are few market structures that exist between small DTC avenues and large supermarkets. The lack of available and scale-appropriate market structures is also a problem for larger small-scale farms. Among other factors, mid-sized farms are disappearing because of the lack of market access; relatedly, small farms struggle trying to "scale up" to become mid-sized farms because the lack of market opportunity limits growth. There is significant economic dichotomy in the gap between availability of specialized local and regional goods and widespread but unmet demand.

Problems with market access demand solutions that address current market realities while grounded by guiding principles. Values-based supply chains (VBSCs) are an especially promising way to provide scale-appropriate market access to support farm viability (Stevenson et al., 2011). VBSCs are supply chains that use strategic partnerships to create shared vision and trust and ensure transparent communication and equitable profits and wages for all partners in the supply chain. They also facilitate long-term business relationships and agreements for producers (Hooks et al., 2017; Lyson et al.,

2008). VBSCs take a variety of forms, including intermediated market models such as food hubs and agricultural cooperatives or farm-to-institution partnerships (Hooks et al., 2017). VBSCs also facilitate risk sharing and the equitable redistribution of risk along the supply chain, a significant feature of effective and reliable market access for small and midsized producers.

Recent initiatives have focused on values-based partnerships with larger retailers or supermarkets that capitalize on the preexisting infrastructure of conventional food supply chains. These VBSCs use strategic partnerships to “scale down” the retail-oriented supply chains to provide scale-appropriate market access for midsized farms (Abate-Kassa & Peterson, 2011; Clark & Inwood, 2016). Capitalizing, or “piggybacking” (Bloom & Hinrichs, 2011b), on the pre-existing “physical, logistical, and relational infrastructure” (Clark & Inwood, 2016, p. 504) of the conventional networks might offer benefits that attempting to scale up independently, via cooperatives or food hubs, may not (Bloom & Hinrichs, 2011b; 2017).

This project investigates VBSCs that connect small and midsized farms with large retailers and supermarkets in the six-state New England region of the U.S. New England farms constitute approximately 32% of U.S. farms (National Agricultural Statistics Survey, 2022) and use 9% of the New England land base (Pottern & Barley, 2020). From a regional perspective, the viability of these farms has both significant economic and environmental value. (Because New England farms are predominantly small and midsized, we use terms like “local” and “regional” as synonymous with non-industrial throughout this paper.)

The research addresses three main objectives: (1) to characterize the economic and social values upheld collectively and individually by participants in values-based food supply chains, (2) to evaluate participants’ strategies for communicating and enacting these values, both with other participants as well as with others outside the VBSC, and (3) to identify challenges and opportunities that cooperating participants may experience when enacting and communicating these values. We synthesize the insights gained from each type of interviewee to identify nine practical mechanisms that actors are

using to operationalize the values embedded in their VBSCs. This research reframes three challenges as opportunities or “leverage points” for using VBSCs to provide small and midsized New England farms with scale-appropriate market access to large grocers.

Agriculture of the Middle and Values-Based Food Supply Chains

Most food products are produced and distributed via large global commodity markets with substantial distance between producer and consumer, both in physical terms and in the number of intermediaries or handlers of a product and its inputs (Alexander et al., 2017, Thomé et al., 2021). Supply chains are a central organizing feature in the commodified global market, characterized by an extended series of intermediaries and buyers between which raw goods are transported, processed, and distributed. Despite the efficiencies that give conventional food systems the capacity to produce, transport, and process a significant volume of food, these supply chains are increasingly impacted by a continual shift toward concentration and consolidation, resulting in power inequities that disadvantage socially and economically vulnerable populations (Hendrickson et al., 2020; Howard, 2016), disenfranchise farm laborers, incentivize monoculture-based production systems with significant environmental impacts (Rotz & Fraser, 2015), and systematically disadvantage smaller farms (Berti & Mulligan, 2016). Among other societal disruptions, the global COVID-19 pandemic underscored the shortcomings of this centralized and concentrated system and led to calls for increasing resilience at all levels of the food system (Chenarides et al., 2021; Marusak et al., 2021).

The effects of horizontal and vertical integration and consolidation in the food system impact the production end of the supply chain by shifting to reliance on a decreasing number of very large farms producing an increasing percentage of national and global food supplies. While estimates differ, as much as 80% of the U.S. food supply is produced by as little as 10% of all U.S. farms (Nesheim et al., 2015). Consolidation and concentration threaten the economic viability of small and midsized producers unable to compete with highly

mechanized, large-scale farms that rely on economies of scale to accept low prices in exchange for large contracts with buyers (Rotz & Fraser, 2015). The market power of the small number of large firms that exert downward price pressure for farm products in the food processing, distribution and retail sectors contributes to the displacement and continuing loss of small to mid-sized farms, driving further concentration of farmland (Gray, 2009). Increasing the resilience of the food system requires reversing course toward diversification and decentralization, shifting toward a greater number of small and mid-sized farms producing a greater portion of the food supply (Rotz & Fraser, 2015; Stevenson et al., 2011; Thilmany et al., 2021).

AoTM is a body of literature and a network of scholars focused on the “hollowing out” of the U.S. farm sector as an especially problematic result of the concentration in conventional supply chains, and a significant threat to food system resilience. AoTM refers to the compounding bifurcation of U.S. agriculture, as producers are generally channeled into two distinct market categories. First, industrial producers supply global commodity markets with high volumes of undifferentiated products, relying on large and increasingly complex commodity supply chains to process homogenous inputs. In the second, small-scale, geographically limited or “hyperlocal” producers supply very small volumes of highly differentiated goods to specialty markets (Stevenson et al., 2011). Caught between these two market avenues, mid-sized farms produce at volumes too large for local specialty markets better suited for small farms, but too small and often too differentiated to participate in the global commodity chains for which large-scale farms produce (Lyson et al., 2008). However, a market-based solution to the decline of mid-sized farms does not have to be based on farm size or scale. Because mid-scale farms have the capacity to produce differentiated, nonhomogenous goods at high volumes, market avenues equipped to capitalize on these strengths can cater to farms that produce at volumes both larger and smaller than mid-scale parameters. “A ‘marketing middle’ is scale-related but not scale-determined” (Stevenson et al., 2014, p. 7). AoTM research has been focused on supply chain shifts

and strategic developments of pre-existing market infrastructures to provide sustained market access for mid-sized farms and to counter vertical and horizontal food system integration. In contrast to strategies that focus on DTC supply chains, VBSCs seek to “scale down” larger, conventional supply chains.

VBSCs can take different forms. AoTM researchers and other scholars have increasingly recognized the limitations of DTC markets and called for further investigation of farm-to-retail market models (Abate-Kassa & Peterson, 2011; Born & Purcell, 2006; Clancy & Lehrer, 2010; El Bilali, 2019; Zwart & Wertheim-Heck, 2021). After all, most consumers access food via grocery stores and other retail outlets due to time, transportation, financial, and other convenience-related constraints (Oosterveer, 2013; Bruce & Som Castellano, 2017). However, the same centralization, consolidation, and vertical integration structures that constrain producers in the middle privilege large retailers to have significant power over national sourcing practices (Zwart & Wertheim-Heck, 2021). To appeal to consumer demand for local food and meet sustainability, corporate responsibility, and public image goals, retailers are also more likely than ever to be interested in offering more differentiated, specialized, and source-identified items like those produced by small and mid-sized farms and food businesses (Bloom & Hinrichs, 2017; Dunne et al., 2011). Leveraging this growing interest in local food may offer opportunities for shifting retail sourcing practices in ways that accommodate small and mid-scale producers. However, producers face ongoing challenges in these retail supply chains that are characterized by power imbalances that enable large retailers to squeeze their suppliers with contracts that place disproportionate risk on producers while capturing the most value for retailers. Common barriers for producers include meeting the high volume, consistency, food safety and quality standards of retail supply chains, while receiving low prices that often don’t adequately cover their labor and production costs (Kaditi, 2013; Hendrickson 2015; Hendrickson et al., 2020).

In response to these trends, researchers have called for studies to characterize retail-oriented VBSCs that hold potential for addressing the

decline of midsized farms. This research directly responds to these calls by investigating the various values VBSCs emphasize that connect small and midsized farms with large retailers. By studying the procedures of implementing values along retail-oriented VBSCs, we aim to broaden existing understandings and contribute to a broader collective aim to make local and regional food increasingly available where most people buy their food.

Methods

We conducted 22 interviews with participants along several different VBSCs, including producers, intermediaries, retailers, and key informants, to assess the types of values and value-sharing strategies embedded within the value chains. This qualitative approach was modeled after Collins' (2005) and Freidberg's (2001) commodity chain ethnographic approaches, to capture the different perspectives of actors from across VBSCs. This study took a commodity chain analysis approach, using qualitative methods to investigate VBSCs that feature retail or supermarket partnerships with small and midscale farms in New England. We identified and conducted interviews with four categories of participants along several different food value chains in New England: producers, intermediaries, retailers, and key informants. We then assessed how VBSCs varied in the types of values they emphasized and prioritized, and in their strategies for implementing values. We drew from all categories of interviewees to identify the mechanisms used to operationalize VBSC values.

Originally, researchers used commodity chain analysis to evaluate complex global production and consumption systems. Scholars have adapted this method for increasingly interdisciplinary applications and expanded it for other types of supply chains (Bair & Mahutga, 2016). To apply this historically global and commodity-oriented approach to New England VBSCs, we sampled interviewees across the value chain. Rather than focusing exclusively on one VBSC in a case-study, we selected participants from many different regional VBSCs that overlap, share resources, and work collaboratively to varying degrees. The research team selected interviewees through a network sample, leveraging the team's preexisting relationships and

by cold emailing organizations, departments, and businesses of interest with public contact information. We conducted interviews from Fall 2021 through Winter 2022. Leslie conducted interviews with producers and three key informant interviews as part of a broader research study (Bruce et al., 2025; Leslie, et al., 2024). Wilhelm conducted all other interviews.

Five interviewees representing intermediaries included firms, organizations, brokers, distributors, and others operating between producer and retailer, aggregating from small and midsized regional farms. All VBSCs identified with values other than profit, but to varying degrees and emphases. We further incorporated perspectives from five New England food retailers that sourced food from regional small to midsized producers, in varying amounts. Four retailers were chain supermarkets, well-known in New England or nationally. All seven participating New England producers earned less than US\$1,000,000 in gross annual revenue, the USDA cutoff for midsized farms. All producers derived a portion of their market sales from wholesale accounts with larger retailers either directly or through an intermediary. Key informants represented organizations and nonprofits that supported farm-to-retailer wholesaling, state and federal government programming focused on farmers' market access, and cooperative extension. The interviewees asked each type of participant consistent questions about practices, protocols, perspectives, decision-making processes, price and logistical negotiations, and relationships with other value chain participants. Interviewees also included tailored questions specific to the interviewee's situation and expertise. This dual approach helped distill perceptions and enactments of values by different types of VBSC participants.

We recorded all interviews with Zoom. Wilhelm manually transcribed them by playback software, and uploaded transcripts into the qualitative data analysis software NVivo. Wilhelm first analyzed all interviews using descriptive coding (Saldaña, 2014), which served to distill patterns in participant perspectives. Our coding categories included supply chain-related themes, which captured instances of the mechanisms to be discussed below. Finally, our coding strategy used

several simultaneous codes to capture thematic overlap (Saldaña, 2014), highlighting instances of partner alignment and tension within the value chain, as well as risk-related feedback.

Results

For the value chains we investigated, social and environmental values largely involved drawing local and regional producers into larger supply chains. Assuming that all value chains are, by definition, driven first by profit or economic values and then by values external to profit, we aim to characterize these two types of values in the context of the VBSCs we investigated in this study. We found that the economic interests of all categories of VBSC participants (producers, intermediaries, and retailers) were largely defined by interest in self-maximization, reflecting their status as profit-seeking businesses in a competitive market. Underlying this shared primary interest among all food supply chain participants were differences in their tools, capacities, and positionalities, resulting in differing outcomes in actualizing their profit-seeking interest.

Our findings suggest that VBSC sourcing and production practices were guided by at least three key themes: price, quality, and reliability. Quality was generally about physical product attributes. All VBSC participants shared a concern for quality but differed in ideas about what specific attributes indicated higher or lower quality. Price and quality were closely related, higher quality generally receiving a higher price. We found that middle supply chain participants typically applied downward pressure on price and upward pressure on quality, aimed at producers and others preceding them in the supply chain. Reliability in product supply was important, despite disruptions like extreme weather or transportation difficulties. Several intermediaries reflected on their capacity to maintain reliability during the COVID-19 pandemic, which presented significant supply chain disruptions and challenges globally. Whether or not an intermediary or retailer was explicitly dedicated to values external to profit, these were the parameters within which entities competed to remain economically viable, emphasizing price and quality as drivers of profit.

Social and Environmental Values: Claims and Mechanisms

We found that extra-economic values were communicated in two different ways for VBSCs. One was a form of narrative or a means of public communication, and the other was a means of inward communication with other value chain participants. The dichotomy we encountered between publicly stated values and the mechanisms designed to practically implement values revealed two distinct ways that VBSC participants communicated and executed values, which we call value claims and mechanisms. In instances where values were stated but mechanisms for enactment were not in place, it was difficult to know whether farmers (the intended beneficiaries) were receiving any benefit. This distinction helped to differentiate between value claims as a marketing strategy and the actualization of values. By identifying this important gap between stated and actualized values, we could analyze the mechanisms used for enacting values. We found that actors have used similar strategies to generate viable market access in retail-oriented VBSCs and to circumvent commonly faced challenges, such as the disproportionate share of risk and costs borne by producers relative to the share of value they received. Because these mechanisms for enacting their values served to expand market access for small and midscale farms in the face of common barriers, we call these mechanisms leverage points.

Value Claims

A crucial takeaway from the interviews is that values beyond profit were often fluid, difficult to concretely define, and even more challenging to enact. Stated values generally included equitable labor relations, sustainable production and business practices, and support for community development by sourcing from and supporting the viability of local and regional small and midsized farms. However, values such as equitable labor relations or sustainable farming were especially challenging to implement, and there were no widely held standards or accountability systems in place (aside from organic certification, which does not address labor concerns). This made organizations susceptible to making value claims in their public facing commu-

nications (websites, newsletters, etc.) that served to advance their goals and portray themselves in a positive light, while lacking meaningful enactment of those values in their day-to-day operations. This disjuncture was true even for well-intentioned entities and spokespersons who resonated strongly and emotionally with social and environmental values-based missions.

For example, a Vermont-based intermediary who identified in both mission and public reputation with the value of equitable producer partnerships, demonstrated this reality when asked about measures taken to put the claimed value to work. They explained that they don't have a standardized approach for implementing these values in their support and services to small farms and producers because implementation varied depending on producers' needs. It's important to recognize that individualized and adjusted approaches were likely helpful for producers, but protocols for enacting these values in the face of systemic barriers (e.g., volume and consistency requirements that were very difficult to meet and put all the risk onto producers) were also vital to ensuring that their needs were recognized and addressed. An East coast regional retailer considered their prior partnerships with regional producers from the intermediary perspective, and recounted:

The farmers have to advocate and look out for themselves and make sure that they're entering into any agreement with their eyes open and they've got stuff in writing and they know exactly what's happening so that they don't get it stuck to them partway through the process.

This comment illustrates that despite their claimed value of equitable producer partnerships, they acknowledged that ultimately producers were still vulnerable to unfair business arrangements because of the power imbalance, and so farmers had to protect themselves in the contract. At worst, values might have been coopted for marketing purposes, giving consumers a certain impression to bolster sales without any measurable implementation. For example, a retailer could claim that they valued equitable producer partnerships on their website or in marketing communications but not

actually treat their producers fairly in their business arrangements.

In several cases, interviewees made claims about just labor and sustainable production practices without reference to any type of protocol or practice to ensure that these values were being implemented. For example, a participant claimed to ensure the use of equitable and fair labor practices in their public-facing communications, but acknowledged sourcing from producers whom they understood were not complying with such values. In this case there was a gap between claimed values of supporting equitable labor practices in their supply chain and their continued sourcing from producers who were known to not be using fair labor practices. It should be recognized that it was especially challenging to enact values related to equitable labor practices alongside the similarly amorphous concept of local or regional sourcing and of supporting small and midscale farms. Furthermore, it's important to consider the motivations and goals behind the ways entities identified themselves as holding these claimed values, both internally and publicly. Identification may have revealed a genuine eagerness to adopt innovative strategies if the barriers could be alleviated or access to resources were improved. For example, producers often aspired to pay their workers higher wages but were constrained by their own struggle to maintain viable enterprises in the face of intense price pressure in retail supply chains (Bruce et al. 2025). Thus, these entities may have originally intended to only source from producers that used fair labor practices but then struggled to find enough producers that had implemented measurable standards. Public identification may also have been motivated by a desire to meet the interests of a consumer base who were concerned about these values and were willing to pay higher prices for them.

Value Mechanisms

It is a significant takeaway that VBSC representatives may have had mechanisms in place for enacting stated values regarding giving producers equitable decision-making power around pricing and environmental values (discussed below), but few had mechanisms in place for enacting values around equitable labor practices.

The specific VBSCs and interviewees were selected for this project because of their publicized goal to source from small and midsized New England farms; thus, a shared interest in the viability and support of these farms was a primary value identified besides economic interest. After ascertaining values that an interviewee or their association claimed, we investigated mechanisms for actualizing these values. Mechanisms could be strategies or series of actions to meet a specific goal. We found that these mechanisms directly responded to common, systemic barriers faced by VBSC participants in balancing tensions between economic self-interest and upholding broader values. One New Hampshire-based intermediary reflected a common sentiment in our interviews:

The added services is the value that we bring to the farms, which is our primary focus: supporting local agriculture. It's a lot of value where it allows farms to continue focusing on growing, on what their practices are on their own farm. They don't have the time and focus on a lot of aspects in which we're handling. So that is the real value and real service that we're providing to the farms, as our first and primary focus for a mission.

For instance, support with complying with food safety and quality standards were services these intermediaries might offer, as well as all the marketing, refrigeration and storage which were all difficult for producers to handle. In this example their value claim of supporting small and midsized producers was accompanied by mechanisms for actualization, including price-setting strategies that prioritized equity, decision-making power, and transparency for the producer:

When farmers list their product [with intermediary], they can list exactly that dollar amount they need to receive. And then they can see what the retail price is to the customer or the product that they're listing. And we've tried to keep those margins [taken by the intermediary] much smaller than what you might typically be given from a farmer's perspective.

This intentional practice, allowing farmers to set their own prices while keeping the margins taken by the intermediary lower than market rate, was an example of a mechanism in place to actualize a value claim in place from the intermediary position of a VBSC.

Although a few interviewees identified both social and environmental values and mechanisms for enactment relevant to them, almost no intermediaries or retailers delineated specific criteria for ensuring that food entering the value chain was produced with equitable labor, or production practices aside from those related to food safety and organic certifications. For example, a Vermont-based intermediary had outwardly claimed labor values, but when prompted for specifics about criteria in place to ensure the labor standards stated:

I think from a labor standpoint, that's something that—we know that some of the farms that we work with don't have the best practices. We also know that cutting them off is not going to help that. Right? You know, so it's a tricky piece.

Other intermediaries and retailers made claims like “sustainable” or “good production practices,” which were not verified or formalized by a mechanism like organic certification, though they were often implied as closely associated. Generally, value mechanisms benefitted producers. However, producers who were not organic benefitted from claiming environmental values without having implemented the mechanism of organic certification.

Leverage Points

Our respondents, especially those in mid-supply chain positions, identified a range of mechanisms to ensure that the values they claimed were enacted in tangible ways. We found that these mechanisms often corresponded to common challenges faced by producers, including the disproportionate risks and costs they bear, relative to the share of value they receive. We framed these barriers or challenges as opportunities or leverage points to emphasize the role of the mechanism in creating opportunity for the producer. The overarching lev-

erage points we identified include: (1) risk and value sharing, (2) improvements in physical infrastructure, and (3) improvements in informational infrastructure. Each leverage point was comprised of numerous mechanisms that responded to systemic barriers that simultaneously presented opportunities for sourcing from local and regional producers in ways that addressed these inequities to support their economic viability and access to retail markets.

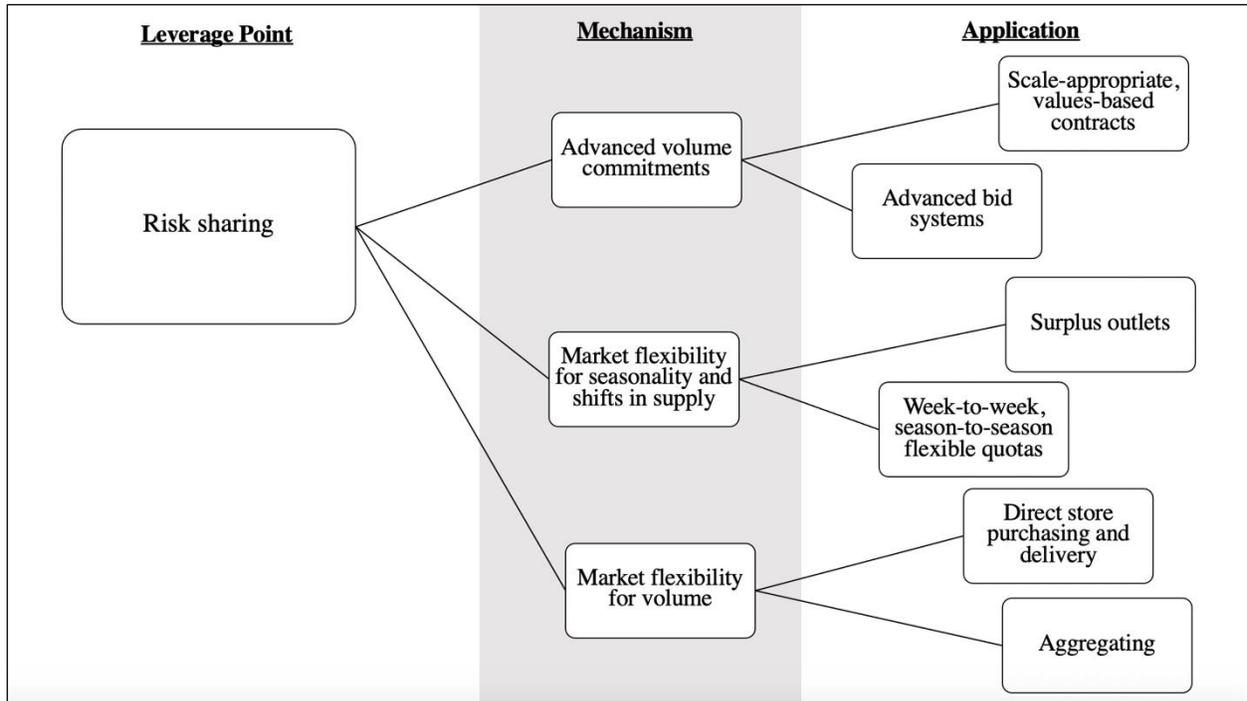
Risk Sharing

Just as capital flowed along the supply chain between participants, so did financial risk. While all food supply chain participants were subject to a competitive market that prioritized profit, each had different tools, capacities, and positionalities. Entities were thus motivated to use all available means to situate themselves in advantageous positions, ideally superior to their competitors. For intermediaries and retailers, this entailed maximizing individual capacity to achieve quality, price, and reliability, the central pillars upon which food supply chain participants competed.

Figure 1 illustrates the relationship between risk sharing as a leverage point, corresponding mechanisms, and applications of these mechanisms. VBSCs may serve as a means to redistribute or share risk along a supply chain. In the case of vertically integrated supermarket food supply chains, redistributing risk required cooperation via actualization mechanisms to deliver reliable market access to producers. A Rhode Island-based intermediary directly addressed risk as a leverage point of VBSCs:

You need to essentially translate the idea of CSA risk models into retail. Retailers need to be committing to volumes as they do with big growers, because they feel that they have limited volume. People write season-long contracts all the time. Why can't they write season-long contracts with small growers? They totally can, they just don't feel that they need to, and they feel that they can just continue to just beat them up for price on a weekly basis, which is true.

Figure 1. Risk Sharing and Mechanisms



In this example, CSAs were used as a point of reference for volume assurance as a mechanism to share risk. Thus, risk sharing was a leverage point, and our analysis identified three examples of mechanisms by which risk sharing was enacted: (1) advanced volume commitments, (2) market flexibility for seasonality and shifts in supply, and (3) market flexibility for volume.

Advanced Volume Commitments

A significant discovery in our research was that advanced volume commitments by buyers, typically afforded to large producers in the form of contracts, provided a guarantee of market access that minimized risk by passing it up the value chain. If the intermediary or another buyer was willing to commit to a certain shared and specific volume in advance, the producer was more likely to make more informed planning choices ahead of acquiring inputs and planting. A Massachusetts producer described conventional retail markets:

I have had a lot of friends who have gone out of business in the market of wholesale and they aren't getting the support from their markets. Supermarkets don't help. They say they do, but ... [if] it's [US]\$0.50 cheaper from New Jersey, they'll get it from them in a heartbeat. They don't care. Corn, corn is a tough one to wholesale. You get a lot of corn coming in. ... It can be tough—and if the buyers start buying it from somebody else—they can really hurt you bad.

Volatility in commitments could leave producers vulnerable to risk, left with volumes of produce suddenly without a market outlet. Contracts or bid systems served as mechanisms to provide advanced volume commitments. A Vermont-based intermediary designated a bid system to provide producers with an advanced guarantee, based on their typical production from previous years, with flexibility to use larger volumes from one producer to offset lower volumes from another. This system used year-to-year volume and sales measures that also honored enduring VBSC partnerships with producers.

Market Flexibility for Seasonality and Shifts in Supply

VBSCs offered flexibility with quotas in order to accommodate producers experiencing disruptions leading to higher or lower than anticipated yields. Participation in wholesale markets could be risky for producers if they experienced shifts in their supply due to circumstances such as climate- and weather-related disruptions, damage from pests or diseases, and supply chain disturbances. The often rigid consistency requirements of large wholesale markets made participation in wholesale markets disproportionately risky for producers. Interviewees gave numerous examples of mechanisms to accommodate these shifts. A Vermont-based intermediary explained:

The other thing that [intermediary] offers its growers is flexibility. Like you are not required to produce a certain amount for [intermediary] every week. There's no quota that you have to meet. So we have plenty of growers that come on and come off as the season ebbs and wanes, depending on their offerings.

This quota flexibility accommodated both predictable (seasonal) and unpredictable shifts. A New Hampshire-based intermediary discussed mechanisms in place to handle such shifts: "We can guarantee that even if some producers under-produce, other ones can deliver an excess of the crop, and we can make those things happen." In the buyer role, whether filled by an intermediary or retailer, relationships were leveraged both vertically and horizontally to quickly accommodate unexpected shifts in supply.

Market Flexibility for Volume

The interviews demonstrated that VBSCs enacted mechanisms to lower volume requirements, in order to accommodate small-scale producers who otherwise would not have had access to a market.

Just as standardized consistency requirements could disproportionately subject producers to risk, large wholesale volume requirements could do the same. The minimal volume capacities of DTC markets and the industrial volume requirements of conventional retail supermarkets both excluded

farms producing or striving to produce at midsized scales. Values-based retail supply chains may have the capacity to better accommodate and support producers by scaling down requirements per delivery or order, accommodating midscale volumes.

Intermediaries and retailers discussed mechanisms that reduce volume requirements. One was direct-store delivery, rather than aggregating wholesale quantities in distribution centers and dispersing smaller quantities to individual stores. A New England regional retailer explained: “And so there isn't really a [volume requirements] too small from a [direct store delivery] standpoint. Warehouse would have much different expectations.” Another mechanism was intentional matching of retailers and producers by size, perhaps allowing producers to access retail markets that best accommodated volume capacities that shift with growth. A Vermont-based intermediary defined the role of the intermediary in creating such alignment:

We've done a pretty good job of understanding capacity of farmers and matching them ... with size of customers. Sometimes it just works out naturally that way. But we've got some larger farms that pack 24-count lettuce or kale or other products. And a small store can't buy that. They don't go through that. So we've got some smaller farms that are packing 6-count.

Specialty items may also have provided opportunity for entry into retail markets at smaller volumes. A Vermont-based intermediary characterized this approach:

We do have some specialty niches. During the summer, hot peppers is one, we have sold a good amount of hot peppers. But you need to have a certain amount of volume to successfully sell through [the intermediary]. And that depends on the item. So if you're selling kale, you need to be able to produce kale in the half palette to palette quantities to successfully sell them through [the intermediary]. But if it's a specialty item like hot peppers, then then we're just looking at 5, 10, 20 cases at a time.

Direct store delivery, size matching of producers

and retailers, and specialty niches all served as mechanisms to “scale down” or adjust volume requirements to meet the needs of small and midsized producers.

Physical Infrastructure

Lack of access to necessary physical infrastructure—the physical components necessary for moving local and regionally produced food through conventional markets—in numerous ways hindered producer capacity to access appropriate markets, and created challenges at each point in the VBSC. Adjusting existing physical infrastructure and identifying ways to increase producer access to existing infrastructure was an important leverage point for enacting VBSC values. Improving physical infrastructure was also a critical leverage point to reduce losses in quality. Reducing complexity and strain on producers during shipping offered an opportunity to negate logistical complexities the producer was often left to cope with alone.

Cold Storage

A primary takeaway was that VBSCs facilitated collaboration and strategies to address small-scale producers' need for cold storage so that they could access wholesale retail markets. Access to proper refrigeration soon after harvest was widely recognized as paramount by interviewees from all positions in the VBSC. Cold storage, specifically hydrocooling technologies, for both producers and sellers in the chain improved many outcomes, including quality and shrinkage, or post-harvest volume loss. An East Coast regional retailer explained the importance of cold storage:

I'll tell you what the biggest challenge is for New England local produce. They don't hydrocool. They don't have hydrocoolers that cool product, that product sits in their barns or whatever, around their trucks. ... And the shelf life of local produce is very limited. ... But with local growers and I'm talking strictly New England ... your shrink on local produce is much higher.

These profit losses due to shrinkage may have made grocery stores less willing to participate in

value-chain partnerships with smaller regional producers. Furthermore, where value was not captured on the retail end of the supply chain, it could not be passed back to the producer, even if mechanisms to pass on this value existed. Our findings suggest that proper cooling infrastructure was a means to improve quality for all value chain participants, increase producer capacity to meet larger volume requirements, and improve efficiencies in transportation.

Opportunities for improved access to cold storage generally centered on themes of collaboration and sharing among multiple producers, as illustrated by a Rhode Island-based intermediary:

Usually, the grower that's packing the bulk of the order becomes the consolidation and shipping point ... so they go out in the fields early morning, they get the stuff packed, cooled, in the cold chain, moved over to this farm's cooler, by 1:00 PM we have a truck that's coming in to pick that product up after its all consolidated.

This kind of collaboration may have been initiated or organized by another participant along the supply chain, such as the intermediary or by a collective of growers participating in the same supply chain.

Transportation

We found that VBSCs developed strategies for ensuring access to transportation for small and midscale producers who otherwise would not have access to wholesale retail markets. The logistics of moving smaller quantities of produce from many producers was inherently more complex in a supply chain designed to handle large volumes of goods from a small number of large farms. Transportation and volume were closely tied. Producers have been required to deliver goods or to rely on an intermediary, retailer, or an outsourced service to pick up their goods for a fee. This became problematic when producers were solely responsible for managing and absorbing the costs of frequent deliveries over extended distances, especially if they could not afford the labor and transportation costs. Aggregation and streamlined shipping systems

were necessary to accommodate smaller volumes efficiently for the producer and other value chain participants.

Reported mechanisms to cope with this complex problem varied from mitigating transportation-related strain on producers to shifting transportation responsibilities and costs to the intermediary or retailer. Direct store delivery as a strategy to “scale down” volume requirements could also reduce complexities in transportation. This international retailer reflected:

They pick typically that day, pack it up, bring it to the store in their vehicles with their insurance, with their operating costs to do so and deliver to the back of the store with that load and store. And repeat that based on the relationship that they have.

In this case, delivering to individual stores rather than more distant warehouses cut down on mileage traveled by the producer. Collaborative, intra-producer efforts to develop transportation efficiencies could also offer solutions. The Rhode Island-based intermediary identified geographically proximate groups or “clusters” of producers who relied on one central, local distribution point to aggregate their food products. While this mechanism required that the farmer serving as the central aggregation point have access to cold storage infrastructure, there was potential for efficiency in identifying producer clusters and streamlining transportation around pre-identified groups.

Warehousing

VBSCs developed strategies for ensuring access to warehouse space for small and midscale producers who otherwise would not be able to market their products to retail chains. Proper warehouse and storage facilities were also integral for aggregation, shrinkage reductions, and efficient transportation outcomes. If direct store delivery was an option, improved storage capacity could also limit strain on the producer, as described by an international retailer:

Typically [the producer delivers] almost every day. ... I think anywhere from every day, every

other day, for the most part during the highest season. ... And then also, with produce, if it's on the shelf. We typically will only let maybe one additional day of stock sit in the back room. Knowing if it's like a hot product of the time, if it's corn, then we would let some of the backstock sit for that extra day just so the farmer doesn't have to run back in the afternoon too, but that's about it.

While freshness was important for all participants along the VBSC, increased warehousing space for individual retail locations meant that producers could limit the frequency of deliveries, saving transportation costs. Intermediaries were well positioned to provide this infrastructure necessary for aggregating and accommodating shifts in supply. As a New Hampshire-based intermediary stated:

We can guarantee that even if some producers under produce, other ones can deliver an excess of the crop, and we can make those things happen. So in the long-term, that's an

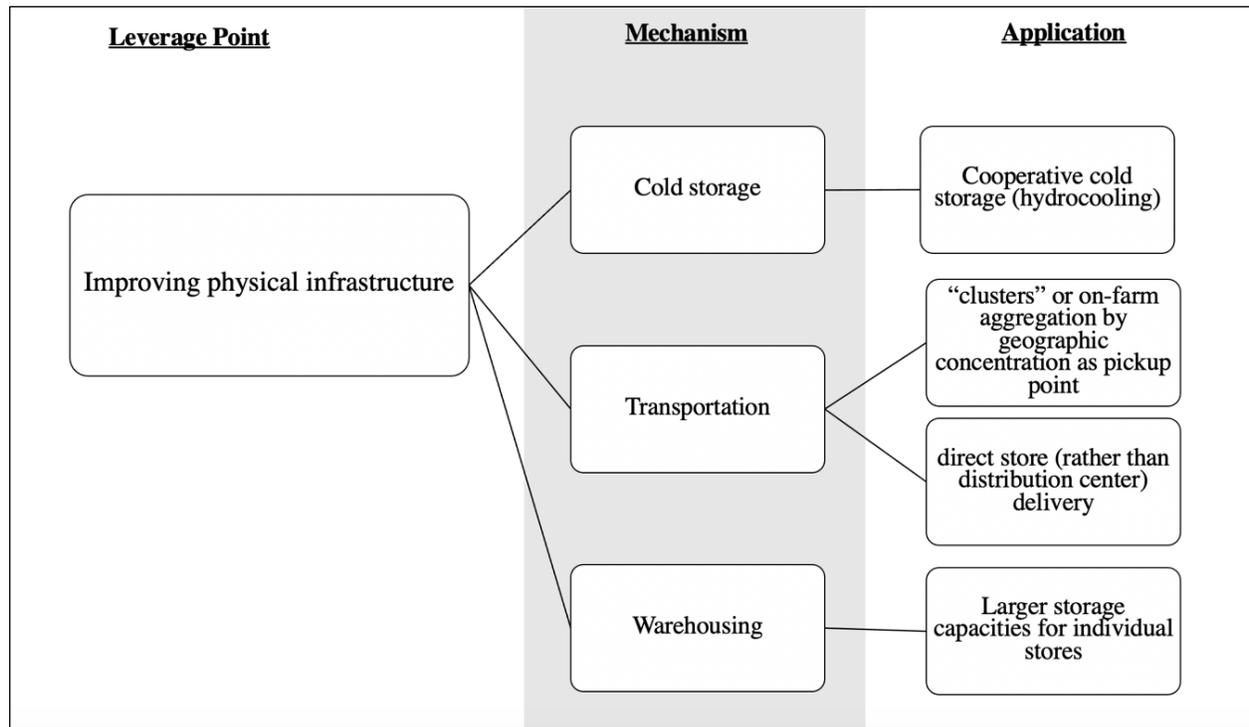
area that we want to be and that's all based within a wholesale, in order to kind of be those items. But that also requires more accreditations for ourselves. A larger facility, a lot of infrastructural improvement for us to get there.

Warehousing in the middle of the supply chain enabled both aggregation and flexibility mechanisms necessary for accessing larger retail markets. Figure 2 illustrates relationships among physical infrastructure as a leverage point, mechanisms, and applications.

Informational Infrastructure

Improved systems for information distribution were critical to VBSCs. Retail and supermarket supply chains were less direct and more elongated in structure, with many participants along a single chain. Information included access to consumer demand (especially for producers), current availabilities and volumes of different goods, and regulatory information about food safety. Creating pathways for information to flow among participants

Figure 2. Physical Infrastructure and Mechanisms



was foundational for cooperation. Informational infrastructure was another leverage point, with mechanisms to improve information flows, making them more accessible for participants. Informational infrastructure was necessary to cope with the complexities of aggregating many different volumes of products from numerous farms, in complex retail-oriented supply chains. Mechanisms corresponding to informational infrastructure as a leverage point included both technologies and procedural or relationship-based protocols to prevent asymmetries in information flows.

Software Systems

VBSCs used software and ordering platforms as a vital strategy to coordinate and streamline communication for both producers and buyers, and for improving transparency and trust. Software systems ensured that producers and buyers had access to sales, demand, and product availability data. Besides enhancing trust and transparency, using a platform to directly access this information could provide producers with increased access to information about consumer demand and preferences. Platforms offered potential to streamline information sharing when handling the complexities of elongated supply chains with many producers, customer base-tailoring, value-orientation, and product type. A Vermont-based intermediary emphasized the role of such a platform in moving information between producer and customer, whether the latter was a consumer or a retailer:

We have an online catalog and so that's what our customers interface with. That's what they use to purchase product on a weekly basis. Any time our procurement specialists get an update on product availability, changes in apple variety, changes in price, he'll update that catalog weekly.

Producers often lacked information on consumer or market demand, particularly in longer supply chains, resulting in slower responses to shifts in an ever-evolving market. The inverse was true for direct markets, where proximity allowed producers to pivot more nimbly and successfully in response to short-term demand information.

Adaptable capacity to respond to demand and market shifts could improve resilience for producers and the larger food system.

Access to Food Safety and Regulatory Certifications for Producers

We found that VBSCs have offered technical assistance and sometimes supported the cost of compliance with food safety regulations, often a major barrier for small and midscale producers. Food safety certifications such as GAP (Good Agricultural Practices) and Harmonized GAP were often required for participation in larger retail markets, access to which was difficult for small and mid-sized producers. These certifications were sometimes obscure, needlessly complex, and difficult to navigate. Intermediaries and retailers were positioned to provide this information directly, as they were often the entities requiring these certifications and reviewing them. A Massachusetts-based producer reflected on struggling with this as a farmer:

Well, there is a myriad of regulations when it comes to food safety. The paperwork and the pesticide recordkeeping, we gotta do that. Which is I think important—just for your own good. Some of the food safety stuff I think for the size of farm I have—it is a little overkill.

Furthermore, costs of meeting certification requirements as well as of obtaining the paper certifications themselves were barriers for some producers. Recognizing this, retailers and intermediaries put in place mechanisms to help diffuse the cost and complexity of these processes, including alleviating or taking on costs and providing educational services to producers. A New England-based retailer explained:

Food safety for produce is incredibly confusing for farmers and can be incredibly frustrating and costly. And so we may not be the solution, but we know all the right players, we know what our retail expectations are. ... We're going to have the expectation of high food safety requirements, that's not going to go away.

This same retailer also described a mechanism to mitigate high costs associated with GAP certification:

One of the first efforts that [we] led was increasing the amount of money that we could reimburse those farmers who are approved and onboarded towards that cost. So those costs can really add up and be a huge deal to really small local farmers, anybody really, but especially our smallest local [direct store delivery] farms.

As producers struggled to cope with both the complications and financial overhead of food safety and other regulatory certifications, retailers and intermediaries who required this paperwork were positioned to alleviate strain.

Retail-level Registration of Values

A major takeaway was that retail-level strategies for internal registration of values like locally and regionally produced products, such as barcodes and special packaging may help capture value and distinguish special qualities for VBSC farm partners. While certified organic products were nearly universally differentiated at large supermarkets, universal product codes (UPCs) or barcode systems for differentiating products with other values generally did not exist at a retail level. Despite consumer demand and physical labels denoting regional procurement or farm size, there was no universal or widely utilized system in place to capture data so that goods with these specific values could be effectively differentiated from those without. Furthermore, UPCs and barcodes may also be useful for measuring preference and consumer willingness to pay for embedded values over time, as is the case with organics. A Rhode Island-based intermediary reflected:

Part of the reason I took on the packaging part as well is that because organics is dependent on more point-of-sale identification, there are definitely organic local growers that I would be able to buy from, but they don't sticker their products or they don't band their products or they don't have a retail identification compo-

nent.

Aside from creating an internal system to capture these values by the retailer, packaging could be used as a tool to distinguish values other than organic. Interviewees suggested that when a system or retailer did not have capacity to create a new and separate system for distinguishing regional and local attributes, packaging could be a creative solution. Repackaging one or multiple foods meant they had to be allocated a unique barcode, which would have to be indexed in the retailer's system. Figure 3 illustrates relationships among informational infrastructure as a leverage point, mechanisms, and applications.

Structural Constraints for Value Enactment

While leverage points and corresponding mechanisms for enacting values provided opportunities to use VBSCs to strategize for viable retail market access, there were limitations. It is critical to acknowledge that there were important barriers for which this study did not find salient mechanisms to address. One limitation was that retailers had limited shelf space and could only work with so many producers at once. The unwieldy and inefficient complexities associated with sourcing many separate volumes of products from different producers also presented a challenge. Finally, the role of high and often rigid consumer and retailer expectations for produce quality and availability were ongoing challenges.

Cannibalization

VBSC retail partners limited their shelf space to a few small and midscale producers through a vetting process that forced producers to compete with each other for access to them. In sourcing from smaller and midsized regional producers, multiple retailers described constraints on their capacity to carry limited quantities of a particular type of product or to source from multiple producers while maintaining source transparency or brand identity. One retailer referred to this concept as "cannibalization," as described by a New Hampshire-based intermediary:

Within the vetting process, because we want to

make sure that we're not over listing a specific type of produce. Meaning if there's five people that specialize in arugula, since I already brought up arugula. We don't necessarily want to work with all five of those producers, because if we list five producers, then no one's going to succeed as much. Whereas if we list like say, three producers, where their growing season doesn't drastically overlap with each other, they're all going to benefit pretty well from that.

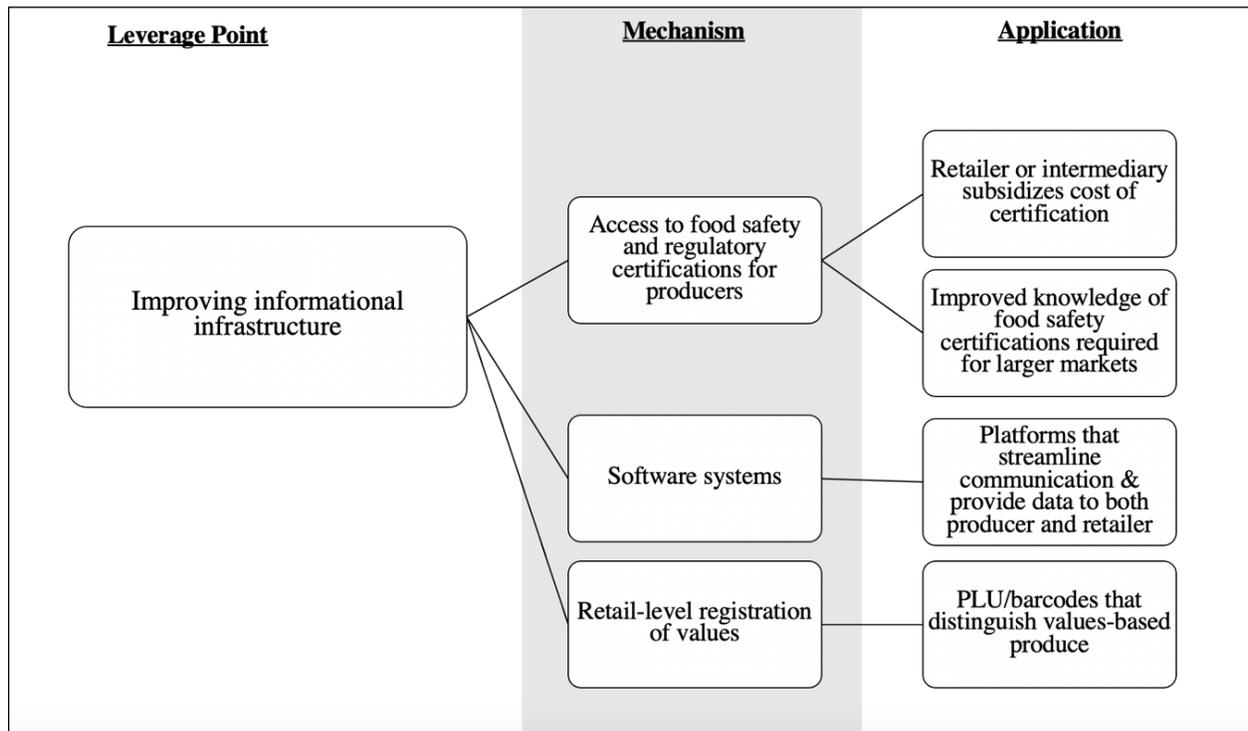
Individual farms still had to compete for consumer demand on store shelves subject to the competitions of the marketplace. Respondents from both retailers and intermediaries emphasized the significance of sourcing from a limited number of producers as a strategy to reduce in-store and on-shelf competition between producers.

Consumer and Retailer Expectations

Despite all the strategies utilized by VBSC partners to facilitate market access for local and regional small and midscale producers, consumer expecta-

tions for uniform, flawless, and consistently available products was an ongoing barrier that was out of the control of producers and individual retailers. An important aspect of allowing all VBSC participants flexibility in managing supply and quality fluctuations was addressing the expectations of the eater. Consumers have long been accustomed to certain quality and availability standards in shopping. Strawberries were available for purchase in December at nearly all large chain grocery stores, each berry meeting specified appearance and uniformity standards, settled tidily in homogenous packaging. Apples were shiny, round, and manicured into heaping stacks. Tomatoes were eternally red, with thin skin taut and unblemished. These have become customary expectancies of produce aisle scenery which inform normative consumer selection criteria, cast by ever-refining industrial sourcing practices. However, food system change involves addressing mutually dependent consumer and retailer expectations, requiring parallel education initiatives and ultimately generating consumer willingness to tolerate shifts in availability and produce appearance.

Figure 3. Informational Infrastructure and Mechanisms



Discussion

This study identified three categories of leverage points for reframing persistent challenges in retail market access as opportunities: risk sharing, physical infrastructure, and informational infrastructure. We shed light on the mechanisms used to address ongoing challenges, corresponding to leverage points that act as strategies to transform barriers for producers and actualize values in VBSCs. The interview narratives provided shared accounts of transforming supply chain environments previously inhospitable to small and midsized farms. Developing and implementing these mechanisms was critical for actualizing shared values, made possible via cooperative partnerships along the chain.

Reconciling Values

Most notably, we found that reconciling economic interests with social and environmental values proved to be a considerable challenge even in cases where partnerships designed to facilitate reconciliatory communication were a primary function of the VBSC. Cooperating actors experienced challenges in communicating and enacting values along the chain, consistent with findings by Bloom and Hinrichs (2011a) and Abate-Kassa and Peterson (2011). We distinguished between value claims and value mechanisms, where shared values might only be actualized if a mechanism to enact a value was in place, also consistent with Bloom and Hinrichs (2011a). Our work shows how the partnerships that characterize VBSCs play an important role in shaping the extent to which mechanisms are in place to enact claimed values.

Cooperation was necessary for implementing value mechanisms for equity, transparency, and fair returns, yet this kind of cooperation was often undermined by the pervasiveness of centralization, consolidation, and integration endemic to the larger food system and conventional supply chain structures in which these VBSCs are embedded (Hendrickson et al., 2017; Howard, 2016). Social and environmental values were consistently at odds with the competitive pressures to prioritize profit. Thus, we show that practical mechanisms were essential to enacting value claims in retail-oriented VBSCs, making more resilient, less consolidated food system outcomes more possible.

Cooperation and Sharing

Cooperation among value chain participants served as a basis for identifying leverage points and developing corresponding mechanisms (Conner et al., 2020). Clark and Inwood (2016) confirm that aside from a primary shared value of delivering local, regional, or differentiated goods to larger markets, VBSCs are defined by their commitments to the participants. Such collaboration facilitates a mutual understanding of individually and collectively faced barriers, often symptomatic of complex problems that require multifaceted, mutually beneficial solutions (Buckley et al., 2013). Ability to respond to these complex problems strengthens cooperation along the value chain between partners with diverse horizontal connections and relationships (Buckley et al., 2013). Our findings highlight the centrality of cooperation and partnerships that define the VBSC structure, both among producers and among partnerships at different positions along the chain. The partnerships that support VBSC cooperation ensure effective leveraging of physical and informational infrastructures critical for enacting their values. This kind of cooperation and sharing among value chain participants is not novel; it remains a primary strategy for resisting barriers to accessing land, infrastructure, capital, markets, and other resources for small and mid-scale producers, especially those in marginalized positions (Brasier et al., 2007; White, 2018). As White (2018) argues in her study of the Freedom Farms Cooperative, shared ownership enabled Black farmers access to physical infrastructure and other systems necessary for market access in the face of structural oppression. In our study, cooperation for access to physical infrastructure was a resistance strategy for small and midsized producers facing systemic exclusion from the consolidated food marketplace.

Both formal cooperation and information sharing to facilitate access to infrastructure is helpful for producers. This is especially important for transportation and other logistics for moving food to the marketplace, due to the complexities of transporting many different volumes of food products (Lutz et al., 2017). However, formalization of these strategies is increasingly important to support decentralization in the greater food system (Rosin

et al., 2012). One mechanism important for improved physical infrastructure is to create closely located producer groups or “clusters.” Leveraging proximity for access to infrastructure, formalized through a common relationship with an intermediary, is one way of formalizing cooperation. This study finds that producers located in reasonable proximity may also access cold storage facilities and warehouses through cooperation. This strategy is not only productive for market access, but also for broader resilience (Brasier et al., 2007; Karki et al., 2021). Formalized and established farmer groups by location, either facilitated by the producers themselves or by a shared relationship with an intermediary or retailer, may be a useful strategy.

Cooperation also underlies effective mechanisms for informational infrastructure. Software systems and barcodes facilitate transparent flows of information between partners. Day-Farnsworth et al. (2009) recognize these feedback loops of information between producer and consumer as vital for connecting producers to consumer demand information. In elongated or less direct value chains, producers may not have direct access to information to make decisions about consumer preferences, market gaps, or willingness to pay (Buckley et al., 2013). For VBSCs, cooperation facilitates producer access to information by drawing on resources available to their partners. This idea also potentially applies to ensuring producer access to information on GAP certification and to the capital to acquire this food safety certification.

Cooperation is also vital for risk sharing. Bids, contracts, and other mechanisms for certainty also help to formalize mutual commitments. Cooperation is standard among conventional business partnerships to enable the outcomes of reliability that are acknowledged as crucial to competition in the food marketplace (Dunning, 2015, Holm et al., 1999). Reliability ultimately depends on relationships, shared understanding, and communication, which are often informal. In a VBSC the intermediary or retailer understands the integrity of the producer and that certain outcomes or inability to meet thresholds may be out of the producer’s control (Dunning, 2015). Shared understandings of integrity build a mutual toleration for shifts in volume, supply, and quality. Capacities to pivot on the

retailer or intermediary end, to meet reliability standards imposed by the larger market, are thus vital in providing less risky pathways to retail markets for small and midscale producers. Cooperation and communication enable the capacity to pivot.

Necessary Complexity

This study has identified several practical mechanisms and approaches for mitigating the complexity of coordinating smaller volumes of food products from a greater number of small producers. Connecting New England’s regional producers to its large supermarkets involves many moving parts, however, requiring greater investment in communication and demanding tradeoffs in efficiency. Decreases in scale inherently result in increasing complexities that are felt at all levels of the value chain (Buckley et al., 2013; Mount, 2010). Because value chain participants are still competing in a capitalist marketplace that prioritizes profit over all other values, balancing efficiency and complexity poses a significant challenge. Numerous participants described grappling with such complexities; the mechanisms presented in our analysis illustrate the actions they are taking to cope with these formidable barriers.

Calls for transparency and information sharing in delivering alternative values require mechanisms that can address such complexities. Interviewees, especially those in the middle supply chain space, acknowledged the opportunities software and other platforms provide to address barriers brought on by many moving parts and relationships. Still, the functional structure of conventional food supply chains, which centers price, quality, and reliability as the guiding tenets of profit, will continuously engender greater complexity for values-based sourcing (Stroink & Nelson, 2013). Thus, unless conventional food supply chains are restructured to adopt broader values as well as mechanisms to facilitate the inclusion of small and mid-sized regional producers, embedding broader values in the conventional supply chain structure may result in some loss of efficiency. Innovation can offset some of these complexities. There is considerable potential for the continued development of systems that reduce losses in efficiency as broader values are increasingly embedded in food supply chains.

A significant theme throughout this study was the COVID-19 pandemic and its continued implications. While the pandemic was a special opportunity to investigate food supply chain partnerships, it also impacted the methods and findings of this study. Pandemic disruptions were felt throughout the global food supply chain, calling widespread attention to the inflexibility of the conventional food supply chain structure. In response, this study explored an array of practicable mechanisms and leverage points for increasing structural flexibility and resilience. For instance, a chain supermarket interviewee reflected on the vital role that sourcing from more small and mid-sized regional farms played in response to addressing supply chain disruptions, as these producers shifted their focus and production volumes to supply individual stores when larger, more globalized supply chains failed. As Day-Farnsworth et al. (2009) acknowledge, producer access to information about market shifts and demand is important for their capacity to respond in a changing market climate. Such capacity to respond contributes to regional and national food system resilience, making cooperation a necessary hallmark of resilience itself. It is also important to consider this study's findings alongside others conducted prior to the onset of COVID-19. Abate-Kassa and Peterson (2011) identify similar drivers in their work on conventional food supply chains, including price and quality, but reference volume rather than reliability. This could be attributed to a shift in marketplace priorities after widespread global disruptions had significant implications for reliability.

Directions for Future Research

Possible applications in broader circumstances may derive from the accounts of participants utilizing mechanisms presented in this study. While the mechanisms have potential for use in other VBSC settings, they are not exhaustive. Possible applications of each mechanism likely extend beyond those we have described here and may provide grounds for future research. Future work should continue to consider the ways that conventional supply chain structures inhibit effective communication and sharing among VBSC partners, the nuances of these challenges, and possible pathways

toward improving communication and value reconciliation outcomes. Findings from this study may also inform adjustments to current food system policy. Sharing and cooperation as a pervasive theme in this study suggest the need for policies and programs that support shared infrastructure improvements, certification-oriented food safety education, and producer knowledge-sharing networks.

Building on the findings of this study, future research should investigate strategies for enhancing VBSC resilience, transparency, and sustainability to ensure and improve their viability in an increasingly uncertain post-COVID 19 landscape. Given the critical role of cooperation and communication, further work should examine ways to formalize cooperative mechanisms that promote equitable risk and profit distribution, strengthen long-term relationships, and support scalability. Because of the importance of informational infrastructure for data sharing and transparency, research is needed to identify specific and effective features that software platforms, apps, and other digital tools can use to improve communication and access to information, and to differentiate product values. Our work has examined VBSC adaptations that were effective during the pandemic, so further research should assess which strategies have remained effective and why.

Conclusion

Small and mid-sized farms in New England are valuable culturally, environmentally, socially, and economically. Using values-based food supply chains to change conventional structures has the potential to ensure the farms continue to exist and to meet consumer demands in a rapidly changing world. This study has investigated retail-oriented VBSCs and the partnerships that characterize them using a qualitative commodity chain analysis approach. We provided an account of how producers, intermediaries, and retailers along the supply chain are acting on their stated values to address barriers in risk sharing, physical infrastructure, and informational infrastructure. This effort is challenged by the complexities of shifting away from conventional market structures, but cooperation using a range of practical strategies offers promising ways of doing so. 

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